



**THE RELATIONSHIPS BETWEEN POOR MENTAL HEALTH, CHILD ABUSE,
WOMEN'S EXPERIENCES AND MALE PERPETRATION OF INTIMATE
PARTNER VIOLENCE IN GAUTENG PROVINCE OF SOUTH AFRICA**

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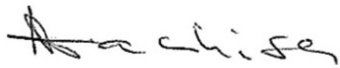
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Johannesburg, October 2019

DECLARATION

I, **Mercilene Tanyaradzwa Machisa**, student number **386953**, declare that this thesis is my own work conducted under the supervision of Professors Rachel Jewkes and Nicola Christofides. The work is being submitted for the Degree of Doctor of Philosophy (PhD) in the School of Public Health at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.

I have read the sections on referencing and plagiarism in the WITS Plagiarism Policy. I am aware that the plagiarism is wrong and that the University of the Witwatersrand may take disciplinary action should plagiarism be found in this work. I have followed the required conventions in referencing the thoughts and ideas of others. I confirm that all of the work submitted in this thesis is my own unaided work except where I have explicitly indicated otherwise.

A handwritten signature in black ink, appearing to read 'Machisa', is positioned above the signature label.

Signature:

Date: 31 October 2019

DEDICATION

*I dedicate this work to my parents Patience and Silver Machisa, for your love and
undiminished support over the decades!!*

CONFERENCE PRESENTATIONS ARISING FROM THIS STUDY

Date	Name of conference/seminar	Place (city, country)	Title of presentation	Oral/poster
2014	Global Violence Reduction Conference	Cambridge, England	Addressing child abuse is key to addressing gender violence and poor mental health	Poster
2015	MRC Gender and Health Unit: Academic Day 2	Pretoria, South Africa	Structural pathways between child abuse, poor mental health and IPV perpetration.	Oral
2016	Safety Conference	Tampere, Finland	Structural pathways between child abuse, poor mental health and IPV perpetration.	Poster
2016	South African Violence Conference	Johannesburg South Africa	Mental ill health in pathways to women's experiences of intimate partner violence	Poster
2017	Sexual Violence Research Initiative Conference	Rio de Janeiro, Brazil	Mental ill health in pathways to women's experiences of intimate partner violence	Oral

PUBLICATIONS ARISING FROM THIS STUDY

- ✚ **Machisa M.T.**, Christofides N., Jewkes R. (2016). Structural Pathways between Child Abuse, Poor Mental Health Outcomes and Male-Perpetrated Intimate Partner Violence (IPV). PLoS ONE 11: e0150986 (1).
- ✚ **Machisa M.T.**, Christofides N., Jewkes R. (2017). Mental ill health in structural pathways to women's experiences of intimate partner violence. PLoS one 12.4: e0175240 (2).
- ✚ **Machisa M.T.**, Christofides N., Jewkes R. (2018). Social support factors associated with psychological resilience among women survivors of intimate partner violence in Gauteng, South Africa. Global Health Action. Special Issue Gender and Health Inequality. VOL. 00, 1491114 (3)
- ✚ **Machisa M.T.**, Hatcher A., Christofides N., Jewkes R. Systematic review and meta-analysis of the associations between alcohol abuse, depression, or PTSD symptoms and adult male perpetration of intimate partner violence (In Press) (4)

ABSTRACT

Background

Aims and objectives

To address, the aforementioned knowledge gaps, this thesis aimed to investigate the relationships between childhood trauma, mental ill-health, women's experiences and male perpetration of intimate partner violence in Gauteng province of South Africa in 2010. Specific objectives were a) to conduct a global systematic review and meta-analyses to estimate the associations between alcohol abuse, mental ill health symptoms and perpetration of IPV as an outcome; b) to investigate the relationships and pathways between childhood trauma and men's IPV perpetration including the mediating effects of mental ill health; c) to investigate the inter-relationships of childhood trauma, mental ill health and women's experiences of IPV and lastly d) investigate the factors associated with resilience that was measured as absence of psychopathology among women survivors of IPV.

Existing evidence shows that South Africa has high prevalence of different forms of violent and traumatic exposures which include violence against children (VAC), violence against women (VAW) and interpersonal violence or violent crime which are risk factors for a high burden of mental ill health in the population. VAC and VAW co-occur or intersect by having shared common risk factors and mental ill-health consequences including depression, post-traumatic stress disorder (PTSD), and binge drinking. Yet, many VAC or VAW victims do not report mental ill health symptoms or recover from them more expediently than others, showing different responses to traumatic exposures and resilience. Global reviews of literature suggest that mental ill health may increase women's risk for repeated or on-going intimate partner violence (IPV) experiences. Research in other settings and especially among military and clinical samples has indicated that mental ill health symptoms increase risk of men's perpetration of violence against intimate partners. However, pathways between childhood trauma exposures, mental ill health and men's IPV perpetration or women's IPV experiences have been little studied from population-based and even less in longitudinal studies conducted in Africa or in low and middle-income country settings (LMICs) where the prevalence of IPV is higher than that documented in the high-income countries.

Methods

Systematic review, meta-analytic techniques and quantitative research methods were employed in the study. For the systematic review and meta-analysis, studies that were published in peer reviewed journal articles before April 2018 and that reported associations between alcohol abuse, depression or PTSD and IPV were searched for on the PubMed and Science Direct. Only studies measuring IPV in the past year were included

in the meta-analysis. Study data were extracted and odds ratios (OR) were pooled using meta-analysis commands in STATA 15. The source of heterogeneity of included studies was further assessed through tests for publication bias.

Secondary analysis was conducted on data collected in household survey employing a multi-stage random sampling approach to select 511 women and 416 men from Gauteng, South Africa in 2010. IPV was measured using the WHO Multi-country Study on Women's Health and Domestic Violence Questionnaire. Childhood trauma was measured using a short form of the Childhood Trauma Questionnaire. Depression was measured using the Centre for Epidemiologic Studies Depression Scale (CESD). PTSD symptoms were measured using the Harvard Trauma Questionnaire. Resilience was measured as scoring below the threshold for the Centre for Epidemiological Studies Depression Scale and the Harvard Trauma Questionnaire. Binge drinking was measured using the Alcohol Use Disorders Identification Test (AUDIT) scale. All statistical analyses were conducted in Stata taking into account the survey design. Regression modelling was used to test the associations between variables whilst adjusting for potentially confounding variables identified from literature. The investigation of associations and path analysis of the inter-relationships of variables was conducted using structural equation modelling (SEM) with full information maximum likelihood estimation accounting for missing data.

Results

In meta-analytic work, 15 studies showed a positive association between alcohol abuse and past year IPV perpetration (OR 1.77 [95% CI 1.37-2.28] $I^2=86.3$; $p=0.000$). Nine studies showed no pooled association between current depressive symptoms and past year IPV perpetration. Four studies showed a positive marginal association between current PTSD symptoms and past year IPV perpetration (OR 1.02 [95%CI 0.96-1.54] $I^2=83.5$ %; $p=0.000$).

From the secondary analysis of survey data, 62% reported lifetime IPV perpetration. In contrast, 50% of women reported lifetime experience of IPV. The prevalence of men's IPV perpetration (19.7%) and women's IPV victimisation (18%) in the past year were comparable. More men participating in the study reported experiencing childhood physical abuse (men 88% vs women 72%) and emotional abuse (men 63% vs women 54%) compared to women. Women reported more childhood neglect experience (men 55% vs women 59%), and child sexual abuse experience (men 20% vs women 28%) compared to men. The trauma event reported more frequently by men was being robbed/carjacked at gunpoint or knifepoint or being kidnapped (49.3%). The most common trauma event reported by women was witnessing abuse of their mother (35.7%) and this was higher than the proportion of men reporting this (25%). A higher proportion

of men witnessed murders of someone close (men 26% vs 15.8% women), witnessed murders of strangers (men 34.4% vs 9.7% women,) being robbed or carjacked at gunpoint or knifepoint or being kidnapped (men 49.3% vs women 19.2%), and being close to death (men 28.7% vs women 13.3%). Overall, men reported a higher prevalence of mental ill health symptoms.

Thirty six percent of men compared to 14% of women reported binge drinking in the past year. Twenty four percent of men compared to 11.6% of women in our study reported PTSD symptoms. Twenty four percent of men and 23% of women reported depressive symptoms. There was also evidence of co-occurring mental ill health among women and men, with co-occurring symptoms being higher among men than women. Nine percent of women and 14.2% men reported PTSD and depressive symptoms. Five percent of women and 10% of men reported both binge drinking and depressive symptoms. Three percent of women and 10.6% of men reported both binge drinking and PTSD symptoms.

Men's childhood trauma had direct effects on perpetration of IPV and other indirect effects through pathways mediated by personal gender attitudes, other life trauma and mental ill health symptoms. Men's childhood trauma had direct effects on PTSD symptoms (β 18; $p=0.003$) and depressive symptoms (β 4.6, $p=0.01$). Both PTSD and depressive symptoms had direct effects on binge drinking. PTSD had direct effects on IPV perpetration, thus being a mediator of the relationship of childhood trauma or other life trauma and lifetime IPV perpetration.

Women's childhood trauma score was positively associated with PTSD (β 0.45; 95 CI 0.33-0.57; $p<0.0001$) and depression scores (β 0.39; 95 CI 0.26-0.51; $p<0.0001$). PTSD and depressive scores fully mediated the relationship of childhood trauma and IPV victimisation. Childhood trauma also had indirect effects on women's IPV experience through a pathway mediated by women's power in their current relationship. Women's IPV victimisation in the past year had direct effects on PTSD (β 0.24; $p <0.0001$), depressive symptoms (β 0.24; $p <0.0001$) and binge drinking (β 0.19; $p <0.0001$).

Forty two percent of women who reported lifetime IPV experiences scored below the threshold for PTSD or depressive symptoms at the time of the survey and so were categorized as resilient. Increased resilience was associated with social support indicators i.e women who perceived that their communities were supportive, and they would easily find money in an emergency were more likely to be resilient. Women who binge drank, experienced severe IPV in past 12 months, received negative reactions to disclosure and utilized medical or psycho-social services were less likely to be resilient.

Conclusions

Our findings show women and men's high reporting of cumulative and multiple trauma exposures in the life course which include childhood trauma. PTSD symptoms which are the effects of violent exposures, were co-occurring with depression and alcohol and were a central risk factor for men's perpetration of IPV or women's experience of IPV. The findings show the importance of mental health response and intervention to the VAW field. Therapies targeting women's mental disorders and strengthening women's resilience should be prioritised as an essential component of packages of interventions to improve women's health and wellbeing, prevent IPV, along with other gender transformative, parenting, and alcohol reduction programmes. Pharmacotherapeutic and psychotherapeutic interventions aimed to treat multiple mental ill health symptoms including PTSD, depression and alcohol abuse hold promise for reducing male-perpetrated IPV in these settings. IPV prevention and violence reduction programmes are critical to reduce the burden of mental ill health in the population. This may entail development or adaptation of multi-component prevention programmes that combine transdiagnostic mental health and gender transformative components in their design. Positive social support from family and perceptions of a supportive community were shown to protect women from the potential mental ill health effects of IPV, therefore women's resilience could be fostered through supportive responses to IPV victims at all the levels of social capital. The VAW field would benefit immensely from further research investigating women's psychological resilience the factors associated with it and using the evidence to develop models to foster victim resilience and reduce revictimisation.

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CONTENTS

ABSTRACT.....	V
<i>Background.....</i>	<i>v</i>
<i>Aims and objectives</i>	<i>v</i>
<i>Methods.....</i>	<i>v</i>
<i>Results.....</i>	<i>vi</i>
<i>Conclusions.....</i>	<i>viii</i>
ACKNOWLEDGEMENTS.....	IX
ABBREVIATIONS	XIV
LIST OF FIGURES.....	XV
LIST OF TABLES.....	XV
ORGANISATION OF THE THESIS	XVI
1 INTRODUCTION	2
1.1 DEFINITIONS OF IPV	2
1.2 GLOBAL REPORTING OF PREVALENCE OF IPV	3
1.2.1 <i>Global estimates of women’s experiences of IPV.....</i>	<i>3</i>
1.2.2 <i>Global estimates of men’s perpetration of IPV.....</i>	<i>5</i>
1.3 PREVALENCE OF IPV IN SOUTH AFRICA	5
1.3.1 <i>Women’s reports of IPV experiences.....</i>	<i>5</i>
1.3.2 <i>Men’s reports of IPV perpetration in South Africa.....</i>	<i>6</i>
1.3.3 <i>IPV incidence from administrative data sources</i>	<i>7</i>
1.4 DRIVERS OF IPV	8
1.4.1 <i>Societal factors</i>	<i>8</i>
1.4.2 <i>Community factors.....</i>	<i>11</i>
1.4.3 <i>Relational factors.....</i>	<i>12</i>
1.4.4 <i>Key individual risk factors.....</i>	<i>13</i>
1.5 JUSTIFICATION FOR THE RESEARCH.....	17
1.6 STUDY AIM AND OBJECTIVES	18
1.7 CHAPTER CONCLUSION	19
2 LITERATURE REVIEW	21
2.1 GLOBAL PREVALENCE OF MENTAL DISORDERS	21
2.2 DESCRIPTIONS AND PREVALENCE OF SPECIFIC MENTAL DISORDERS.....	21
2.3 SOCIAL RISK FACTORS FOR MENTAL DISORDERS	23
2.3.1 <i>Socio-demographic risk factors</i>	<i>23</i>
2.3.2 <i>Child abuse a risk factors for mental ill health.....</i>	<i>23</i>
2.4 RISK FACTORS FOR DEPRESSION.....	24
2.5 RISK FACTORS FOR PTSD	25
2.6 RISK FACTORS FOR ALCOHOL ABUSE	26
2.7 COMORBIDITIES	27
2.8 WOMEN’S EXPERIENCES OF IPV AND ASSOCIATION WITH MENTAL ILL HEALTH	27
2.8.1 <i>Psychological resilience and women’s experiences of IPV</i>	<i>28</i>
2.9 MENTAL ILL HEALTH AND MEN’S PERPETRATION OF IPV	29
2.10 PREVALENCE AND RISK FACTORS FOR MENTAL DISORDERS IN SOUTH AFRICA	30

2.10.1	<i>Social risk factors for mental ill health in South Africa</i>	30
2.11	CONCEPTUAL FRAMEWORKS FOR THE STUDY	32
2.12	CHAPTER CONCLUSION	34
3	METHODS	36
3.1	SYSTEMATIC REVIEW METHODS	36
3.1.1	<i>Search strategy</i>	36
3.1.2	<i>Study selection</i>	37
3.1.3	<i>Measurement</i>	38
3.1.4	<i>Screening</i>	38
3.1.5	<i>Data extraction and synthesis</i>	38
3.1.6	<i>Quality assessment</i>	39
3.1.7	<i>Statistical analysis</i>	39
3.2	HOUSEHOLD SURVEY	39
3.2.1	<i>Organisation and contribution in the primary survey</i>	39
3.2.2	<i>Study location</i>	40
3.2.3	<i>Study sampling</i>	40
3.2.4	<i>Questionnaire development</i>	41
3.2.5	<i>Fieldworker training</i>	41
3.2.6	<i>Community access and mobilisation</i>	42
3.2.7	<i>Data collection</i>	42
3.2.8	<i>Survey instrument</i>	42
3.2.9	<i>Ethical considerations</i>	46
3.2.10	<i>Data analysis</i>	46
4	SYSTEMATIC REVIEW AND META-ANALYSIS OF THE ASSOCIATIONS BETWEEN ALCOHOL ABUSE, DEPRESSION, OR PTSD SYMPTOMS AND ADULT MALE PERPETRATION OF INTIMATE PARTNER VIOLENCE	49
4.1	ABSTRACT	49
4.2	INTRODUCTION	50
4.3	METHODS	51
4.3.1	<i>Registration</i>	51
4.3.2	<i>Search strategy</i>	51
4.3.3	<i>Study selection</i>	52
4.3.4	<i>Screening</i>	53
4.3.5	<i>Data extraction and synthesis</i>	54
4.3.6	<i>Quality assessment</i>	54
4.4	STATISTICAL ANALYSIS	54
4.5	RESULTS	63
4.5.1	<i>IPV perpetration and alcohol abuse</i>	63
4.5.2	<i>IPV perpetration and depressive symptoms</i>	64
4.5.3	<i>IPV perpetration and PTSD</i>	66
4.5.4	<i>Studies adjusting for multiple disorders</i>	66
4.6	DISCUSSION	67
4.7	CONCLUSION	69
5	STRUCTURAL PATHWAYS BETWEEN CHILD ABUSE, POOR MENTAL HEALTH OUTCOMES AND MALE-PERPETRATED INTIMATE PARTNER VIOLENCE (IPV)	71
5.1	ABSTRACT	71
5.2	INTRODUCTION	73

5.3	METHODS	74
5.3.1	<i>The questionnaire</i>	75
5.3.2	<i>Statistical analysis</i>	78
5.4	RESULTS	79
5.5	DISCUSSION	83
5.6	CONCLUSION	86
6	MENTAL ILL HEALTH IN STRUCTURAL PATHWAYS TO WOMEN'S EXPERIENCES OF INTIMATE PARTNER VIOLENCE.....	88
6.1	ABSTRACT	88
6.2	INTRODUCTION	90
6.3	METHODS	91
6.3.1	<i>Measurement</i>	92
6.3.2	<i>Statistical analysis</i>	97
6.4	RESULTS	98
6.5	DISCUSSION	104
6.6	CONCLUSION	107
7	SOCIAL SUPPORT FACTORS ASSOCIATED WITH PSYCHOLOGICAL RESILIENCE AMONG WOMEN VICTIMS OF INTIMATE PARTNER VIOLENCE	109
7.1	ABSTRACT	109
7.2	INTRODUCTION	110
7.3	METHODS	111
7.3.1	<i>Measurement</i>	112
7.3.2	<i>Data analysis</i>	115
7.4	RESULTS	115
7.5	DISCUSSION	118
7.6	CONCLUSION AND POLICY IMPLICATION	121
8	DISCUSSION.....	123
8.1	COMPARISON OF WOMEN'S AND MEN'S REPORTS OF IPV	123
8.2	COMPARISON OF IPV PREVALENCE TO PREVIOUS SOUTH AFRICAN STUDIES	125
8.3	PREVALENCE AND FACTORS ASSOCIATED WITH CHILDHOOD TRAUMA EXPERIENCES	126
8.4	PREVALENCE AND FACTORS ASSOCIATED WITH OTHER TRAUMA	130
8.5	PREVALENCE AND RISK FACTORS FOR MENTAL ILL HEALTH AND ALCOHOL ABUSE.....	131
8.5.1	<i>Gender</i>	132
8.5.2	<i>Childhood trauma</i>	133
8.6	IPV VICTIMISATION AND MENTAL ILL HEALTH EFFECTS	135
8.7	FACTORS ASSOCIATED WITH PSYCHOLOGICAL RESILIENCE AMONG IPV VICTIMS	135
8.7.1	<i>Severity of IPV</i>	135
8.7.2	<i>Social support and help seeking</i>	136
8.7.3	<i>Social connectedness and perceptions of supportive communities</i>	137
8.7.4	<i>Utilisation of formal services</i>	137
8.8	FACTORS ASSOCIATED WITH WOMEN'S IPV EXPERIENCES.....	138
8.8.1	<i>Childhood and other trauma</i>	138
8.8.2	<i>Sexual relationship power and gender beliefs</i>	138
8.8.3	<i>Mental ill health</i>	139
8.9	FACTORS ASSOCIATED WITH MEN'S PERPETRATION OF IPV	140
8.9.1	<i>Childhood trauma and other trauma</i>	140

8.9.2	<i>Personal gender attitudes</i>	141
8.9.3	<i>PTSD, depression and alcohol abuse</i>	141
8.10	POSITIONING MENTAL HEALTH WITHIN ESTABLISHED FRAMEWORKS OF IPV	143
8.11	LIMITATIONS.....	146
9	RECOMMENDATIONS	151
9.1	ADDRESSING STRUCTURAL AND SOCIETAL RISK FACTORS	151
9.2	MENTAL HEALTH RESPONSES.....	153
9.3	SECONDARY PREVENTION AND RESILIENCE BUILDING	ERROR! BOOKMARK NOT DEFINED.
9.4	WORKING WITH MEN AND BOYS.....	156
9.5	FUTURE RESEARCH	157
10	CONCLUSION	159
	REFERENCES	160
	APPENDIX 1: ETHICS APPROVAL CERTIFICATE	187
	APPENDIX 2: WOMENS AND MEN’S HOUSEHOLD SURVEY QUESTIONNAIRES	188
	APPENDIX 3: SYSTEMATIC REVIEW TOOLS	215

ABBREVIATIONS

AOR	-	Adjusted Odds Ratio
AUDIT	-	Alcohol Use Disorders Identification Test
CDC	-	Centre for Diseases Control
CES-D	-	Centre for Epidemiological Studies Depression Scale
CMD	-	Common Mental Disorder
CTQ	-	Childhood Trauma Questionnaire
DHS	-	Demographic Health Survey
HIV	-	Human Immunodeficiency Virus
HTQ	-	Harvard Trauma Questionnaire
GBV	-	Gender Based Violence
GHRU	-	Gender and Health Research Unit
HICs	-	High Income Countries
IPV	-	Intimate Partner Violence
LMICs	-	Low- and middle-income countries
NDSD	-	National Department of Social Development
NGO	-	Non-Governmental Organisation
PTSD	-	Post Traumatic Stress Disorder
SADHS-		South African Demographic and Health Survey
SAMRC-		South African Medical Research Council
SASHS-		South African Stress and Health Study
SDG	-	Sustainable Development Goals
SEM	-	Structural Equation modelling
STATSSA-		Statistics South Africa
UN	-	United Nations
USA	-	United States of America
VAW	-	Violence against Women
VAC	-	Violence against Children
WHO	-	World Health Organization

LIST OF FIGURES

<i>Figure 2:1 Conceptual framework of inter-relationships of variables among women</i>	<i>33</i>
<i>Figure 2:2 Conceptual framework of inter-relationships of variables among men.....</i>	<i>34</i>
<i>Figure 3:1 Alignment of methods to research objectives</i>	<i>36</i>
<i>Figure 4:1 Flow of studies through the review.....</i>	<i>53</i>
<i>Figure 4:2 Forest plot of studies showing associations between past year IPV perpetration and alcohol abuse ...</i>	<i>63</i>
<i>Figure 4:3 Contour-enhanced funnel showing associations between past year IPV perpetration and alcohol abuse</i>	<i>64</i>
<i>Figure 4:4 Meta-analysis of studies investigating depression or mood disorder and past year IPV perpetration ..</i>	<i>65</i>
<i>Figure 4:5 Contour-enhanced funnel showing associations between past year IPV perpetration and depressive symptoms.....</i>	<i>65</i>
<i>Figure 4:6 Meta-analysis of studies investigating PTSD symptoms and past year IPV perpetration.....</i>	<i>66</i>
<i>Figure 5:1 Structural model of IPV perpetration and poor mental health.....</i>	<i>83</i>
<i>Figure 6:1 Mental ill health in pathways to IPV experiences.....</i>	<i>101</i>
<i>Figure 6:2 Mental ill health effects of IPV experiences</i>	<i>103</i>

LIST OF TABLES

<i>Table 3:1 Definitions of variables, tools, item examples</i>	<i>43</i>
<i>Table 4:1 Studies and study estimates.....</i>	<i>55</i>
<i>Table 5:1 Childhood trauma dimensions and scale items.....</i>	<i>76</i>
<i>Table 5:2 Characteristics of men who perpetrated IPV.</i>	<i>80</i>
<i>Table 5:3 Associations between poor mental health outcomes, child abuse and other violence exposures</i>	<i>81</i>
<i>Table 5:4 Multinomial regression model for IPV perpetration.</i>	<i>81</i>
<i>Table 5:5 Structural model statistics.....</i>	<i>82</i>
<i>Table 5:6 Model Goodness of Fit statistics.</i>	<i>82</i>
<i>Table 6:1 Variable and scale items.</i>	<i>95</i>
<i>Table 6:2 Bivariate analyses of socio-demographic characteristics, child abuse, other life trauma, mental ill health and women’s experiences of IPV.....</i>	<i>99</i>
<i>Table 6:3 Mediation effects from seemingly unrelated regression test.....</i>	<i>100</i>
<i>Table 6:4 Multivariate regression models of factors associated with IPV in past 12 months.....</i>	<i>100</i>
<i>Table 6:5 Structural model statistics for mental ill health in pathways to IPV experiences.....</i>	<i>102</i>
<i>Table 6:6 Structural model statistics for mental ill health effects of IPV experiences</i>	<i>103</i>
<i>Table 7:1 Resilience disaggregated by socio-demographic, trauma exposures and social support.</i>	<i>117</i>
<i>Table 7:2 Factors associated with resilience among abused women.</i>	<i>118</i>

ORGANISATION OF THE THESIS

This doctoral thesis is organized into ten chapters. **Chapter 1** introduces the thesis by outlining the definition, prevalence and risk factors of IPV that will be used in this work. The chapter also presents global and local prevalence statistics for intimate partner violence before delving into theoretical frameworks and risk factors for IPV victimisation and perpetration as well as describing the negative ill health effects of IPV from literature. The chapter concludes by identifying the critical gaps in knowledge that will be filled by this work and positing the study's rationale. The aim and specific objectives of the study are also presented.

Chapter 2 reviews the definitions and prevalence estimates of the mental ill health symptoms that are the focus of the study namely depression, PTSD and alcohol abuse at a global and local scale. The chapter also discusses the social determinants of mental ill health or alcohol abuse and the inter-relationships or comorbidities between them. The intersections of IPV victimisation or perpetration and mental ill health or alcohol abuse effects or risk factors are discussed while acknowledging the importance of psychological resilience. The chapter also paints a picture of the traumatic environment which South Africans live so as to provide context to the importance and relevance of the subjects of study. In conclusion, conceptual frameworks developed to guide the study are presented.

The study is made up of a systematic review and meta-analysis of literature, and three sub-studies comprising of secondary analysis of survey data from Gauteng province. Women and men from the general population were surveyed leading to two sub-studies- utilizing the women's data set and one sub-study utilizing the men's data set. **In Chapter 3**, the methods chapter, ethical considerations, and methodological approaches that were used to conduct each of the sub-studies as well as the measurement of different variable constructs will be presented. Over-arching data analysis strategies used to meet each of the study objectives will also be outlined.

Chapters 4, 5, 6 and 7 are “results chapters”. Each chapter follows a format of a journal article and provides background of the work, presentation of methods, findings and concluded by a discussion of findings. These articles were written with supervisors playing the role of co-authors, therefore in each paper, the contribution of all individuals will be acknowledged. Each of the chapters presents published peer-reviewed findings that pertain to one of the specific study objectives as follows:

Chapter	Objective	Paper Title and citation
4	To summarize and appraise the existing evidence for the association between PTSD, Depression and binge drinking (independent variable) and IPV perpetration (dependent variable) by men from the general population	Machisa M.T., Hatcher A., Christofides N., Jewkes R. <i>Systematic review and meta-analysis of the associations between alcohol abuse, depression, or PTSD symptoms and adult male perpetration of intimate partner violence</i> (In Press)
5	To describe the relationship and pathways between history of child abuse and male-perpetrated IPV while exploring the potentially mediating effect of PTSD, depression and binge drinking	Machisa M.T., Christofides N., Jewkes R. (2016). <i>Structural Pathways between Child Abuse, Poor Mental Health Outcomes and Male-Perpetrated Intimate Partner Violence</i> . PLoS ONE 11: e0150986 (1).
6	To describe the relationship and pathways of child abuse history, mental ill health and women’s experiences of IPV	Machisa M.T., Christofides N., Jewkes R. (2017). <i>Mental ill health in structural pathways to women’s experiences of intimate partner violence</i> . PLoS one 12.4: e0175240 (2)
7	To investigate factors associated with the psychological resilience among abused women	Machisa, M. T., Christofides, N., & Jewkes, R. (2018). <i>Social support factors associated with psychological resilience among women survivors of intimate partner violence in Gauteng, South Africa</i> . Global health action, 11(sup3), 1491114.(3)

Chapter 8 synthesizes the key findings from the different sub-studies of the doctoral thesis. Findings are discussed in light of existing literature and implications emanating from the findings are reflected upon. **Chapter 9** proposes recommendations for future research, practice and intervention based on the study findings. **Chapter 10** is the thesis conclusion chapter.

01

Introduction

1 INTRODUCTION

Violence against women (VAW) occurs in all societies of the world and is a manifestation of unequal power relations between men and women hence it is also referred to as gender-based violence (5). VAW infringes on human rights and fundamental freedoms through patterns of violent acts or behaviours that result in physical, sexual or psychological harm or suffering to women (5-9). Perpetrators of VAW include intimate partners, persons of authority abusing their power, other community or family members, strangers or the State. Forms of VAW include, but are not limited to, intimate partner violence (IPV), rape by a non-partner, intimate femicide (homicide of a female by her current or ex-partner) dowry-related violence, harmful traditional practices such as female genital mutilation, violence related to exploitation such as human trafficking or forced prostitution and sexual harassment in the workplace or education settings (5-7, 9).

1.1 Definitions of IPV

IPV is the most common form of VAW reported by women at the population level (5, 6) . IPV is defined as any behavior within an intimate relationship or former relationship that results in physical, psychological, or sexual harm to those in the relationship (5, 10). Forms of IPV include but are not limited to:

- ✚ Physical IPV or physical aggression, which is “the intentional use of physical force with the potential for causing death, disability, physical injury, or psychological harm. This includes acts such as hitting, kicking; beating; scratching; pushing; shoving; throwing; grabbing; biting, burning, choking or threatening with or harm with a weapon” (10);
- ✚ Sexual IPV which refers to “forced intercourse and other acts of sexual coercion. Rape or forced intercourse refers to the use of physical force or other coercive tactics to penetrate the vulva or anus with a penis, other body part or object” (10);
- ✚ Emotional or psychological IPV which refers to “the use of verbal and non-verbal communication with the intent to harm another person emotionally, and/or to exert control over another person. This includes calling insulting names, ridiculing, attempts to isolate through preventing a partner from seeing friends or family, intimidation and constant humiliation in front of others” (10);
- ✚ Controlling behaviors which include “isolation from family and friends and restricting freedom of movement through excessive monitoring of whereabouts, controlling what a woman wears, use of her cell phone, and dictating all aspects of the conduct of the relationship including when they have sex” (10);

- ✚ Economic IPV which includes “limiting access to money and employment opportunities so that the partner is entirely dependent , making sole decisions on how money is spent and controlling the female partner’s income, refusing to provide money required for household expenses such as food when it is available, restricting access to services through declining to provide the money required to do so” (10).

1.2 Global reporting of prevalence of IPV

Due to the problem of under-reporting and underutilization of available services, population-based and representative surveys provide the most reliable source of data to reflect the prevalence of violence against women. Population-based studies that are designed to focus on violence tend to provide higher and more accurate prevalence estimates because they often employ self-report methods and researchers are trained to sensitively deal with participants so as to enhance disclosure. Higher prevalence of violence is reported in population-based and violence-focused surveys compared to population-based health surveys which are not violence focused, also called and omnibus surveys (11, 12). Examples of omnibus health surveys are the Demographic Health Surveys (DHS) that are conducted periodically in countries. Whilst, the DHS surveys have the advantage of being large nationally representative samples, implemented by national statistical bureaus and being more acceptable as evidence to policy makers, they measure many priority health-related outcomes and the domestic violence module is not among the core modules and is administered last in the women’s questionnaires. DHS surveys because of their omnibus nature tend to report lower estimates of women’s experiences of IPV in comparison to violence focused surveys. The differences in reported estimates between omnibus and violence focused surveys also relates to researcher training that enables researchers to conduct sensitive research while minimizing participant distress or traumatization, support and debriefing given to researchers to minimize their risk to vicarious trauma associated with conducting sensitive research. These factors have been shown to enhance participant disclosures as evidenced by higher prevalence estimates generated from violence-focused surveys. (11, 12). Moreover, DHS surveys and other omnibus surveys, in an effort to minimize the length of questionnaires, tend to measure fewer risk factors for violence experiences or perpetration for example child abuse exposures. This limits the full consideration and study of the interplay of all necessary pertinent risk factors for violence in these surveys.

1.2.1 Global estimates of women’s experiences of IPV

Based on a global review of population-based data from 79 countries, 30% of women experienced either physical and or sexual IPV perpetrated by a male partner in their lifetime and 38% of all women murders are committed by intimate partners (5). Prevalence of IPV varies across geographical and cultural settings (13). In the most recent World Health Organisation’s global systematic review on violence against women,

higher prevalence of lifetime physical and/or sexual intimate IPV was reported in the low and middle-income countries (LMICs); 37% of ever-partnered women in Africa, Eastern Mediterranean, and South-East Asia regions experienced physical and or sexual IPV (5). The lowest lifetime prevalence of physical and/or sexual IPV was reported in the European , the Western Pacific (25%) and the high-income regions (23%) (5). About a third (32.9%) of women experienced physical IPV and about 10% of women were raped by a male intimate partner in their lifetime in the United States of America (USA) (14). The past 12 months prevalence estimates of IPV are as low as 4% of women in some high-income countries (HICs) such as Denmark, Ireland, the USA, the UK and across the 28 states of the European Union (13-15). In contrast, at least 40% of women in some LMICs, for example Ethiopia, Tanzania and Namibia, reported experiences of physical and or sexual IPV in the past 12 months (6, 13). The differences in the prevalence of physical and sexual violence across countries relate to the varying extents of risk factors. For example, the higher prevalence of physical and sexual violence in LMICs relates to social norms and the lower positions occupied by women in society as determined by different development indicators including education, empowerment, wealth and gender inequality. Women in HICs and the Global North have more empowerment and access to education, financial options, information on violence and occupy better positions in society compared to women in LMICs. VAW research in HICs may avoid sectors of the population among whom the prevalence is much higher and therefore mask the true national prevalence estimates

Women's experiences of emotional IPV and controlling behaviours are an indicator of ongoing or severe violence and most often occur concurrently with experiences of physical and sexual IPV (6). Data from the World Health Organization (WHO) Multi-Country Study on Women's Health and Domestic Violence against Women, conducted in ten countries namely Bangladesh, Brazil, Ethiopia, Japan, Peru, Namibia, Samoa, Serbia and Montenegro, Thailand, and the United Republic of Tanzania showed that between 20% and 75% of women experienced emotional violence in their lifetime (6). These data show that the prevalence of emotional IPV reported by women in surveys is significantly higher than the other forms of IPV. The wide disparities of emotional IPV estimates reported from different studies globally are influenced by the use of different emotional IPV measures across studies. The WHO Domestic Violence module measures emotionally abusive acts by a partner including being insulted or made to feel bad about oneself; being humiliated in front of others; being intimidated or scared on purpose; or being threatened directly, or through a threat to someone the respondent cares about (10). The measurement and generation of comparable prevalence estimates of emotional violence remains a challenge for the field because there are many more acts or behaviours that are viewed as emotional abuse in different cultural contexts (5, 6, 16)

Non-population-based studies i.e studies conducted with women using convenient samples and in healthcare settings, and are not representative of the whole population, show even higher prevalence of IPV. The global prevalence of physical IPV in studies conducted in the health settings ranges from 30-50%; the prevalence of sexual IPV is between 30-50% and the prevalence of emotional IPV is between 65-87% (17)

1.2.2 Global estimates of men's perpetration of IPV

Historically, evidence of the epidemiology of IPV has been generated from population-based surveys that focused on women's experiences of male perpetrated IPV. While there is a growing body of research on men's perpetration of IPV, the initial research began investigating court-referred male offenders who were included in programmes aimed to reduce re-offending and to protect victims, and men who were enrolled as military personnel to understand male-perpetration of IPV (18). Research on male perpetration of IPV from the perspective of samples of men from the general population is only emerging (19). Data from the UN Multi-country Study on Men and Violence in Asia and the Pacific showed lifetime prevalence of lifetime physical, sexual, emotional or economic IPV perpetration between 39.3% (Sri Lanka) and 87.3% (Papua New Guinea) (19). The prevalence of lifetime physical or sexual IPV perpetration was between 25% (Indonesia) and 80% (Papua New Guinea) (19).

1.3 Prevalence of IPV in South Africa

1.3.1 Women's reports of IPV experiences

South African violence-focused and population-based studies where interviews were conducted with women have shown high prevalence of IPV victimisation and perpetration (20-27). Between 20% and 30% of women have experienced physical IPV in their lifetime; 25% of women experienced lifetime physical IPV in Eastern Cape, Mpumalanga and the Northern Provinces (20); 23% of women experienced physical IPV in Limpopo province, 25% of women in the Western Cape experienced physical IPV and 24% of women experienced physical IPV in KwaZulu Natal (25); 31% of women participating in the national South Africa Stress and Health Study had experienced lifetime physical IPV (26) and 21% of ever-partnered women participating the South African Demographic Health Survey (SADHS) 2016 experienced physical IPV by a partner (27).

Close to a tenth of women disclose having experienced sexual IPV in their lifetime; 12% of women in KwaZulu Natal reported lifetime sexual IPV; 7% of women in Limpopo reported lifetime sexual IPV, 13% women in the Western Cape reported lifetime sexual IPV (25), and 6% of women participating in the SADHS 2016 reported lifetime sexual IPV (27). The prevalence of emotional and or economic IPV reported

in South African studies overlaps with, but is significantly higher than physical and sexual IPV: 51% of women in the Eastern Cape, 50% in Mpumalanga and 40% in Northern Province reported experiences of emotional and or economic IPV (20). In population based studies less than 10% of women reported physical IPV during a pregnancy: 9.1% in the Eastern Cape, 6.7% in Mpumalanga, 4.7% in Northern Province (20).

About a tenth of women participating in surveys reported being in current or recent abusive relationships: 9.5% of women in Eastern Cape, Mpumalanga and Northern Province experienced past 12 months physical IPV (28); 6% of women reported past 12 months physical IPV in the SADHS 1998(29); 11% of women in KwaZulu Natal experienced past 12 months physical IPV, 6% of women in Limpopo and Western Cape reported past 12 months physical IPV (25) and 8% of women reported past 12 months physical IPV in the SADHS 2016 (27). It is evident that IPV prevalence from the SADHS, an omnibus survey with a domestic violence module as an add-on is lower than the estimates reported in dedicated VAW studies.

Notwithstanding, a higher prevalence of IPV is reported in non-population based and clinical studies; 56% of pregnant women in a study in Soweto had experienced physical or sexual IPV in lifetime (21) and 26.6% of young women aged 16-24 years enrolled in a randomised control trial in rural Eastern Cape had experienced more than one episode of physical or sexual IPV (30). The prevalence of past 12 months physical and or sexual IPV in a study among sex-workers was 53.8% (31). Studies showed a past 12 months prevalence of between 9% and 30% among pregnant women receiving antenatal care in different locations of the country, 9% of pregnant women in a Mpumalanga district reported experiences of physical partner violence in the past 6 months, 10.6% of post-partum women in a clinic in eThekweni Municipality reported past 12 months physical IPV, 21% of HIV positive pregnant attending primary care antenatal clinic in Cape Town reported past 12 months prevalence of physical sexual or emotional IPV, 25% of women in a Durban study reported experiencing physical sexual or emotional IPV during pregnancy and 30.8% of pregnant women attending antenatal clinics in Soweto reported past 12 months prevalence physical or sexual IPV (32-36).

1.3.2 Men's reports of IPV perpetration in South Africa

Generally, estimates from studies using men's samples and measuring perpetration have been higher than women's victimisation studies indicating considerable under-reporting of victimisation by women even in a context where disclosure is confidential. Twenty eight percent of men participating in the national South African Health and Stress Study perpetrated lifetime physical IPV (37). In a study conducted in the Eastern Cape and KwaZulu Natal Provinces, 42% of ever partnered men aged 18-49 perpetrated lifetime physical IPV, 14% had perpetrated past 12 months physical IPV and 14.3% had raped an intimate partner in their

lifetime (38). Other population based research in four provinces with men show lifetime prevalence of physical IPV of 19% to 33% and sexual IPV prevalence of 5% to 19% (25).

Non-population-based studies have also shown higher prevalence of IPV perpetration by men. In a cross-sectional study with men working in three Cape Town municipalities, 42% of men perpetrated lifetime physical IPV and 8.8% reported past 12 months physical IPV; 15.3% of the men perpetrated lifetime sexual IPV(39). Among men recruited to participate in a randomised cluster trial in the Eastern Cape, 31.8% perpetrated lifetime physical or sexual IPV (40).

1.3.3 IPV incidence from administrative data sources

South Africa has enacted specific legislation that provides frameworks of procedures for the criminal justice system's response to IPV. These include the Domestic Violence Act of 1998 and the Criminal Law (Sexual Offences and Related Matters) Amendment Act No. 32 of 2007 (41).

Service providers responding to VAWC in the criminal justice system and generating VAW statistics include police, health providers, mortuaries and non-governmental support organisations (NGOs). Numbers of sexual offences reported to police have oscillated on annual basis making it difficult to gauge the progress made in reducing sexual violence in the country. The reported cases steadily declined over the past five years from 56,680 in 2013/4 to 49,660 in 2016/7 and increased minimally to 50,108 in 2017/8 (42). Inopportunely, the SAPS sexual offences data is not disaggregated by offender relationship therefore it is impossible to deduce the incidence of sexual offences perpetrated by intimate partners. In a national study drawing from a random sample of rape cases reported to police in 2012, 13.8% of cases involved intimate partner perpetrators (43). The distribution of intimate partner rape cases differed across provinces and was higher in the Western Cape (20%) compared to other provinces (43). Furthermore, domestic violence data collated by SAPS is not classified by victim-offender relationship, making it impossible to know the proportion of these cases that is specifically IPV.

Female homicide statistics are deductible from research involving abstraction of data from mortuary registers. In a retrospective study drawing from a random sample of 25 mortuaries, 50.3% of female homicides were from IPV, resulting in a mortality rate from IPV of 8.8 per 100,000 women (44).

Though administrative data provides indications of the scourge of VAW, it is of limited value primarily due to under-reporting of cases and the lack of data disaggregation (45). To fully understand incidence and risk factors for IPV, research is necessary. Quantitative and population-based research have much wider coverage of participants and measure violent experiences among individuals who may have never reported

cases to the criminal justice system or sought medical help. Survey methods also make it possible to analyse for risk or protective factors in particular amenable ones which become areas for prevention intervention to reduce violent incidences. This is not possible with administrative data which is confined to documenting circumstances of a violent and criminal incident.

1.4 Drivers of IPV

The integrated ecological model provides a framework for understanding and organizing thinking about risk factors for experiences or perpetration of IPV. Research has shown that no single factor can cause violence; instead, the model categorizes risk factors into individual, relationship, community and societal domains or levels (46). Although being confined to specific levels, factors interconnect and impact on each other within and between the levels to predict experience or perpetration of abuse (46). More research has been conducted to understand the individual risk factors and comparably less research is available on community and macro-level risk factors for IPV.

1.4.1 Societal factors

At a societal level, the prevailing ideas about gender also affect social organisation and hierarchy for example women's representation in public office, public policy and legislation. When these ideas support unequal power between men and women, women are accorded a lower status in society compared to men and gender inequitable relationships are normative. Societal culture has a large bearing on men's use of violence against women. Societies in which interpersonal violence in its various forms including amongst men is accepted, are more likely to have higher prevalence of violence against women and children (VAWC) (47).

1.4.1.1 Gender and social structure

According to Connell's social theory, gender is a structure of social order whereby power relations between men and women are dictated by prevailing sets of ideas and practices that collectively and individually relate to the differential division of labour, reproductive roles and acceptable sexual or emotional attachments prescribed by society as a collective (48, 49). These collective ideas, also termed cultural gender norms, determine how men and women view themselves; and dictate the ideals of manhood and womanhood they should espouse to. Notwithstanding, these commonly-held ideals, expressions and practices of manhood (masculinities) or womanhood (femininities) may vary from one society to another (49, 50). Thus, in any given context there is a plurality of expressed masculinities which are constantly changing in time or fluid as a product of other social change (51).

The ascendancy by which a certain group of heterosexual men claims and sustains a leading position, is through the acceptance or acquiescence of other men or women who may be in subordinated positions is referred to as hegemony (49). At any given time, the most accepted ideals of manhood, even if the majority of men do not occupy the position but aspire to it, are termed the hegemonic masculinity (51). Hegemonic masculinities are just one of the prevailing masculinities in a given context and they coexist with alternative or subordinate or complicit or non-hegemonic masculinities. Ideals of manhood and hegemonic masculinity are also influenced by ideas emanating by the dominant ethnic groups within a society. However, within different ethnic groups of a society, it is possible to have multiple hegemonic masculinities. Over time and during periods of effective social change or transition, it is possible for masculinities to reconstruct resulting in multiple hegemonic masculinities co-existing within subcultures, ethnicities or geographic locations. (51, 52). Because hegemonic masculinities, align to cultural models and ideals of manhood, multiple hegemonic masculinities may co-exist in multi-ethnic societies (51, 52). It is also possible for hegemonic masculinities to adopt features of alternative masculinities as a means of reinforce dominance over them (53).

The hegemonic hierarchy is impacted by gender norms or cultural constructions and broader contexts of gender inequality in institutions as well as the interactions with race or ethnic marginalization, physical disability, class inequality, stigmatized sexuality and religious beliefs (51).

A social system through which women are subordinated through social structures, for example unequal access to political, education, social power and value of the feminine as well as dominance within specific relationships, is referred to as patriarchy (49). Consequently, in strongly patriarchal societies, hegemony aligns with the social structures, cultural ideals and power within institutions in a way that the most powerful and dominating group of men becomes the hegemonic group (49). Therefore, in most strongly patriarchal societies, hegemonic masculinities often converge with harmful or risky masculinities that are typified by the use of power and force over women (49, 50). However, hegemonic masculinities are contextual and do not always explicitly align to harmful masculinities (50). Yet, even within patriarchal societies, other men who choose not to occupy hegemonic and oppressive positions over women or other men, referred to as either non-hegemonic, complicit or subordinating, still benefit from the social gender order created by hegemony through the patriarchal dividend (49, 50). Thus, the position of dominance for hegemonic masculinities is attained and sustained through relative consensus and social agreement by alternative or subordinating or complicit or non-hegemonic masculinities that tend to benefit from the social order created by the hegemony (49-51). In fact, for a hegemony to be effective, an overlap between hegemonic and alternative masculinities is necessary (51). Moreover, in strongly patriarchal societies, women who express emphasised femininities perpetuate the status quo by reproducing hegemonic masculinities within their families and other in other social structures as well as in the labour market (50). Conversely, hegemonic

and alternative masculinities are impacted by the prevailing configurations of women's identity and practice or femininities (51).

Men's use of violence against female partners in patriarchal societies, thus relates to hegemony in several ways. Firstly, the use of violence must be understood as normative in a context where men's unequivocal dominance over women is legitimised as a means of maintaining the gender social order. Secondly, male vulnerabilities and inabilities to fulfil some of the social expectations and commonly held ideals of manhood, may result in men resorting to the use of violence to demonstrate their manhood (50). Particularly, harmful hegemonic masculinities may manifest as hyper-masculine behaviours and heterosexual success that emphasises physical strength, aggression, and male sexuality typified by, engaging in violent competition against men or other interpersonal violence, being involved in fights or gangs or risky sexual behaviours including having multiple sexual partners and perpetrating violence against their partners as a means to assert their power (47, 50, 54, 55).

Therefore, male to female IPV, must be understood as the culmination of the concomitant interactions of cultural gender norms and the hegemonic notions that dictate both unequal hierarchical gender power relations which may overlap with harmful masculine identities and practices that men use as a means to assert their dominance over women. This means that in a society where women are expected to be subordinate to men in intimate relationships, IPV is among other behaviours that men engage in so that they control women and assert their masculine identity. Men may also use physical or sexual force to punish acts in transgression to the socially defined norms about how women should behave or relate (47). When common ideals about gender favour equality among men and women, the value placed on women is higher. Conversely, ideals about gender that support male dominance and promote inequitable power relations, provide the enabling context for sustained intergenerational transmission of men's use of violence against women (22, 23, 28, 56-60). Moreover, inequitable gender norms are associated with attitudes that blame women victims who may be perceived to have breached the commonly held ideals of womanhood. These blaming attitudes are in turn associated with poor disclosure and or reporting by women victims, stigmatisation of women victims that report, unsupportive service-provider responses and unfavourable legal outcomes of reported cases within the criminal justice system (13, 47). This way, harmful cultural gender norms are also a major impediment to VAW responses at all levels of society and the implementation of legislation or other progressive reforms aimed to reduce gender inequality (13).

There is evidence in the South African setting, of the existence of a hegemonic masculinity that is harmful, typified by the expression of gender inequitable beliefs justifying the use of violence against female intimate

partners and engaging in HIV risky sexual behaviours such as non-condom use, having multiple sexual partners and engaging in transactional sex (50, 52, 53, 55, 61-63). Gender inequitable attitudes or beliefs among men have thus been associated with increased risk for HIV, STIs and IPV perpetration (53, 63).

1.4.1.2 Political landscape

Conflict, political unrest, situations of war and humanitarian crises are associated with higher incidence of IPV through several pathways (13, 64, 65). Trauma due to war has long term effect on mental health in particular greater PTSD symptomatology which has been shown to increase IPV perpetration by men. Women with mental ill health symptoms due to trauma and harsh effects of war are also more likely to be victimised. Other pathways to increased IPV include displacement and resultant loss of social support, divided communities, deeper poverty and breaking down of social structures including the justice system (65, 66).

1.4.1.3 Economic and development landscape

Geographical location predicts the past 12 months prevalence of IPV in a population through pathways mediated by gender-related factors and socio-economic development (5, 13). Countries that have higher levels economic development measured by indicators such as the gross domestic product (GDP) are more likely to have lower prevalence of IPV (13). However, this association is not direct, but is mediated by gender-related factors for instance in HICs, it is the higher status of women indicated by educational achievement, women's access to cash or employment and economic rights including access to land or property that is associated with lower prevalence of IPV(13). Legal and economic reforms relating to women's access to resources are also critical. When a country's law and practice disadvantages women compared to men with respect to access to land, property, and other productive resources, the prevalence of IPV is likely to be high (13). Similarly, when family law discriminates against women through differential rights to child custody, inheritance and marital rights, IPV prevalence is high (13).

1.4.2 Community factors

A range of factors at the community level predict women's experiences and men's perpetration of IPV. There is strong association between being raised in a family with strong patriarchal values, living in a community expressing attitudes that endorse traditional gender roles or stereotypes, individual attitudes that justify men's use of violence or wife beating and ultimately increased risk of IPV (46, 64, 67). Prevailing community attitudes are critical determinants of community responses to violence against women (68). When societal norms are supportive of male dominance, inequitable gender norms prevail, and the resultant

prevalence of IPV is higher. IPV is therefore normalised and condoned; stronger norms supporting non-intervention prevail and there is lesser community or family intervention in response to incidents.

In communities that have lower levels of social cohesion or social control, lower levels of collective efficacy and social control, community members are less likely to intervene in situations of IPV (3, 69-71). Social support, which refers to one being part of a supportive social network of other people who care and are available to help through life challenges, is a protective factor for IPV (3). Lack of social support is associated with perpetrators' ability to sustain abusive relationships through social isolation of victims. Lack of social support is more pronounced among abused women compared to non-abused women and the relationship between social support and victimisation has been shown to be bi-directional i.e lack of social support may increase risk for victimisation whilst victimisation may lead to lesser social support from the community (3, 72, 73).

Concentrated socio-economic disadvantage, higher levels of residential instability, higher crime rates, higher community violence, neighbourhood disorder and higher alcohol outlet density are associated with IPV (71). Communities of people who have lower socio-economic status i.e. lower education, high food insecurity, poor housing and crowding, low income, high unemployment and higher prevalence of common mental disorders, are more likely to be highly disorganized, have weaker neighbourhood social cohesion and have higher rates of interpersonal violence and crime. Consequently, there is intersection of IPV with poverty and neighbourhood characteristics through complex pathways.

1.4.3 Relational factors

At the relationship level, unequal gender power relations and relationship conflict increase risk of IPV (19, 46, 58, 74, 75). Previous research exploring the underlying factors for women's experiences and men's perpetration of IPV shows that women in inequitable relationships who have lesser economic and sexual decision-making power are more likely to experience IPV (64, 76-79). The risk of physical IPV is also higher among couples that have higher levels of marital discord and frequently have verbal disagreements or quarrels (46, 64, 67). Physical IPV in these circumstances is used as a means of resolving conflict (67). Higher levels of marital dissatisfaction is associated with increased risk of physical IPV perpetration (18, 80). Similarly, IPV victimization is also associated with increased marital dissatisfaction (80). However, marital dissatisfaction among victims is often significantly higher than that reported by perpetrators of IPV(80). Jealousy, which is among a range of controlling behaviors includes feelings of suspicion toward a potential "rival", is associated with increased IPV.

1.4.4 Key individual risk factors

1.4.4.1 *Socio-demographic factors*

Individual risk factors for IPV are multi-faceted and operate differently in relation to each other and to factors at other levels of the social ecology. Socio-demographic characteristics such as age, education, income or socio-economic status are associated with risk for victimisation or perpetration of IPV (46, 54, 67, 81). Across all settings, the incidence of IPV is higher among younger women and men compared to older age groups (64, 67). In many settings, IPV is higher in lower income families compared to higher income families that have higher household wealth or assets (46, 67, 82). Women living in poverty, who are less educated and less food secure are disproportionately more likely to experience IPV (64, 67, 83-85). (86). Moreover, women with fewer resources and who are abused by partners are less likely to leave them and so face repeat or ongoing IPV (86).

However, the protective effects of high educational attainment on IPV is not linear but more complex in several ways. Firstly, women who have high educational attainment and higher socio-economic status also have higher status in their households making them less likely to report IPV experiences (67, 81-83). Secondly, high educational attainment is associated with holding more equitable views about gender, being in more equitable egalitarian relationships and having more sexual relationship power than would be the case with less educated women who express less progressive gender attitudes, maybe more dependent on their partners economically and have less relationship power which are all factors associated with less risk for IPV (82). Women that have high educational attainment are more likely to have more options not to marry less educated men than themselves or men who they view to be violent. The result is that they have higher likelihood to be in relationship with men who have the same level of education, are more valued by their partner because of their contribution to household welfare and have egalitarian relationships (82, 87).

Nonetheless, in other settings being highly educated is a risk factor for violent experiences. The risk of abuse for educated or employed women is higher in settings with higher acceptance of violence and in more wealth unequal areas (88). Firstly, highly educated women's status in their relationships may challenge men's status as the head of the household leading to men using violence as a means of controlling them and maintaining dominance (82). At a community level, highly educated women's gendered views are very divergent to those of the community around them making them less likely to have positive social support.

Yet in other work, the associations of education with IPV dissipate when other variables including relationship conflict, unemployment, income and gender norms are controlled for (13, 54, 88). Education therefore ought to be viewed in light of the multi-faceted risk factors as a proxy for women's economic

empowerment which leads them to be less economically dependent on partners for livelihood. When women have increased economic resources they are empowered to leave abusive relationships or negotiate for a better relationship (82). Studies have shown reduced risk of IPV experiences for women after participating in structural intervention studies where they receive cash transfers or participate in economic empowerment programs indicating that financial independence and economic empowerment of women may be protective against IPV (89).

Correspondingly, men who have low educational attainment, are unemployed or have low income are more likely to perpetrate IPV (64, 67). Again, these associations are more complex and need to be understood in the context of education inequality whereby the relative education of the female partner becomes important. There is evidence that women who have higher educational attainment than their partners are more likely to report higher experiences of violence (82).

Also, the association between men's poverty and perpetration of IPV is mediated by their masculinity identity, stress that emanates from their inability to live up to their ideas of hegemonic masculinity and the need to assert their dominance over women (50, 67). Masculinities are a product of life-experiences, societal order and community dynamics. It is common for men in conditions of poverty or social disadvantage to go through an identity crisis when they are unable to attain social expectations of manhood and compensate for this through exaggerations of aggressive behaviours or expression of power that is otherwise denied, manifesting as acts of violence against other men and against women and children. Hyper masculinities also find expression through intergenerational transmission and socialisation that is typical in explaining the occurrence of family violence (50).

1.4.4.2 Childhood trauma

Childhood trauma, meaning experiencing any type of physical or emotional ill-treatment, sexual abuse, neglect, negligence and commercial or other exploitation that occurs to children under 18 years of age and which results in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power as well as exposure to intimate partner violence, is an individual level factor that is associated with women's experiences and men's perpetration of IPV (46, 54, 64, 67, 90). Witnessing marital violence intersects with child abuse experience (90). Children whose mothers or primary female caregivers are victimised by their intimate partners are more likely to encounter harsh parenting and physical punishment (90, 91). The relationship of male perpetrated IPV and child abuse has been explained by socialisation theories and also by trauma theories that posit that the mental ill health effects of victimisation may act as mediators to the relationship (92-94). According to the theories of

socialization, boys and girls learn behaviors and attitudes considered appropriate for their sex by observing what adults in their society and settings do. According to the trauma theory, the mental effects of child abuse or witnessing marital violence as a child include depressive, post-traumatic stress disorder symptoms (PTSD) and alcohol problems (54). If mental ill health symptoms are left untreated, they may persist and affect adult health and relationships (95). There is evidence that life stress or trauma and mental ill health symptoms may mediate the experience of childhood physical, sexual, emotional abuse, neglect or witnessing mother or female caregiver abuse with women's adult experiences of IPV and men's perpetration of IPV (18, 23, 28, 37, 39, 54, 58, 81, 96-99). This body of evidence shows pathways of intergenerational transmission of IPV in which men who have been abused or witnessed abuse in their childhood are more likely to perpetrate IPV in adulthood compared to men who were not abused. Similarly, women who were abused or witnessed abuse in childhood are more likely to perceive violence as normative and are more likely to be abuse partly because of their choice of partners that may have been skewed by their perceptions of the idealized male partner."

Gender attitudes

Gender attitudes are defined as "normative preferences for a certain distribution of roles among men and women in private and public life including employment and political leadership" (100). Gender attitudes are measured as "beliefs regarding roles such as women's suitability for political leadership, men's active participation in housework and childcare and power relations or decision-making authority within intimate relationships" (100, 101). Men's collective and individual gender attitudes impact on their behaviours and have health implications for them and for their partners (63, 76, 101, 102).

At an individual level, gender attitudes are greatly influenced by cultural gender norms and the broader socio-cultural settings in which people live. Men who embrace harmful hegemonic masculinities and express inequitable gender beliefs or attitudes that condone IPV are more likely to perpetrate IPV (18, 19, 51, 64, 67). Similarly, among women, endorsement of conservative ideas about gender is associated with increased experiences of violence and acceptance or justification of men's use of violence. Moreover, women who express equitable views about gender roles which are opposite to the commonly held ideals about womanhood, especially those who are more educated, are employed or have a source of income thus of a higher socio-economic status, are less likely to experience IPV (13, 67). Yet, at the highest levels of education, women's progressive attitudes and their assumption of "non-traditional roles" may put them at increased risk of experiencing IPV (64, 67). The differential gender attitudes of women relative to those of their partners is important. If women's attitudes or views are more gender equitable compared to their partners, they will be more likely to experience IPV.

Pathways to the association between gender attitudes amongst women and experiences of IPV are explained in part through social learning theories, whereby violence is normalised as a way of life and these patterns are learned through early life experiences of witnessing parental violence (103). Later in life it becomes acceptable and normal to the extent that it influences women's choices of intimate partners. Women also play a role in reproducing harmful ideals about manhood in their close family or community (50).

1.4.4.3 Mental ill health factors

IPV negatively affects women's overall physical, mental, sexual or reproductive health, quality of life, autonomy, productivity and their participation in the society (5, 104). Moreover, IPV negatively impacts on women's ability to take care of themselves and their children's well-being through various pathways (105-107). Mental health effects associated with women's experiences of IPV in literature include anxiety, depression, post-traumatic stress disorder (PTSD), alcohol and substance abuse disorders and suicidality (83, 108-117).

Notwithstanding, other research has found evidence that depression, alcohol abuse, PTSD and suicide attempts are a risk factor for women's experiences of IPV (54, 111, 116, 118). However, research that explores mental ill health as a risk factor and as an effect of IPV experiences simultaneously is limited. (2, 118, 119). Yet research is necessary to establish the complexity of the relationships of mental ill health and women's experiences of IPV and inform possible areas of intervention.

Traditionally, scholars have focused research on understanding the associations of women's IPV experiences with mental ill health symptoms in general population or convenient samples. However, limited research has investigated mental ill health as a key risk factor for men's perpetration of IPV. The majority of studies investigating mental ill health risk factors for IPV is among military or male offender samples (120-123). Depression has been associated with men's perpetration of physical IPV in some settings, but the temporality of this relationship has been little studied (18, 81, 124, 125). While many studies have investigated the associations of alcohol abuse as an individual or situational risk factor for IPV perpetration, findings have been inconsistent; with some studies finding a positive association and the association not being found in others (18, 54, 64, 81, 116, 126). Studies showing a positive association are mostly samples of men who drink, men perpetrators of IPV participating in programs or undergoing treatment. Fewer studies have involved men from the general population and measures of alcohol abuse that were not conditional or situational (18, 126). Ample evidence is also available of the association of male partner alcohol abuse and women victims' IPV experiences (116).

Pathways between traumatic exposures, PTSD and IPV perpetration by men are established in studies with patients undergoing treatments and men who were enrolled into the military. (127-130). Clinical studies that include patients undergoing treatments tend to report higher prevalence, severity and associations of mental ill health and IPV that may not be observed in general population. Similarly, studies of military personnel and patient or clinical samples are not generalisable and are limited in establishing and quantifying risk factors. Because clinical and veteran sample studies are not generalisable to the general population, relying on their findings as evidence basis for programming for the general population may be problematic. Most of what is known about the relationship between PTSD and male-perpetrated IPV is also from high income countries. PTSD symptoms have been associated with physical IPV among men in the general population; men with PTSD symptoms report higher rates of IPV perpetration, trait and internal anger, and hostility compared with men without PTSD symptoms among non-clinical samples (124, 125, 131). Nevertheless, research on the prevalence of PTSD in the general population in LMICs and non-conflict settings is limited. However, statistics indicate comparably lower prevalence in these settings than is reported among clinical and military samples and scales.

Moreover, globally population-based research on men's perpetration has been infrequent. These factors contribute to the limited research and evidence base available that has investigated mental ill health as a key risk factor for IPV perpetration in the general population in LMICs.

1.5 Justification for the research

South Africa is a middle-income country with high prevalence of many indicators of interpersonal violence including IPV when compared to many other countries. Intersecting with the high prevalence of IPV is a high prevalence of child abuse, interpersonal violence, violent crime and mental ill health. Studies have shown intergenerational transmission of IPV in that men with histories of childhood physical or sexual abuse or who were exposed to parental violence are at greatest risk of IPV perpetration in adulthood (26, 37, 96, 132). Violence against women and violence against children co-occur or intersect by having shared common risk factors and consequences. Patriarchal family structures and societal norms that support men's use of violence against women intersect with norms that accept the use of violence to discipline children.

Among men, child abuse has been associated with adult mental ill health in particular PTSD and increased IPV perpetration. Hitherto, the complex pathways of this relationship are little documented from population-based studies conducted in Africa or in LMICs where the prevalence of IPV is higher than that documented in HICs. Many of the studies that have found associations between PTSD symptoms and male

perpetrated physical IPV are from samples of court-referred offenders, patients undergoing clinical treatment or participating in batterer programmes, and among military or veteran samples (19-24). Fewer studies have examined the relationships of mental health and violence perpetration from community and non-clinical samples of men from the general population (25).

Likewise, among women, child abuse history, mental ill-health and IPV experience not only intersect but female victims of child abuse are more likely to report mental ill health and experience IPV (26, 28, 38, 57, 96, 98, 99, 133-136). Mental ill health is both an established effect of child abuse and IPV. Other research has shown that mental ill health is a risk factor for IPV. Therefore, women with mental ill health maybe at increased risk for repeated or on-going IPV. Nonetheless, limited research has been conducted to explore the complex pathways between child abuse, mental ill health and IPV among women from the general population in LMICs.

To address these critical knowledge gaps, this thesis reports on investigation of the complex pathways between child abuse, mental ill health symptoms, women's experiences and men's perpetration of IPV in Gauteng Province of South Africa. The data used was obtained from representative samples of men and women from the general population. The investigation of associations and path analysis of the inter-relationships of variables with male perpetrated IPV is novel and significantly contributes to the emerging body of knowledge.

1.6 Study aim and objectives

Overall, the study aimed to investigate relationships between child abuse, mental ill-health, women's experiences and male perpetration of intimate partner violence in Gauteng province of South Africa in 2010. Specific objectives for the study were:

- ✚ To conduct a systematic review and meta-analysis aimed to summarise and appraise existing evidence from population-based studies that investigated the associations between depression, PTSD or alcohol abuse and male to female perpetration of IPV;
- ✚ To describe the relationship and pathways between history of child abuse and male-perpetrated IPV while exploring the potentially mediating effect of PTSD, depression and binge drinking;
- ✚ To describe the relationship and pathways of child abuse history, mental ill health and women's experiences of IPV and
- ✚ To investigate factors associated with psychological resilience among abused women.

1.7 Chapter conclusion

The literature presented thus far, encompasses concepts of VAW, in particular IPV, which is the most common form of violence experienced by women and perpetrated by male partners. The prevalence and effects of IPV on women's overall health cannot be overemphasized. The global and local prevalence cited herein provides evidence that IPV constitutes an epidemic with a broad range of public health implications. IPV is a product of risk factors at different levels of the integrated ecological framework. Important risk factors highlighted in this chapter comprised history of childhood trauma, mental ill health, socio-economic status, social norms and gender attitudes. Key gaps identified in literature include paucity of data that explores the complex inter-relationships between IPV risk factors. More specifically it is apparent that there is limited evidence available in LMICs and South African settings to elucidate the potential mediating role of adult mental ill health in the pathways between childhood trauma and women's experiences or men's perpetration of IPV.

02

Literature Review

2 LITERATURE REVIEW

There is considerable literature showing co-occurrence and associations between child abuse, mental ill health and IPV experiences or perpetration primarily among military, clinical and court-referred offender samples (120, 121, 137-139). Yet limited work has documented the complex pathways and interrelationships of variables in the general population, especially in LMICs. The main aim of this doctoral study was to investigate the potential contribution and mediatory role of mental ill health in exacerbating women's experiences and men's perpetration of IPV in the South African general population. This chapter outlines global and South African literature showing the prevalence and shared risk factors for selected mental ill health symptoms, alcohol abuse and IPV. The inter-relationships of mental symptoms in relation to IPV experiences and perpetration from literature will also be discussed. The culmination of the literature review will be the presentation of conceptual frameworks developed to guide the study.

2.1 Global prevalence of mental disorders

Common mental disorders (CMDs) including depression, anxiety disorders and substance disorders are leading contributors to morbidity and disability worldwide (140). An estimated, one in five adults (17.6%) experience CMDs within the past year and 29% of the global adult population are estimated to experience at least one CMD across their lifetime (140-143). The estimate lifetime prevalence for anxiety disorders is about 12.9%, of mood disorders is about 9.6% and of substance use disorders is about 10.7% (141). The estimate past 12 months prevalence for anxiety disorders was about 6.7%, prevalence for mood disorders was 5.4% and substance disorders was 3.4% (141). Women have higher lifetime and past 12 months prevalence of anxiety disorders and mood disorders and compared to men. Whereas men have higher lifetime and past 12 months prevalence of substance use disorders compared to women (141). Gender differences are evident in the prevalence and patterns of CMDs. Socio-economic status is also an important social risk factor for CMDs with the poorer being more vulnerable to CMDs (144).

2.2 Descriptions and prevalence of specific mental disorders

Mental disorders that are more prevalent in the general population and those described as "common" include depression, post-traumatic disorder and alcohol abuse. Depression is a "mood disorder that is characterised by feelings of sadness, despair, discouragement, inactivity, difficulty with thinking and concentration, a significant increase or decrease in appetite and time spent sleeping, feelings of dejection and hopelessness, and sometimes suicidal thoughts or an attempt to commit suicide" (145).

Depression has been “ranked the most disabling mental disorder” worldwide (140). It is also a major contributor to suicide deaths (142). About 322 million people were estimated to have depression in 2015 (4.4% of global population) (140, 142). Globally, the prevalence of depression is higher among women (5.1%) than among men (3.6%). With respect to age, depression has been found to be more prevalent among the among the elderly. Regionally, Africa has the highest point prevalence of depression (5.4%) compared to the other regions of the world (142).

PTSD is an “anxiety disorder characterised by a cluster of symptoms which are definitionally persistent over a month and that develop in the aftermath to one or more life threatening or severely traumatic events for example interpersonal violence, severe accidents, disasters or military action” (146). “PTSD cluster symptoms include re-experiencing of aspects of the traumatic event in a vivid and distressing way, emotional numbing or the inability to have any feelings and avoidance symptoms which include feeling detached from other people or lack of interest in previously significant activities or avoidance of trauma reminders. Another cluster of hyper-arousal symptoms includes hypervigilance for threat accompanied by exaggerated startle responses, increased anxiety, and sleep problems” (145, 146). PTSD is “among the anxiety disorders which are ranked second most prevalent CMDs contributing to the global burden of disease” (140, 142). About 3.6% of the global population which is about 264 million people are diagnosed with anxiety disorders (140, 142).

Alcohol abuse is among the more common forms of substance use disorders globally. Alcohol abuse is a collective term used to encompass alcohol dependence and patterns of alcohol use that are harmful and cause damage to physical or mental health (146, 147). Alcohol abuse indicators include combinations of high volumes of consumption and high frequencies of consumption. Alcohol dependency refers to repetitive patterns of excessive use of alcohol that involves a lack of control, tolerance and withdrawal such that the consumption of alcohol takes a much higher priority than any other individual or behaviors (148). Harmful alcohol use is a broader term that includes binge or heavy episodic drinking which is operationalized as consuming five or more drinks in one sitting or occasion (149). Harmful alcohol use also includes heavy, excessive or problem drinking which involved consumption of quantities that places individuals at risk for adverse health events such as physical, psychological and harm (150, 151).

Five percent of the global burden of disease and injury is attributable to alcohol (142). There are significant gender differences in the patterns and prevalence of alcohol consumption by gender. Globally, about 55% of men and 34% of women consume alcohol in their lifetime, showing that females are more often lifetime abstainers than males (152, 153). About 39% of the global population aged 15 years or older drank alcohol in the past 12 months (153). Men consume higher quantities of alcohol and have many more alcohol-related disorders compared to women (152). Women in HICs consume more alcohol than those in LMICs (152).

2.3 Social risk factors for mental disorders

2.3.1 Socio-demographic risk factors

Mental health is also influenced by people's social, economic, and physical environments or backgrounds. Socio-demographic factors such as gender, age, marital status, low socioeconomic status factors including low education, unemployment, low income and low social support have been associated with increased risk for mental disorders (154, 155). Mental illness is also associated with physical illness or disability which results in diminished socio-economic status due to loss of income (154). Marital status in particular being separated, widowed or divorced has been associated with increased risk and severity of any disorder (156, 157).

Prevalence of mental ill health is higher in contexts of greater social inequality for example in neighborhoods that are straddled with poor housing, overcrowding, lower social cohesion, and high incidence of community violence (154, 158, 159). Prevalence of mental ill health is also higher among the lower income or poorer communities where social support is very low (158, 159). Environmental factors including conflict, migration, social changes and natural disasters also increase incidence of mental disorders (154).

2.3.2 Childhood trauma a risk factor for mental ill health

Childhood trauma which refers to a broad range of adverse experiences or abuse of a child that are emotionally painful or distressful, is an important risk factor for poor mental and physical effects. Negative childhood or adolescent outcomes of trauma and abuse include mood disorders, anxiety disorders and substance misuse hence first onset of mental disorders mostly occurs earlier in life (160-162). History of childhood trauma is a key risk factor for depressive and post-traumatic stress disorder symptoms (PTSD) in adulthood (92, 95, 163-165).

Norman et al's 2012 review of 124 cohort, cross-sectional, and case-control studies searched from three showed statistically significant associations between child physical abuse, child emotional abuse or child

neglect and depressive disorders, drug use, alcohol abuse, suicide attempts, STIs and risky sexual behaviours (95). Gender differences in the associations of emotional neglect and mental health outcomes included that women who were neglected were more likely to be at risk of depression, suicidality, alcohol abuse (95) while men were more at risk of depression and drug use and no association was found with suicidality and alcohol abuse (95).

In a systematic review of fourteen reviews, including more than 270,000 subjects from 587 studies, Maniglio et al 2009 found that survivors of childhood sexual abuse are significantly at risk of a wide range of psychological disorders. and concluded that child sexual abuse should be considered as a general, nonspecific risk factor for psychopathology(163). In another systematic review of reviews, Maniglio et al 2010 searched seven databases which yielded four reviews, including about 60,000 subjects from 160 studies and found that child sexual abuse is a significant risk factor for depression (165). Chen et al 2010, in a systematic review, that yielded 37 eligible studies, 17 case-control and 20 cohort, with 3,162,318 participants found statistically significant association between sexual abuse and lifetime diagnosis of depression (OR, 2.66; 95% CI, 2.14-3.30), and posttraumatic stress disorder (OR, 2.34; 95% CI, 1.59-3.43)(166).

South African studies have also found child sexual abuse to be associated with increased the risk for alcohol abuse and depression among men and women (167). Among men, child physical abuse and witnessing parental violence has been associated with adult alcohol dependence (162). Among women and men, history of child abuse is also associated with higher risk of other life traumatic or violent events which are also associated with higher risk for mental ill health (168, 169). Studies conducted in South Africa show that children, adolescents and young people are exposed to high levels of violent trauma with a significant proportion developing PTSD, depression, suicidal notions and attempts (96, 135, 170-175).

2.4 Risk factors for depression

Prevalence, incidence and risk of depressive disorders are higher in women compared to men from mid-puberty and throughout adulthood (176). Risk factors associated with depression in adulthood include biological, genetic factors or personality traits that predispose individuals (142). Physical ill health especially terminal or chronic health conditions and other mental ill health symptoms including anxiety disorders and problems caused by alcohol or drug abuse also increase risk of depressive symptoms (118, 142, 168, 176). Social determinants of depression include adverse childhoods including abuse experiences, low socio-economic status, unemployment, and experiences of physical, sexual emotional IPV or non-partner rape (83, 115, 118, 177).

2.5 Risk factors for PTSD

PTSD develops because of exposures to life-threatening or very severe trauma for example having physical injury from a life-threatening traumatic event, being a victim of violent crime, exposure to war-related violence and surviving a catastrophic disaster or experiences of rape or physical assault leading to grievous bodily harm (93, 178-180). Notably, the risk for PTSD is associated with the features of the traumatic event including the degree or severity of the exposure which is positively associated with severity of PTSD symptoms (93, 169, 178, 179, 181). PTSD symptomatology is highest in combat settings, among communities with higher prevalence of interpersonal violence particularly, gun violence and in disaster settings (128, 139, 180, 182, 183). However, within such settings, risk for PTSD is significantly higher among individuals who are victims and directly experience the traumatic events compared to those who “witness” them (178). Poly-victimisation which refers to experiencing multiple forms of victimization; and revictimisation which refers to multiple exposures to the same trauma also increases risk and severity of PTSD symptoms (92, 93, 178, 184-187).

Child sexual abuse is a risk factor for PTSD and IPV or rape victimisation (163, 166, 188-190). Severe IPV and all rape victimisation are risk factors for PTSD. Moreover, individuals that experience both child abuse and rape are more likely to develop PTSD and have persistent symptoms (2, 92, 93, 95, 185, 186, 190-196). Similarly, experiencing sexual victimisation repeatedly at different stages of life is a major risk factor for adult PTSD (166, 168, 178, 197).

Nevertheless, it is notable that many trauma-exposed people do not subsequently develop PTSD. Other pre-trauma (“occurring or present before the traumatic event”) and peri-trauma (“occurring during or soon after the event”) factors influence whether a trauma-exposed individual develops PTSD, quickly recovers from it or it persists (178, 179, 198, 199). Socio-demographic and pre-trauma factors that are associated with the development of PTSD include gender age, and socio-economic status (169, 178, 179). Females are exposed to different types of traumatic events and are at greater risk of developing PTSD than males (178, 199). Among children, earlier, prolonged and cumulative exposures of traumatic stressors are associated with greater risk for PTSD (93, 178, 199). There is conflicting evidence suggesting that being married is protective to PTSD when one is exposed to a traumatic event (179, 197, 200). Being in a position of social disadvantage including having lower education and income, homelessness and lower social support is associated with increased likelihood of experiencing multiple traumatic events which in turn increases risk for PTSD (169, 178, 198, 199, 201).

Pre-trauma psychological variables associated with PTSD include past exposures to traumatic events, family psychiatric or addiction problems, poor family functioning and previous or pre-existing psychiatric disorders including past episodes of PTSD, mood disorders, anxiety disorders or psychoses (178, 181, 198, 199). PTSD is associated with more severe symptoms of other mental disorders (178). Poor family organisation or functioning leads to increased risk for PTSD through increased vulnerability to traumatic exposures for example child abuse and domestic violence (178). The association of PTSD and other disorders may partly be due to shared environment and traumatic exposures or that the symptoms of pre-existing disorders may increase vulnerability to PTSD through for example alterations in brain structure in particular the hypothalamic-pituitary-adrenocortical (HPA) function (178). Additionally, the association of family history and PTSD may be influenced by genetic predisposition that underlies alterations to brain structure and subsequently increases vulnerability to mental disorders (178).

In the aftermath of the trauma exposure, peri trauma-factors relating to the social environment that influence the development of PTSD include the level of initial distress due to the exposure, self-efficacy and availability of social support (169, 178, 193, 194, 198, 199). Positive social support helps trauma-exposed individuals to correctly appraise the traumatic event and restore self-efficacy which refers to one's belief and ability to successfully cope despite the traumatic events and maintain health or recover from mental ill health symptoms (178). On the other hand, people with greater self-efficacy will be more likely to seek and receive social support. Positive social support is associated with protective effects to developing PTSD symptoms (178).

2.6 Risk factors for alcohol abuse

Socio-demographic factors including age, gender, socio-economic status, family history of alcohol abuse within the family, life stress, depression, delinquent associations and engagement in risky sexual behaviours have been associated with alcohol consumption, dependence and abuse (153). Problem drinking is often higher among people with lower socioeconomic status including lower education and this has been explained by pathways of social causation such as higher adversity and life stress (202, 203).

Parental alcohol abuse is associated with increased likelihood of developing alcohol abuse disorders through pathways of family dysfunction and negative childhood experiences that often include child emotional abuse, neglect and physical abuse (153, 204). Child abuse experiences can lead to psychopathology, which if left untreated leads to adolescent and adult psychopathology which may include problem drinking (153, 205, 206). Pathways between child abuse and alcohol disorders may include adverse influences on brain development and negative affect disorders including depression and PTSD (206).

Societal factors such as culture, economic development, the availability of alcohol and the effectiveness of alcohol regulation policies influence alcohol consumption and related harms (153). Norms and cultural positions about alcohol influence societal levels and patterns of consumption (207). For example alcohol problems are likely to be lower in "abstinent societies", where drinking is religiously or culturally forbidden and highly regulated compared to societies where there is less regulation and drinking is part of daily life (153, 207).

2.7 Comorbidities

Comorbidity, which refers to “the presence of multiple disorder symptoms within an individual at the same time, occurs either when the presence of some symptoms precede or cause some other symptoms or when symptoms occur together because there are mutual interactions among symptoms of disorders” (208, 209). Depression, PTSD and alcohol/substance use disorders are comorbid because PTSD symptoms following traumatic exposure may lead to depressive symptoms or to harmful alcohol use (191, 192, 206, 210-213). About 80% of people who have PTSD symptoms report other mental ill health conditions including depression, substance abuse disorders and alcohol dependence (214, 215).

However, depression or alcohol abuse do not lead to PTSD. The relationship of depression and alcohol abuse reflects comorbidity and bidirectionality between depressive symptoms and harmful alcohol use.

2.8 Women’s experiences of IPV and association with mental ill health

Depression, PTSD and alcohol use disorders which are often comorbid are among the established consequences of child abuse and IPV reported by adult women. A dose response relationship has been established that shows elevated risk, higher frequency and severity of IPV among women reporting histories of child abuse and more severe symptoms of PTSD, depression or alcohol abuse (92, 95, 109, 110, 114, 119, 163, 216, 217). Moreover, there is evidence of comorbidity of alcohol abuse with PTSD, and depression in different contexts among women who have experienced IPV (217, 218). There is also evidence of strong associations between abusing alcohol, having a partner that abuses alcohol and women’s experiences of IPV (81, 126). Other research suggests that poor mental health predicts IPV experiences and may therefore mediate the association of child abuse and experiences of IPV. In particular, depressive disorders and alcohol abuse could increase women’s risk to experiences of IPV (116, 118).

2.8.1 Psychological resilience and women's experiences of IPV

Although scholars have elaborated associations of IPV experiences and mental ill health effects, several protective factors such as social support and self-efficacy enable victims to deal more effectively with adversely traumatic or stressful events. As such, despite experiencing IPV, rape or childhood abuse, some victims do not develop mental ill health symptoms or recover quickly from them compared to others. The processes by which or outcomes of individuals “positively adapting to adversity, overcoming highly stressful, life threatening or traumatic events and recovering or maintaining mental and overall health” is collectively termed “psychological resilience” (219-221).

Protective factors that are associated with resilience in literature include availability of positive social support and self-efficacy which refers to “an individual’s ability to harness social support that may be emotional, instrumental, informational from their social networks leading to sustained well-being” (180, 222-224). The protective effects of positive social support on IPV experiences and mental ill health effects are manifold. There is evidence of less social support among abused women compared to non-abused women indicating that higher social support may be protective to IPV experiences (72, 73). Moreover, the protective effects of social support relate to the aftermath of IPV experiences whereby seeking support from a supportive and sympathetic network enhances victims’ coping skills and mitigates the adverse mental health outcomes of IPV including depressive symptoms, alcohol abuse or suicidal tendencies (70, 72, 73, 225).

Availability of positive informal social support is associated with positive health-related help seeking behaviours, utilisation of formal support services and having a wider range of relationship alternatives for women including leaving the relationship and recovery (70, 72, 226). Increased utilisation of formal support services including receiving therapies and treatment for mental ill health symptoms is associated with recovery and lack of psychopathology (158, 159, 227). However poor treatment response and high relapse of mental ill health symptoms are observed among victims who utilize formal services but have smaller social networks or less social support compared to those who have larger social networks or social support (228). Notwithstanding, few studies have investigated pathways to abused women’s psychological resilience. Studying resilience, a concept well developed for other fields such as childhood development, is important for this field firstly to understand the pathways to recovery and secondly to potentially reduce further revictimisation which is exacerbated by the presence of mental ill health symptoms.

2.9 Mental ill health and men's perpetration of IPV

The association of alcohol and male perpetrated physical IPV has been studied over time. However, the data for this evidence has been obtained from smaller, clinical, military or convenient community samples (4, 18, 126, 229). Foran et al, 2008 found a small to moderate effect size for the association between alcohol abuse and male-to-female partner violence (126). The association of alcohol and IPV was stronger in clinical and military samples compared to the non-clinical community samples (126). Schumacher et al 2001, highlighted alcohol abuse as having moderate to strong effect sizes on male perpetrated IPV. Stith et al 2004, in a multifactorial meta-analysis of IPV risk factors, included only samples of heterosexual married or co-habiting couples and found that alcohol abuse has moderate effect sizes with male-perpetrated IPV (18). Capaldi et al 2012, found that although there is evidence for an association of indicators of alcohol use with IPV perpetration the association is not as strong or consistent as has generally been supposed (54). Typically, the association of alcohol and IPV perpetration is higher in clinical vs non-clinical, general population samples (126).

The emotional and behavioural problems associated with PTSD can have serious consequences for family and intimate relationships (230). The relationship between PTSD and aggression among veterans is well established within the literature. The severity of aggressiveness by veterans is associated with PTSD symptom severity (231-233). Male veterans with greater PTSD symptomatology are more likely to report higher levels of anger, hostility, aggressiveness, and IPV perpetration (234, 235). Veterans report greater aggressiveness and higher rates of IPV perpetration than civilian male batterers without PTSD (236). Similarly, among men participating in batterers programs, PTSD symptoms are associated with more severe aggressiveness and higher rates of IPV perpetration (236).

Nonetheless, extant literature on the relationship of PTSD and male perpetrated IPV originates from the United States and little is known about this relationship using data from the Global South. Furthermore, at a global scale, there is limited research into the relationship between PTSD and male-perpetrated IPV with civilian non-clinical and non-military samples.

Capaldi et al 2012, in a systematic review of empirical studies from the United States, Canada, United Kingdom, New Zealand, and Australia found that depressive symptoms were associated with IPV perpetration but that this association is not robust in multivariate analyses and may be less strong for male-perpetrated IPV(54). In contrast Stith et al 2004 and Schumacher et al 2001, found that depression was a moderate risk factor for men using physical violence against their partners (18, 81).

2.10 Prevalence and risk factors for mental disorders in South Africa

“Mental disorders are ranked as the third highest contributor to the local burden of disease, after HIV and other infections disorders” (4). South Africa has relatively high 12-month and lifetime prevalence rates of common mental disorders when compared with the other countries (141, 237). The severity of 12-month mental disorders among females is significantly higher than that of males (156). Women are more likely to report mood and anxiety disorders while substance use disorders were more common among men (156, 238).

Lower prevalence of alcohol abuse, depressive and PTSD symptoms have been reported in national studies. The South African Stress and Health Study conducted to assess the prevalence and severity of specific psychiatric disorders showed that the lifetime prevalence for any disorder was 30.3% and the projected lifetime risk of any mental disorders was even higher at 47.5% (156). Alcohol abuse (11.4%) and depressive disorder (9.8%) were among the most prevalent lifetime disorders (156). About five percent of participants reported 12-month prevalence of major depressive disorder (4.9%) and alcohol abuse (4.5%)(156). Prevalence rates of PTSD based on clinical diagnosis after trauma exposure was 3.5% (132). Other studies using convenience samples and self-report symptom measures have reported higher prevalence of PTSD (239). PTSD rates based on self-report survey instruments have their limitations and tend to overestimate the prevalence of PTSD (239).

Other studies have shown have shown higher cumulative occurrence of alcohol use of 38.7% (240), current prevalence rates of alcohol use between 20-30% (29, 241, 242), prevalence of binge drinking between 7-10% (241, 243). Generally, more men consume alcohol and have alcohol-related problems compared to women. Prevalence of current alcohol use is about 17.1% and over double the proportion of men (41.5%) consume alcohol (243). Lower education, younger age (between 18 and 35 years) and living in the urban areas are associated with higher levels of binge drinking (241, 243).

2.10.1 Social risk factors for mental ill health in South Africa

South Africa is one of the countries with the highest social inequality in the world therefore structural factors play an important role to prevailing mental health burden and response challenges. Fifty five percent of South Africans live in conditions of poverty that are driven by high rates of unemployment (244). Levels of poverty are higher among women and children (244). South Africans are also exposed to high levels of public violence and crime. Over 1,5 million incidences of household crime and over 1,6 million incidences of crime on individuals occurred in South Africa in 2017/18 (245). The high levels of public violence spill into the private sphere and escalate the high prevalence of VAW reported in the country (45). Over 70% of

the population has experienced one traumatic event in their lifetime and over half have experienced multiple life traumas (246). These settings increase individual risk for the development of mental ill health symptoms.

For decades prior to 1994, during the apartheid era, political violence was rife and common place in South Africa. During the apartheid era younger men who were more active than other population groups in resisting the prevailing political system, were more likely to be the victims of political violence including detention and torture (247). In the SASHS, about 3% of men reported experiencing, severe ill-treatment, detention or torture and less than 1% of women reported experiencing these (156, 157, 248). After 1994 to present day the levels of politically related trauma has diminished but common traumatic events include high rates of violent crime including murders, common community violence in the form of service delivery protests accompanied by violent police responses, high incidence of physical or sexual violence against women and children and high prevalence of road accident related injuries(249). Trauma including structural violence also takes place in a context of poverty and social disadvantage. This context in which people are continually exposed to multiple traumas make the country an ideal environment to study the psychological impact of traumatic events (249, 250).

Gender disparities exist in the different types of violence experienced with men being more likely to be exposed to interpersonal violence and women being more likely to experience domestic violence and rape. Similarly, men were more likely to report criminal violence exposures than women (25.9%vs 11.6%) (246). More men than women were affected by politically related traumas including political detainment and torture (132, 157).

2.11 Protective factors and psychological resilience

Notwithstanding the violent traumatic exposures experienced in childhood or adulthood, some exposed individuals do not report mental ill health effects. This in part relates to the severity threshold of the exposures whereby less severe or less frequent exposure may be associated with the absence or lesser mental ill health effects. The absence of mental ill health effects despite higher thresholds of abuse and trauma indicates that either these individuals did not develop symptoms or that they recovered from them quicker compared to others. The term “resilience” is used by scholars to refer to how well people sustain health and psychological well-being in a challenging environment or when exposed to adversity or stressful events (221, 251). To date the body of knowledge has mainly focused on understanding resilience in childhood, disasters and in patients using multi-disciplinary lenses including but not limited to genetics, neurobiology, developmental psychology and sociology (221). The body of knowledge supports that pathways to

resilience intersect with positive adaptation facilitated by the availability of social capital counteracting the potential harmful effects of experiencing abuse and trauma (180, 219-221, 224). Positive adaptation requires an individual's ability to harness key supportive resources and interact with family, friends, communities or service providers around them to promote mental well-being or protect themselves against the influence of adverse risk factors (221).

Other factors that have been associated with resilience has also been associated with genetic inheritance, personality and emotional regulation, material resources, socioeconomic position, physical environment, family or community organisation or cohesion, health behaviours and health assets (221, 252). Although resilience is mostly considered at the level of the individual, it is dependent on resilience at the family, neighbourhood, community or physical environment levels (252) For example mental health of the community may be both a protective or a risk factor for individual health. There is evidence that cohesive communities tend to have high levels of social capital, trust, reciprocity, and participation and this positively impact the mental health of individuals within them (252) On the contrary environments in which majority in the community are deprived overlapping with high unemployment and crime can present as a risk factor for individual mental health.(221)

Evidence presented so far indicates that the intersections of violence against children and violence against women may be mediated by mental health effects. Yet the body of literature is limited in understanding adult resilience including the protective factors that reduce women's victimisation. Therefore, research to investigate psychological resilience in the context of violence against women is warranted. Understanding pathways and factors for resilience provides opportunities for intervening to promote sustained recovery and adaptation which may reduce the risk for further victimisation.

2.12 Conceptual frameworks for the study

The literature presented to this point has highlighted that multiple factors increase risk for either IPV experiences by women and perpetration by men. Risk factors for women's IPV experiences established in literature include gender inequality, low-socio-economic status, experiences of childhood abuse, witnessing incidents of parental violence, alcohol abuse, depression, other life traumatic events and PTSD symptoms. Evidence from literature also shows that the effects of abuse experiences include depression, PTSD and alcohol abuse. Moreover, PTSD, depression and alcohol abuse symptoms are commonly comorbid among women victims of abuse (57, 174, 253). The existing evidence also suggests that the relationship of mental ill health and IPV among women is potentially bi-directional. Notwithstanding, social support has been identified among the protective factors which confer resilience, abate and the mental ill health effects of

abuse and potentially reduce further victimisation. Based on these assumptions, we hypothesised that the relationships of the said variables are more complex than is oftenly described by scholars in the field. **Figure 2:1** presents the conceptual framework that guided our inquiry of the inter-relationships of variables using data collected from a representative sample of women. We hypothesised that violent exposures including child abuse, intimate partner violence and other life traumatic events would increase risk for mental ill health and this in turn would increase risk for further victimisation by partners. Child abuse overlaps with family violence and would be associated with developing inequitable gender beliefs. Poor socio-economic status which overlaps with greater prevalence of family violence would also be associated with inequitable gender beliefs. Through patterns social learning, justification of the use of violence, intergenerational transmission and unaddressed mental ill health, women exposed to child abuse would be more likely to experience intimate partner violence. Informal and social support factors would be protective to mental health and would make women more resilient and less likely to experience further victimisation.

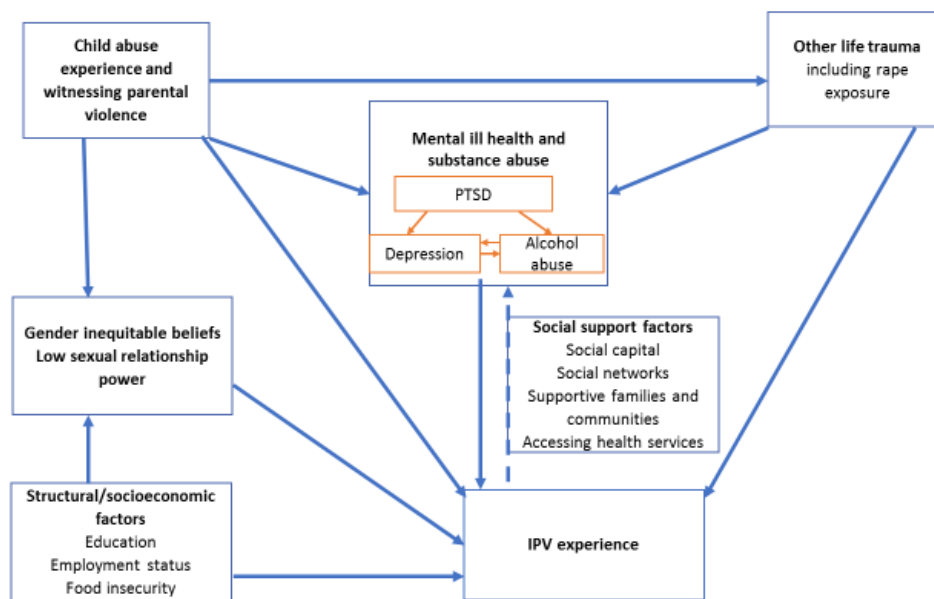


Figure 2:1 Conceptual framework of inter-relationships of variables among women

Evidence from men's studies show that childhood abuse experiences are associated with adult mental ill health symptoms similar to the associations found in women. On the contrary, child abuse has also been associated with men's perpetration of IPV. Mental ill health among men has also been associated with IPV perpetration. Extant literature shows that PTSD symptoms and alcohol abuse potentially mediate the relationship of childhood abuse and severe physical IPV perpetration but the body of evidence from studies of with men from the general population is limited. The focus of this work was to investigate the hypothesised inter-relationships of variables as illustrated in **Figure 2.2**. This was done using data collected

from a sample of men. We hypothesised that men's inequitable gender beliefs would be associated with lower socio-economic status and experiences of family violence including childhood abuse. Experiences of childhood abuse, traumatic events and poor socio-economic status would increase risk for mental ill health. Mental ill health would increase men's use of violence against female partners.

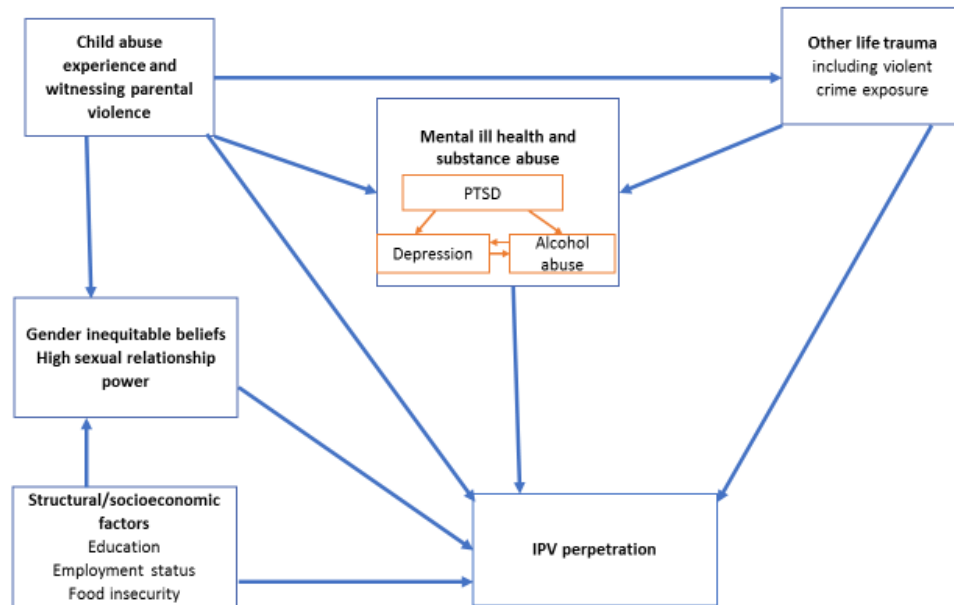


Figure 2:2 Conceptual framework of inter-relationships of variables among men

2.13 Chapter conclusion

In this chapter, I have presented literature showing that mental ill health and the social contexts in which it occurs may be both risk factors/drivers of or effects of IPV. From the literature presented, it is evident that mental ill health and IPV share similar structural determinants among them childhood abuse experiences, poverty and broader context of public safety or violent crime. Yet, protective factors exist in the form of social support indicators that may reduce the risk of mental ill health symptoms among trauma exposed individuals through pathways of adaptation or recovery. Therefore, this study is positioned to elucidate the inter-relationships between these shared risk factors and the potential mediating role of mental ill health or alcohol abuse in exacerbating IPV. Furthermore, the role of social support factors in instigating mental well-being and psychological resilience will be investigated.

03

Methods

3 METHODS

To pursue the specific objectives for this doctoral research, systematic review, meta-analytic techniques and quantitative research methods were employed that resulted in four journal article outputs. This chapter shows the alignment of methods to the four objectives and their subsequent outputs (**Figure 3:1**), provides details of methods and analytic approaches used and describes the study settings and organisation. The different analytical approaches employed in each of the study papers will be described in detail in this chapter and the four journal articles that have been the result of this work, three of which have been published, are presented in the relevant chapters. Methods relating to the systematic review are presented first followed by the quantitative survey methods. The chapter concludes by reflecting on the strengths and limitations of methods used.

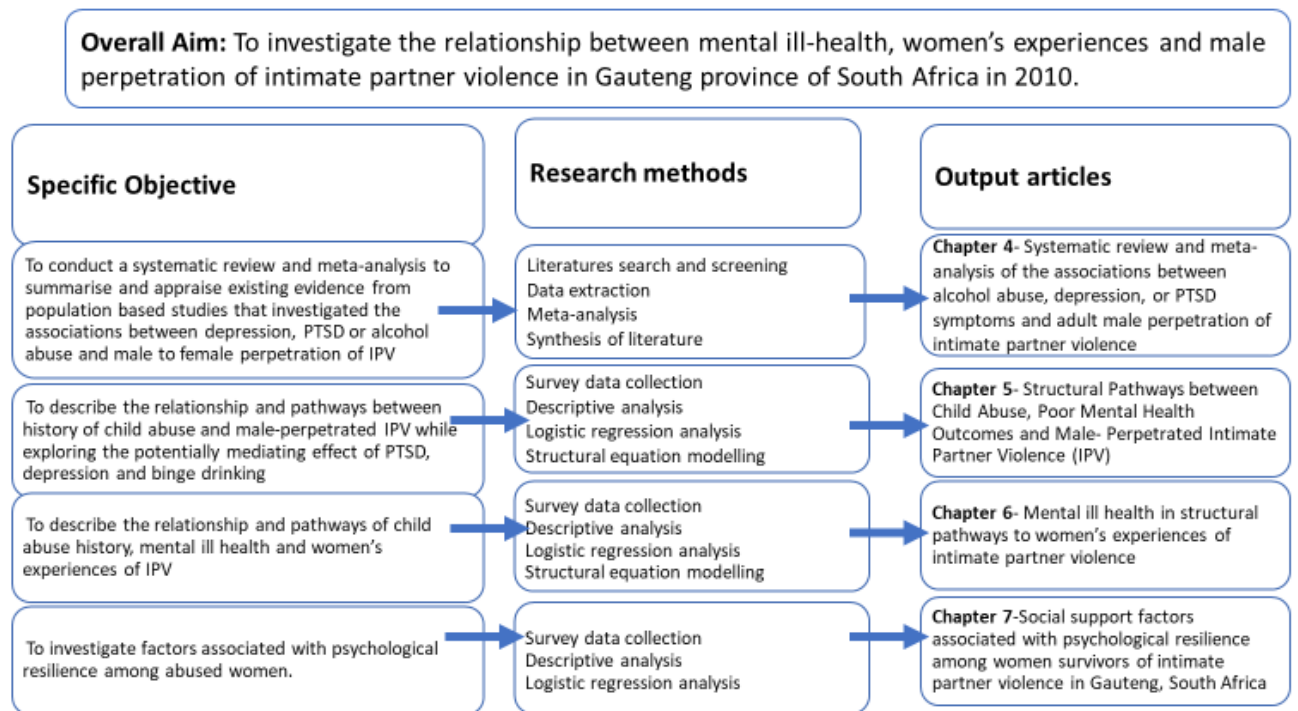


Figure 3:1 Alignment of methods to research objectives

3.1 Systematic review methods

3.1.1 Search strategy

Primary and empirical studies published up to April 2018 were searched for through the bibliographic databases *PubMed* and *Science Direct*. The two databases were chosen because they are very large multi-

disciplinary platforms that index articles from a very wide range of journals in the fields of public health, violence, trauma and mental health. PubMed has over 30 million citations going back to 1966 (254). ScienceDirect indexes articles from more than 2,500 scholarly journals and 39,000 reference books (255). Strategies were adopted and adapted from previous research by combining MESH terms for IPV, alcohol abuse, depression and PTSD and used for each of the search engines (54, 110, 112-114, 126, 217, 256-261).

3.1.2 Study selection

3.1.2.1 *Inclusion and exclusion criteria*

All titles and abstracts from the search were screened based on the set inclusion criteria. To be included a study needed to meet the following criteria:

- ✚ Have a population-based design using random samples of adult male participants from the general population or college students;
- ✚ Use validated diagnostic mental health scales or asked questions about depressive symptoms, PTSD or alcohol abuse;
- ✚ Measure male-to-female IPV perpetration. Importantly studies needed to have reported on the relationship between depression, PTSD or alcohol abuse as explanatory variables and IPV perpetration as an outcome from analysis that adjusted for other potential confounders;
- ✚ Studies that had male adult participants and
- ✚ Written or available in English (4).

3.1.2.2 *Exclusion criteria*

The following studies were excluded:

- ✚ studies with convenience sampling of patients, men participating in batterer programmes, court-referred offenders, veterans or military personnel;
- ✚ clinic-based studies as these have data from reported cases of mental health problems which are typically the more severe cases, therefore they are not representative of the degrees of mental health problems and substance use in the general population;
- ✚ studies of adolescents only were excluded;
- ✚ studies that did not disaggregate IPV perpetrated by men or women;
- ✚ studies that reported on mental ill health as the consequence of male perpetrated IPV;
- ✚ studies that only reported independent associations without multi-variate analysis;
- ✚ studies that simultaneously measured male victimisation and perpetration, where victimisation was adjusted for as a risk factor for perpetration;

- ✚ studies in which the primary alcohol measure was situational, i.e. where participants were only asked whether they were drunk when they perpetrated IPV, were also excluded and
- ✚ studies that used alcohol consumption only without abuse measures.

3.1.3 Measurement

3.1.3.1 Outcome definitions

The review included studies measuring physical and or sexual acts of violence reported by a male partner and perpetrated against a female partner. The range of relationships could span all intimate relationship types including dating, cohabiting or marital relationships. Studies exclusively about other forms of violence other than male to female physical and or sexual violence were not considered (4).

3.1.3.2 Mental health risk factor definitions

Alcohol abuse was considered to be any of the following or alcohol use disorder descriptions binge drinking or heavy episodic drinking, problem drinking, alcoholism or alcohol dependence. Alcohol measure tools considered included validated scales and author definitions that were consistent with codes in the International Classification of Disease (ICD) version 10 (146). Studies that used measures of depression whether as symptoms or diagnosis were included in the review. Similarly, studies measuring PTSD, symptoms or diagnoses were included (4).

3.1.4 Screening

Titles and abstracts found through the search strategy were screened independently by two reviewers to identify all the citations that might meet the inclusion criteria. I retrieved and assessed manuscripts of selected citations against the inclusion and exclusion criteria. Prof Jewkes was the second reviewer, who independently checked the included and excluded manuscripts. Discrepancies between the two reviewers were resolved by discussion. All eligible studies were downloaded and filed.

3.1.5 Data extraction and synthesis

I extracted data from included papers into a Microsoft Excel database created for the review. The database form was used to capture a description of the study design, sample characteristics, measurement of mental health factors and IPV outcome, confounding variables adjusted for and the adjusted measures of effect. IPV measures were categorised into either past year or lifetime.

3.1.6 Quality assessment

I appraised the quality of all included papers using a combination of STROBE guidelines and the criteria developed by Alhabib et al. (2009) and Cochrane Methodological Quality Assessment of observational studies for longitudinal and case control studies (17, 262). The set of 18 questions resulting in possible scores of 0-20 were applied to each study. All included studies in the synthesis and meta-analysis scored above 14.

3.1.7 Statistical analysis

Variables were coded in the extraction form in preparation for meta-analysis in STATA 15. Only studies that measured IPV in past 12 months and recent alcohol abuse or mental symptoms were included for meta-analysis. To determine the overall effect size of the associations between alcohol abuse or depression and IPV from the different studies, we conducted random effects meta-analyses using the STATA metan and randomi commands. For the association of PTSD and IPV, fewer studies were included therefore fixed effects meta-analysis was more appropriate. We assessed STATA output and used the I^2 test statistic to assess overall and sub-group heterogeneity amongst studies. Using Higgins et al's 2003 recommendations we interpreted an I^2 statistic below 25% to indicate no heterogeneity, 25% as low heterogeneity, 50% as moderate heterogeneity and - over 75% represented high heterogeneity (263) . When studies had moderate to high heterogeneity i.e $I^2 \geq 50\%$ and there was evidence of bias in the studies from statistical tests, we took steps to explore the potential influences of publication, small study effects and other bias through funnel plot analysis and running the STATA metafunnel, confunnel and metabias commands. The findings of the systematic review and analysis are presented in **Chapter 4**.

3.2 Household survey

3.2.1 Organisation and contribution in the primary survey

Gender Links (GL), a regional non-governmental organisation headquartered in Johannesburg, partnered with the South African Medical Research Council (SAMRC) Gender and Health Research Unit in conceptualising and implementation of the household survey. Prof Rachel Jewkes and Prof Nicola Christofides, supervisors of this PHD, developed the survey research methodology and instruments. They also formed played an advisory role as part of the working group that managed the research process and authored the research project report (22).

3.2.1.1 Student contribution

As an employee and project coordinator at GL, I was part of the research team that conducted the primary surveys in Gauteng in 2010. My role in the survey logistics focused on ensuring that devices on which

electronic surveys were loaded worked well and managing data synchronisation. This role involved quality assurance of survey instruments and different translations in preparation for programming and device uploading, participating in researcher training particularly sessions to do with using the devices for data collection, assisting with co-ordinating data collection activities and day to day data management. I was also responsible for data cleaning, data recording, analysis and contributed to writing the project research report.

For this PhD, I conceptualized the research objectives, conducted all data analysis, drafted and revised research articles under supervision. I produced four research articles with my supervisors as co-authors, three of which have been published in journals (**Chapters 5-7**). My contributions and those of my supervisors are noted in each of the research articles.

3.2.2 Study location

The data used in this thesis was obtained through a household survey conducted in Gauteng Province of South Africa in 2010. Gauteng province is the most populous and fastest growing of South Africa's nine provinces with a population of 12.2 million people (1-3, 264). The province is mostly urban spanning the country's largest city, Johannesburg and its administrative capital, Pretoria, and surrounds (1-3).

3.2.3 Study sampling

The study's sampling strategy and sample size calculation was done with the help of statisticians at Statistics South Africa (STATSSA). The 2001 Census was used as the study's sampling frame. "The sample size calculation accounted for different strata and non-response rates. A multi-stage random sampling approach was used to randomly select 75 primary sampling units (PSUs) using the South African 2001 National Census as the sampling frame(1-3, 22). PSUs are the main areas in which to locate the households for men and women. The sample size calculation was based on achieving sufficient statistical power to estimate the prevalence of (a) experience of gender-based violence among women and (b) experience of perpetrating gender-based violence among men with acceptable precision. A sample of 75 PSUs, with 15 men and 10 women sampled per PSU yields a total of 1125 men's and 750 women's households sampled. It was assumed all households will have an eligible female, but 40% will have no eligible male. Furthermore, assuming a consistent 10% non-response rate, the final sample was estimated at 675 women and 608 men. Assuming that cluster sampling (through use of PSUs as the primary sampling unit) leads to a design effect (deff) of 1.25, this yields an effective sample size of 540 women and 486 men. This effective sample size would allow us to estimate the lifetime prevalence of experience/perpetration of gender-based violence with an absolute precision of +/- 4% for women and +/- 5% for men, which is adequate to address

the primary goal of the research (Extract from an ethics approval application submitted to the Medical Research Council Ethics Review Committee; and of which a letter of approval was obtained in December 2009)”(1-3, 22).

The 75 PSUs were randomly assigned to either female or male participants. Fieldworkers randomly selected 20 households in each PSU and invited only one eligible adult woman or man residing in a selected household to participate in the study depending on the sex allocation of the PSU. Fieldworkers did not replace or substitute households or individuals if they did not have an eligible member or selected person was unavailable or unwilling to be interviewed. Fieldworkers reached 96% of the selected households and 89% of these households had an eligible participant. The response rate among women was 73% and among men was 77.2%” (22).

3.2.4 Questionnaire development

The questionnaire was developed through a consultative process with inputs from researchers and gender activists from partnering organisations including GL and SAMRC. Prof Jewkes and Prof Christofides were the lead researchers in this process. For the most part validated scales and questionnaires used in previous research studies in South Africa were adopted for the study. Questions relating to GBV awareness, legislation and advocacy were developed and included. Two survey instruments, one with questions for women focusing on IPV experiences and the other for men focusing on IPV perpetration were first collated in English. The instruments were then translated into Zulu, Sotho and Afrikaans. The translations were checked by multi-lingual speakers to ensure they were consistent in meaning with the English questionnaires.

3.2.5 Fieldworker training

Male and female fieldworkers were trained over a week. The content of the training included grounding researchers on gender concepts, gender-based violence, its different forms and drivers. Fieldworkers also familiarised with the survey instruments and questions in the different languages. They were also trained to use and troubleshoot electronic devices for data recording purposes. This included training to save and synchronise data. Also, importantly fieldworkers were trained on the ethical guidelines for conducting VAW research. This included building rapport with participants, obtaining consent, ensuring privacy during interviews, and ensuring their safety as well as that of the participant. Fieldworkers also received training to identify symptoms of distress and to provide referral information to participants who requested it.

3.2.6 Community access and mobilisation

In every selected community, team leaders met with the ward councilors as community representatives and South African Police Services station commander and explained the study prior to accessing selected households. The councilors provided letters endorsing the study and these were used to access households.

3.2.7 Data collection

Interviews were conducted with 487 men and 511 women who were mentally competent and stayed four nights a week or more in a selected household. Highly trained male and female fieldworkers administered the questionnaire in the participants language of choice i.e. English Zulu, Sotho or Afrikaans. The structured questionnaire was installed on personal digital assistants and responses from the participants were captured by same sex researchers. All interviews were conducted in private to achieve more open disclosure of experiences of IPV (11, 22, 265).

3.2.8 Survey instrument

3.2.8.1 *Main outcomes of interest*

The main outcomes (dependent variables) were experiences (aligned to objective 3) or perpetration (aligned to objective 2) of physical, sexual or emotional IPV in lifetime and in the past 12 months. The measurement tool used was the WHO Multi-country Study on Women's Health and Domestic Violence: Core Questionnaire and WHO Instrument–Version 9 which is a standardised tool that has been validated in different settings (10). Physical IPV was measured by four items consisting of specific, violent acts by or towards a current or previous intimate partner (**Table 3:1**). Three items of sexual violent acts by or towards a current or previous partner (**Table 3:1**) measured sexual IPV. Men were asked questions about perpetration of violence against female partners while women were asked about experiences. In this way, our study focused on male perpetrated IPV towards female intimate partners.

For the analysis relating to objectives 3 and 4, mental health outcomes were investigated. Aligned to objective 3, the mental ill health effects of IPV that were explored in structural equation modelling included depressive symptoms, PTSD and binge drinking. The measurement tools for the symptoms are outlined in detail below. The main outcome for objective 4 analysis was psychological resilience. “Resilience to PTSD and/or depression among abused women was assessed as the absence of depressive and PTSD symptoms. Depression was measured using 20 items of the Centre for Epidemiologic Studies Depression Scale which has been used and validated in previous South African studies (CES-D) (Cronbach’s alpha = 0.942) (216, 266-269). We summed up the item scores to create a continuous CES-D score, then we used 16 + a cut-off

to dichotomize the score. A score equal to or greater than 16 indicated moderate depression. PTSD symptoms were measured using 30 items of the Harvard Trauma Questionnaire (Cronbach's alpha = 0.975) which has been used and validated in previous South African studies (267, 270, 271). Fieldworkers asked participants whether each of the symptoms had bothered them in the past weeks and they could respond by 'not at all' (1), 'a little' (2), 'quite often' (3) and 'extremely often' (4). We summed scores for all items divided by 30 items to obtain a PTSD score and a 2.5 cut-off to indicate PTSD symptoms.

We restricted the data and excluded women who did not experience IPV. Using the sub-sample of victimised women we created a resilience variable by combining the depression and PTSD variables. Consistent with other studies, resilience was defined as having less than the threshold for depressive (CESD score < 16) and PTSD symptoms (PTSD score < 2.5)" among victimised women (3, 219, 224)

3.2.8.2 Explanatory variables

Consistent with the hypothesised conceptual framework, **Table 3:1** shows the different variables that were measured, the name of the standard tools or scales used and a brief description of how these were adapted for the research setting. Where scales were used the last column shows how many of the scale items were adapted into the study's questionnaire.

Table 3:1 Definitions of variables, tools, item examples

Variable	Tool	Items
Intimate partner violence	WHO Multi-Country Study on Women's Health and Domestic Violence Module	Physical IPV items included slapping, throwing dangerous objects, pushing, kicking, hitting, dragging, choking, beating, burning or threatening. Sexual IPV items included physically forced non-consensual sex or sex because of fear of what a male partner might do or being forced to do something sexual by a male partner that they found degrading or humiliating.
Child trauma	Child trauma questionnaire	14 items Neglect -I did not have enough to eat Sexual - 1 had sex with a man who was more than 5 years older than me; Physical -I was beaten so hard at home that it left a mark or bruise; I was beaten or physically punished at school by a teacher; Emotional - I was insulted or humiliated by someone in my family in front of other people
Gender Attitudes	Gender Equitable Men Scale	10 Items e.g There are times when a woman deserves to be beaten; I would be outraged if she asked me to use a condom; If someone insults me, I will defend my reputation, with force if I have to; A man should have the final word about decisions in his home.
Sexual Relationship Power	South African adaptation of the Sexual Relationship Power Scale	11 Items e.g If I asked my partner to use a condom, he would beat or hit me; If I asked my partner to use a condom, he would get angry; My partner tells me who I can spend time with; If I asked my partner to use a condom, he would think I'm having sex with other people;

Other life traumatic events	Life Events Checklist	10 lifetime events items including: imprisonment /detainment, civil unrest/war, serious injury requiring hospitalization, being close to death, witnessing a murder of family or friend, unnatural death of family or friend, witnessing the murder of stranger/s, torture, robbed or carjacked at gun or knife point and kidnapping. Responses to each trauma event were either “yes” or no.
PTSD symptoms	Harvard Trauma questionnaire	30 items eg experiencing recurrent thoughts or memories of most hurtful or terrifying events, feeling as though the event is happening again, recurrent nightmares, feeling detached or withdrawn from people, unable to feel emotions, feeling jumpy or easily startled, difficulties concentrating, trouble sleeping, feeling on guard, feeling irritable or having outbursts of anger.
Depression symptoms	CESD	20 items e.g being bothered by things that usually don’t bother, not feeling like eating or poor appetite, unable to cheer up even with help of family or friends, feeling as good as other people, trouble keeping my mind on what I was doing, feeling depressed
Binge Drinking	Audit	“How often have you had 5 or more drinks on one occasion in the last year”

3.2.8.2.1 Childhood trauma

“Childhood trauma or abuse was measured using a 14 item modified version of the short form of the Childhood Trauma Questionnaire (CTQ) (272, 273). Researchers asked participants whether they had experienced each act in their childhood (**Table 3:1**). Possible responses were “never” (1), “sometimes” (2), “often” (3), or “very often” (4). Individual responses for all items of the CTQ to get a child abuse score. Answering at least “sometimes” to any of the items or getting a childhood trauma score that was greater than 14 indicated experiences of child abuse. Categorical variables for four dimensions of adversity namely physical abuse and punishment; sexual abuse; emotional abuse; or emotional neglect were derived from sub-items of the scale”(1, 2). **Table 3:1** shows the CTQ items and other scales items used in the study.

3.2.8.2.2 Mental ill health

“Consistent with the hypothesis that mental ill health has a mediating effect in the relationship between child abuse (exposure) and adult IPV perpetration (outcome), we measured mental ill health symptoms namely PTSD, depression and alcohol abuse. PTSD was measured using the Harvard Trauma Questionnaire (HTQ) which has been validated in other populations and cultural settings (270). Depressive symptoms were measured using the 20 item Center for Epidemiologic Studies Depression (CESD) self-report measure which was designed for use in the general population to assess current symptoms of depression (266). The CESD scale assesses how often an individual experienced symptom associated with depression over the past week. Two items of the Alcohol Use Disorders Identification Test (AUDIT) scale (274) were used to assess binge drinking which was equivalent to drinking 5 or more drinks on one occasion weekly or daily. Another mental health factor measured was the alcohol consumption frequency of a current or most recent partner. Women were asked whether their current or most recent partner drank alcohol and how often this happened. Other life trauma exposures were measured through an adapted Life Event Checklist from the

PTSD Checklist” (1, 2, 270) (**Table 3:1**). A greater score was indicative of more lifetime traumatic events or exposures.

3.2.8.2.3 Socio-demographic variables

Socio-demographic data collected included age, education categorised into no schooling, primary, high school, tertiary; nationality and employment status in the year before the survey(1-3).

3.2.8.2.4 Gender attitudes

“ We used an 11 item South African adaptation of the Sexual Relationship Power Scale (SRPS) (**Table 3:1**) as a measure of measure of controlling behavior by the male partner in the relationship (275, 276). We summed the responses for the SRPS items (Strongly Agree = 1, Agree = 2, Disagree = 3, Strongly Disagree = 4) to constitute a SRPS score. A lower SRPS score was indicative of more gender imbalance and less relationship power for the woman participant”(2). “To measure masculinities and gender attitudes, we used 10 items of the Gender Equitable Men Scale (101) (**Table 3:1**). We categorized the GEMS score into three categories: low, moderate and high based on tertiles of the distribution”(1).

3.2.8.2.5 Social support and help-seeking

“The women’s questionnaire contained several social support and help-seeking questions. These included proxy questions for social-connectedness e.g ‘If you had an emergency and 200 South African Rands (equivalent of USD8) was needed immediately would you say it would be very easy, easy, quite difficult or very difficult to find the money?’ Seeking family support was measured by variables that assessed self-disclosure of IPV experiences and seeking help from family when facing emotional difficulties. Questions included ‘Did you tell anyone in your family about abuse incidents?’ and ‘When feeling sad, disappointed or frustrated have you ever sought help from (1) older relatives (2) through family meetings?’ Possible responses were ‘yes’ or ‘no’. Women who sought help were also asked questions about how the family members responded. Possible negative responses were: they blamed me, they were indifferent, and they told me to keep it quiet. Positive responses were: they supported me, they were hurt by it and they advised me to report to police. We created a categorical variable for not seeking support, seeking family support and receiving either positive or negative reactions. We also assessed women’s utilization of services through questions about whether they had sought medical attention, had been to a shelter for abused women or received counselling for the abuse. Women were also asked the question ‘When feeling sad, disappointed or frustrated have you ever sought help from (1) professional counselling or (2) a doctor?’ We created a binary service utilization variable of using none of the services vs using one or more services. Women’s perceptions of community attitudes towards gender relations and intimate partner violence were used as a

proxy for cultural beliefs and perceived community support. Attitudes were measured by six questions with Likert responses of 'strongly agree' (1), 'agree' (2), 'disagree' (3) and 'strongly disagree' (4) (Cronbach's 0.84). Examples of questions were 'My community thinks that if a wife does something wrong, her husband has the right to punish her'; 'My community thinks that if a man beats you, it shows he loves you' and 'My community thinks that if a man has paid lobola (bride price) for his wife, she must have sex whenever he wants it.' The scores from the items were summed up to give scores along a scale " (3). It must be noted that the social support measures used here were limited due to the secondary nature of the study. We relied on data already collected for the primary study to develop these measures which although not the gold standard, provide good proxy measures which are helpful to gain insights and fill an important knowledge gap about support and utilisation of services by women victims of IPV.

3.2.9 Ethical considerations

Ethics approval for this study was given by the University of Witwatersrand Faculty of Health Science Human Ethics Committee and the Medical Research Council Ethics Review Committee (1-3, 22). "Participants were informed about the study and were required to give written consent to participate in the study. All research was conducted conforming to WHO Ethical and Safety Recommendations for Research on Domestic Violence against Women i.e. interviewers were carefully selected, adequately trained and provided with ongoing support; care was taken to ensure participant confidentiality and to minimize participant distress (11, 265, 277). All interviews were conducted by an interviewer of the same sex with the participant and in private. The interviewers assured participants of confidentiality. Random study identification numbers were generated and no personal identification details of participants were recorded, so that participant data remained anonymous (22). Participants were reimbursed cash for their time and participation in the study" (1, 2, 22). Women who disclosed victimisation were referred to women's NGOs within their vicinity for psychosocial and other support (2, 3, 22).

3.2.10 Data analysis

Internal consistency for all the scales was assessed by examining the Cronbach's alpha. All analytical procedures were conducted using Stata Software and accounting for stratified, two-stage survey design with participants clustered within the PSUs. Participants with key data missing i.e IPV and mental ill health symptoms were excluded. Different analytic techniques were applied to address the different study objectives.

3.2.10.1 Bivariate analysis

Associations between variables were assessed first using bivariate analyses and cross-tabulations with measures of association adjusted for survey design to obtain the proportions of IPV victims or perpetrators disaggregated by the mental ill health factors, sociodemographic, child abuse, other life trauma and gender-related variables. Comparisons of mean scores were conducted using t-tests to compare the mean scores of explanatory variables disaggregated by the IPV categories.

3.2.10.2 Multi-variable analysis

Explanatory variables with p-values of less than 0.3 from the bivariate analyses were included into multivariable regression models used to test for factors associated with IPV. Stepwise backward elimination approach was used to remove non-significant variables to obtain parsimonious models. Mediation tests for mental ill health measures as potential mediators in the relationship of child abuse and recent IPV experiences or perpetration were also conducted.

3.2.10.3 Structural equation modelling

Structural model path analyses were used to investigate the inter-relationships of variables including the mediation of mental ill health based on the study's conceptual framework and considering the results from multi-variate regression models (**Chapters 5 and 6**). Models were estimated with full information maximum likelihood estimation accounting for missing variables (278, 279). "Steps in model building included confirmatory factor analysis and building measurement models for latent factors. This was followed by sequential model modification until final models with acceptable fit were obtained and presented. Model fitness was assessed by the comparative fit index ($CFI \geq 0.9$) ; Tucker-Lewis Index (TLI) (≥ 0.9) and root mean square error of approximation ($RMSEA \leq 0.06$) as indicative of acceptable fit (278, 279). Path models and pathways were then interpreted as either being direct or indirect" (1, 2).

04

Paper One

4 SYSTEMATIC REVIEW AND META-ANALYSIS OF THE ASSOCIATIONS BETWEEN ALCOHOL ABUSE, DEPRESSION, OR PTSD SYMPTOMS AND ADULT MALE PERPETRATION OF INTIMATE PARTNER VIOLENCE

Citation: Machisa M.T., Hatcher A., Christofides N., Jewkes R. Systematic review and meta-analysis of the associations between alcohol abuse, depression, or PTSD symptoms and adult male perpetration of intimate partner violence (In Press)

4.1 Abstract

Intimate partner violence, mental ill health and alcohol abuse are significant public health problems globally. However, limited research has investigated the relationships between alcohol abuse and mental ill health symptoms as risk factors for IPV perpetration by adult men in the general population.

Objective: We conducted a systematic review and meta-analyses to estimate the associations between alcohol abuse and mental ill health symptoms namely depression and post-traumatic stress disorder (PTSD) and perpetration of intimate partner violence (IPV).

Methods: Studies were searched for on the PubMed and Science Direct. We identified 22 studies published in peer reviewed journal articles before April 2018 reporting on associations between alcohol abuse, depression or PTSD and IPV were included in the review. Studies measuring IPV in the past year were included in the meta-analysis. Study data was extracted and odds ratios (OR) were pooled using meta-analysis commands in STATA 15. The source of heterogeneity of included studies was further assessed through tests for publication bias.

Results: Fifteen studies showed a positive association between alcohol abuse and past year IPV perpetration (OR 1.77 [95% CI 1.37-2.28] $I^2=86.3$; $p=0.000$). Nine studies showed no pooled association between current depressive symptoms and past year IPV perpetration. Four studies showed a positive marginal association between current PTSD symptoms and past year IPV perpetration (OR 1.02 [95%CI 0.96-1.54] $I^2=83.5\%$; $p=0.000$). Tests for sources of heterogeneity excluded publication bias.

Conclusion PTSD symptoms and alcohol abuse were positively associated with past year IPV perpetration by men from general population samples. While no associations were found between depressive symptoms and IPV perpetration its influence when comorbid with PTSD symptoms or through alcohol abuse cannot be completely ruled out. Future research is necessary to understand mental health symptoms as risk factors for IPV perpetration. Research needs to account for the complex relationships between mental health factors.

Keywords intimate partner violence, alcohol abuse, PTSD, depression

4.2 Introduction

Depression, anxiety disorders and substance disorders are leading contributors to the global burden of disease (140). Depression is ranked as the single largest contributor of global burden of disease and disability while post-traumatic stress disorder (PTSD) is among the anxiety disorders which are ranked second most prevalent mental disorders (142). Globally, about 322 million people were estimated to have depression in 2015 (4.4% of global population) and about 264 million to have anxiety disorders (3.6% of global population)(140, 142). Alcohol abuse is also ranked among the more common forms of substance use disorders globally(153). Five percent of the global burden of disease and injury is attributable to alcohol misuse (142). In all regions worldwide, men consume more alcohol than do women, although the exact ratio varies, with women in high-income countries consuming more than those in lower income countries (140).

The associations between alcohol abuse, depression and PTSD and experiences of intimate partner violence among women are well-established in literature (2, 18, 54, 114-116, 118, 119, 280-286). Alcohol abuse, depression and PTSD are among the documented mental health effects of IPV experienced by women (115, 116, 118). Some studies have shown that alcohol abuse, depression and PTSD can be risk factors for IPV experiences (2, 116, 118, 119). Women's studies have also found associations between women's reports of male partner alcohol patterns and experiences of IPV (116, 126).

PTSD symptoms have been associated with physical IPV perpetration among different samples of men including court-referred offenders, patients undergoing clinical treatment or participating in batterer programmes, and among military or veteran samples (19-24). However in meta-analyses inconsistent findings have been reported between the associations between PTSD symptoms and IPV perpetration among military personnel (120). While there has been some research among male veterans linking PTSD to IPV (19-24), less research has examined this dynamic among non-clinical samples of civilian men (25). Previously, four systematic reviews of male to female IPV perpetration and alcohol abuse have been conducted. Foran et al (2008) conducted a meta-analysis, with studies published between 1980 and 2006, found a small to moderate association between alcohol abuse and IPV (126). Schumacher et al (2001) found moderate to strong associations between alcohol abuse and IPV(81). Stith et al (2004) in a multifactorial meta-analysis of IPV risk factors, with studies conducted from 1988-2000, included only samples of heterosexual married or co-habiting couples and found moderate associations between and IPV (18). Capaldi et al 2012, included empirical studies from the United States, Canada, United Kingdom, New Zealand, and Australia and found a weak association between alcohol abuse and IPV (54).

Likewise, previous systematic reviews investigated the associations between depression and male to female IPV perpetration (18, 54, 81, 120). Capaldi et al, 2012 found weak association between depressive symptoms and IPV (54). Stith et al (2004) and Schumacher et al (2004) found that among clinical samples, depression was moderately associated with IPV (18, 81). Trevillion et al. (2015) found increased odds of past year IPV perpetration among male military personnel with depression (120), without controlling for socio-demographic factors.

Despite the availability of literature on the associations between depression, PTSD and alcohol abuse to male perpetrated IPV, the existing reviews have become dated and are limited in geographic coverage. Existing reviews do not reflect more recent studies including those from the low and middle-income countries which have highest unmet needs for mental health treatment. The reviews have also included non-population based and small sample studies for example clinical and military samples, that are limited in generalisability. The reviews have a major weakness and are susceptible to bias as they mostly present bivariate associations between variables. Systematic review of literature from population-based studies with larger sample sizes that investigate effect sizes from multivariable analyses (vs univariate associations) is lacking. Multivariate estimates of effect are particularly important because they provide a more reliable picture of associations between mental health symptoms and IPV, which may be confounded by other variables (18, 54).

To build on existing literature, this paper presents data from a systematic review and meta-analysis that we conducted to summarise and appraise existing evidence from population-based studies that investigated the associations between depression, PTSD or alcohol abuse and male to female perpetration of IPV and that adjusted for other potential confounders.

4.3 Methods

4.3.1 Registration

This review was registered on the Prospero database. Registration number is: CRD42015023326

4.3.2 Search strategy

We conducted a global review of peer reviewed journal papers published up to April 2018. Primary and empirical studies were searched for through the bibliographic databases *PubMed* and *Science Direct*. PubMed is a rapidly updated freely accessible search platform and a well-organised abstract database. Over 30 million citations going back to 1966 and selectively to 1809 are indexed on PubMed and about half of the citations (14.2million) include links to full-text articles (254). As a multidisciplinary research platform

with diverse functionality, PubMed indexes articles from a wide range of violence, trauma, mental health, psychiatry and public health journals. ScienceDirect is a user-friendly, multi-disciplinary platform that indexes articles from more than 2,500 scholarly journals and 39,000 reference books. About 10% of the journals are fully open access publications (255). We searched for studies using strategies specific to each of the search engines. Strategies were adopted and adapted from previous research by combining MESH terms for IPV, alcohol abuse, depression and PTSD (**Appendix 3**)(54, 110, 112-114, 126, 217, 256-261).

4.3.3 Study selection

4.3.3.1 *Inclusion and exclusion criteria*

Titles and abstracts from the search were screened and studies were retrieved if they met the requisite criteria. To be included in the review, studies needed to be population-based using random samples of adult male participants from the general population or college students. Studies needed to have used validated diagnostic mental health scales or asked questions about depressive symptoms, PTSD or alcohol abuse, to have measured male-to-female IPV perpetration. Importantly studies needed to have reported on the relationship between depression, PTSD or alcohol abuse as explanatory variables and IPV perpetration as an outcome from analysis that adjusted for other potential confounders. Only articles written in English and whose abstracts were available by April 2018 were included.

4.3.3.2 *Outcome definitions*

The review included studies which measured physical and or sexual acts of violence reported by a man as perpetrated against his female partner as an outcome. The range of relationships could span all intimate relationship types including dating, cohabiting or marital relationships. Studies exclusively about other forms of violence other than physical and or sexual violence were not considered

4.3.3.3 *Mental health risk factor definitions*

The review included studies that measured alcohol abuse, depression or PTSD symptoms as risk factors for male physical or sexual IPV perpetration. To be included studies had to have determined associations using regression methods. Alcohol abuse in this review refers to any of the following or alcohol use disorder descriptions binge drinking or heavy episodic drinking, problem drinking, alcoholism or alcohol dependence. Alcohol measure tools considered included validated scales and author definitions that were consistent with codes in the International Classification of Disease (ICD) version 10. Studies that used validated measures of depression whether as symptoms or diagnosis were included in the review. Similarly, studies measuring PTSD, symptoms or diagnoses were included.

4.3.3.4 Exclusion criteria

We excluded studies with convenience sampling of patients, men participating in batterer programmes, court-referred offenders, veterans or military personnel. We excluded clinic-based studies as these have data from reported cases of mental health problems which are typically the more severe cases, therefore they are not representative of the degrees of mental health problems and substance use in the general population. Studies were restricted to only those that had male adult participants, so that studies of adolescents only were excluded. We also excluded studies that did not disaggregate IPV perpetrated by men or women; those that reported on mental ill health as the consequence of male perpetrated IPV and those that only reported independent associations without multi-variate analysis. We also excluded reciprocal IPV studies i.e. studies simultaneously measuring male victimisation and perpetration, where victimisation was adjusted for as a risk factor for perpetration. Studies in which the primary alcohol measure was situational, i.e. where participants were only asked whether they were drunk when they perpetrated IPV, were also excluded. We also excluded studies that used alcohol consumption only without abuse measures.

4.3.4 Screening

Titles and abstracts found through the search strategy were screened independently by two reviewers (MTM and RJ) to identify all the citations that might meet the inclusion criteria. MTM retrieved and assessed manuscripts of selected citations against the inclusion and exclusion criteria. RJ independently checked the included and excluded manuscripts. Discrepancies between the two reviewers were resolved by discussion. All eligible studies were downloaded and filed.

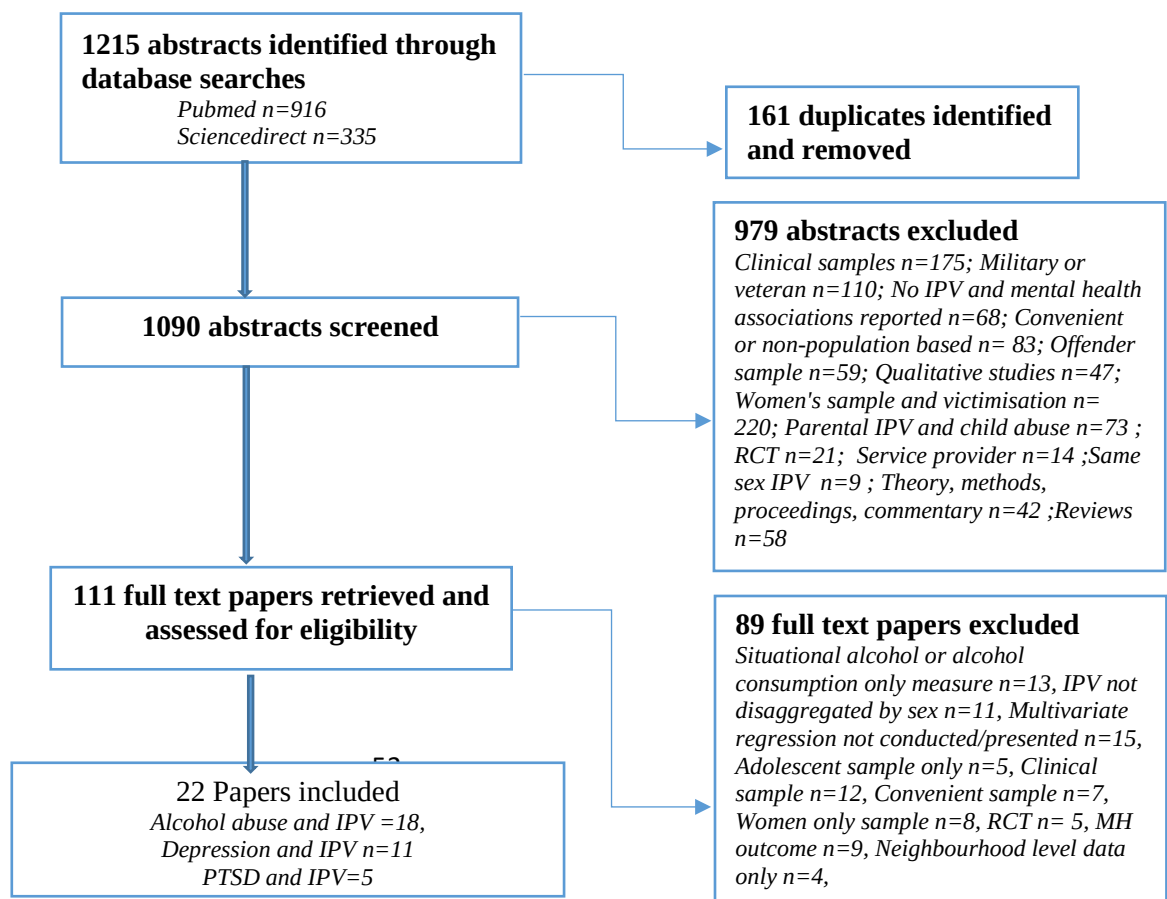


Figure 4:1 Flow of studies through the review

4.3.5 Data extraction and synthesis

MTM extracted data from included papers into a Microsoft Excel database created for the review. The database form was used to capture a description of the study design, sample characteristics, measurement of mental health factors and IPV outcome, confounding variables adjusted for and the adjusted measures of effect. IPV measures were categorised into either past year or lifetime. **Table 4:1.** shows summary descriptions of the included studies by the different characteristics

4.3.6 Quality assessment

We appraised the quality of all included papers using a combination of STROBE guidelines and the criteria developed by Alhabib et al. (2009) and Cochrane Methodological Quality Assessment of observational studies for longitudinal and case control studies (17, 262). The set of 18 questions resulting in possible scores of 0-20 were applied to each study (**Appendix 3**). All included studies in the synthesis and meta-analysis scored above 14.

4.4 Statistical analysis

We coded captured variables in the extraction form in preparation for meta-analysis in STATA 15. Only studies that measured IPV in past 12 months and recent alcohol abuse or mental symptoms were included for meta-analysis. To determine the overall effect size of the associations between alcohol abuse or depression and IPV from the different studies, we conducted random effects meta-analyses using the STATA metan and randomi commands. For the association of PTSD and IPV, fewer studies were included therefore fixed effects meta-analysis was more appropriate. We assessed STATA output and used the I^2 test statistic to assess overall and sub-group heterogeneity amongst studies. Using Higgins et al's 2003 recommendations we interpreted an I^2 statistic below 25% to indicate no heterogeneity, 25% as low heterogeneity, 50% as moderate heterogeneity and - over 75% represented high heterogeneity(263) . When studies had moderate to high heterogeneity i.e $I^2 \geq 50\%$ and there was evidence of bias in the studies from statistical tests, we took steps to explore the potential influences of publication, small study effects and other bias through funnel plot analysis. We ran the STATA metafunnel and the confunnel commands. Metafunnel draws a standard funnel plot and confunnel draws a contour-enhanced funnel that shows where studies lie in the areas of statistical significance. We assumed that when published studies lie in the non-significant areas then it the heterogeneity should be accounted for by other factors and not publication bias. Statistical tests were also conducted using the metabias commands and the Eggers and Beggers tests for funnel-plot symmetry.

Table 4:1 Studies and study estimates

Author	Title	Sample size	Age	Country	Setting	Participants	Study design	IPV type	IPV time	Mental health variable	Effect size-AOR	95% LCI	95% UCI	Other covariates adjusted for
Gass et al, 2011	Gender differences in risk for intimate partner violence among South African adults.	641	18+	South Africa	LMIC	married or cohabiting	cross-sectional	Physical IPV	past 12 months	Alcohol abuse	1.88	1.10	3.20	age, education, rural vs urban, employment status, income, race, childhood physical abuse, witnessing parental violence, closeness to caregiver, onset of DSMIV disorders- alcohol abuse, PTSD, major depressive disorder, disorders before 20
Lynch K and Renzetti C, 2017	Alcohol use hostile sexism and religious self-regulation: investigating risk and protective factors of IPV perpetration	255	18+	USA	HIC	married or cohabiting or dating	cross-sectional	Physical IPV	past 12 months	Alcohol abuse	1.00	0.93	1.09	hostile sexism, self-regulation, race, age, household income, education, employment, length of time in relationship
Cunradi CB, 2009	Intimate partner violence among Hispanic men and women: the role of drinking, neighborhood disorder, and acculturation-related factors.	1148	18+	USA	HIC	married or cohabiting	cross-sectional	Physical IPV	past 12 months	Binge drinking	2.10	0.73	6.04	age, education, past year alcohol abuse, past year drinking days , neighborhood disorder, acculturation factors, employment status, household income
Lee et al, 2014	Gender-specific differences in risk for intimate partner violence in South Korea.	4545	30+	South Korea	HIC	married	cross-sectional	Physical IPV	past 12 months	Binge drinking	2.20	1.45	3.34	age, education, employment status, relationship satisfaction, satisfaction with own life
Brown MJ, Perera RA, Masho SW, Mezuk B, Cohen SA.	Adverse childhood experiences and intimate partner aggression in the US: sex differences and similarities in psychosocial mediation.	11796	18+	USA	HIC	married or cohabiting or dating	cross-sectional	Physical IPV	past 12 months	alcohol abuse or dependence past 12months	2.39	1.90	3.01	age, race/ethnicity, income, education, marital status and insurance status.

Author	Title	Sample size	Age	Country	Setting	Participants	Study design	IPV type	IPV time	Mental health variable	Effect size-AOR	95% LCI	95% UCI	Other covariates adjusted for
O'Leary et al, 2007	Descriptive epidemiology of intimate partner aggression in Ukraine.	558	18+	Ukraine	HIC	married or cohabiting	cross-sectional	Physical IPV	past 12 months	Alcohol abuse	2.56	0.88	7.39	age, education employment status, marital status, financial status of the family, urbanicity, childhood exposure to parental violence, onset prior to age 20 of DSM-IV mood/anxiety disorders intermittent explosive disorder (IED), and alcohol abuse
Jewkes et al, 2017	Enduring impact of conflict on mental health and GBV perpetration	873	18-49	Papua New Guinea	LMIC	married or cohabiting or dating	cross-sectional	physical sexual or psychological IPV	past 12 months	Binge drinking	1.52	1.06	2.18	conflict trauma perceived enduring impact, alcohol abuse, depressive symptoms, past year drug use
Chirwa et al, 2018	Prevalence and risk factors of physical or sexual violence perpetration amongst men in four districts in the central region of Ghana: Baseline findings from a cluster randomised controlled trial	1973	18+	Ghana	LMIC	married or cohabiting or dating	cross-sectional	physical and or sexual IPV	past 12 months	Alcohol abuse	1.83	1.30	2.56	age, marital status, household food insecurity, child abuse, witnessing mother abuse, gender attitudes, number of sexual partners, transactional sex, depression, other life trauma, partner education, partner employment status
Machisa M.T and Shamu S, 2018	Mental ill health and factors associated with men's use of intimate partner violence in Zimbabwe	2838	18+	Zimbabwe	LMIC	married or cohabiting or dating	cross-sectional	physical sexual or psychological IPV	past 12 months	Binge drinking	1.81	1.32	2.48	age, education, child abuse, depression, ptsd, life events, sexual relationship power, gender attitudes
Peltzer et al, 2017	Victimization and perpetration of intimate partner violence among female and male youth and adults in South Africa	7384	15+	South Africa	LMIC	married or cohabiting or dating	cross-sectional	physical and or sexual IPV	past 12 months	Alcohol abuse	2.22	1.46	3.37	age, education, population group, employment status, health status, psychological distress, illicit drug use, multiple sexual partners, victim of violent crime, sex with someone with unknown HIV status, HIV status

Author	Title	Sample size	Age	Country	Setting	Participants	Study design	IPV type	IPV time	Mental health variable	Effect size-AOR	95% LCI	95% UCI	Other covariates adjusted for
Messersmith et al, 2017	Childhood trauma, gender inequitable attitudes, alcohol use and multiple sexual partners: correlates of IPV in Northern Tanzania	450	18+	Tanzania	LMIC	married men	cross-sectional	physical sexual or psychological IPV	past 12 months	Alcohol abuse	2.36	1.32	3.40	gender attitudes, childhood trauma, condom use, multiple sexual partners
Lysova and Hines 2008	Binge Drinking and Violence Against Intimate Partners in Russia	212	18+	Russia	HIC	University students	cross-sectional	Physical IPV	past 12 months	Binge drinking	1.44	0.77	2.11	relationship length, antisocial traits
Field CA and Caetano R, 2003	Longitudinal model predicting partner violence among white, black, and Hispanic couples in the United States.	387	18+	USA	HIC	Hispanic married or cohabiting men	Longitudinal	Physical IPV	past 12 months	Binge drinking	1	0.5	2.2	male childhood abuse, female childhood abuse, male impulsivity, alcohol problems, weekly alcohol consumption, approval of marital aggression, Female to male IPV in 1995
Ally EZ et al, 2016	Intimate partner violence trends in Brazil: data from two waves of the Brazilian National alcohol and Drugs Survey	2070	14+	Brazil	LMIC	married or cohabiting or dating	Longitudinal	Physical IPV	past 12 months	Binge drinking	3.71	1.13	12.19	tobacco use, AUD, sedatives, any illicit drug, age, education and income
Jewkes et al, 2006	Rape perpetration by young, rural South African men: Prevalence, patterns and risk factors	1370	15-26	South Africa	LMIC	married or cohabiting or dating	cross-sectional	Sexual IPV	past 12 months	Alcohol abuse	1.28	0.82	1.98	child trauma score, mother education, transactional sex, physical IPV, number of lifetime partners
Grets et al, 2007	Longitudinal predictors of intimate partner violence perpetration and victimisation in Latino emerging adults	345	21-24	USA	HIC	Latino adolescents from Southern California	Longitudinal	Physical IPV	past 12 months	Alcohol consumption	1.37	1.12	1.68	traditional gender roles, Hispanic, depressive symptoms, tobacco use, marijuana use, history of child abuse, witnessed domestic violence.

Author	Title	Sample size	Age	Country	Setting	Participants	Study design	IPV type	IPV time	Mental health variable	Effect size-AOR	95% LCI	95% UCI	Other covariates adjusted for
Grets et al, 2007, sexual IPV*	Longitudinal predictors of intimate partner violence perpetration and victimisation in Latino emerging adults	345	21-24	USA	HIC	Latino adolescents from Southern California	Longitudinal	Sexual IPV	past 12 months	Alcohol consumption	1.03	0.88	1.2	traditional gender roles, Hispanic, depressive symptoms, tobacco use, marijuana use, history of child abuse, witnessed domestic violence
Fulu et al, 2013	Prevalence of and factors associated with male perpetration of intimate partner violence: findings from the UN Multi-country Cross-sectional Study on Men and Violence in Asia and the Pacific.	8006	18-49	China, Bangladesh, Papua New Guinea, Sri Lanka, Cambodia, Indonesia	LMIC	married or cohabiting or dating	cross-sectional	Physical IPV	lifetime	alcohol abuse	1.48	1.13	1.92	Age, site, education, partner status, child abuse history, gender attitudes, quarrelling, number of sexual partners, transactional sex, depression, life satisfaction, interpersonal violence
Fulu et al, 2013, sexual IPV*	Prevalence of and factors associated with male perpetration of intimate partner violence: findings from the UN Multi-country Cross-sectional Study on Men and Violence in Asia and the Pacific.	8006	18-49	China, Bangladesh, Papua New Guinea, Sri Lanka, Cambodia, Indonesia	LMIC	married or cohabiting or dating	cross-sectional	Sexual IPV	lifetime	alcohol abuse	1.48	1.10	1.97	Age, site, education, partner status, child abuse history, gender attitudes, quarrelling, number of sexual partners, transactional sex, depression, life satisfaction, interpersonal violence
Fulu et al, 2013 physical &/sexual	Prevalence of and factors associated with male perpetration of intimate partner violence: findings from the UN Multi-country Cross-	8006	18-49	China, Bangladesh, Papua New Guinea, Sri Lanka,	LMIC	married or cohabiting or dating	cross-sectional	physical and sexual with multiple emotional or economic	lifetime	alcohol abuse	2.25	1.64	3.07	Age, site, education, partner status, child abuse history, gender attitudes, quarrelling, number of sexual partners, transactional sex, depression, life satisfaction, interpersonal violence

Author	Title	Sample size	Age	Country	Setting	Participants	Study design	IPV type	IPV time	Mental health variable	Effect size-AOR	95% LCI	95% UCI	Other covariates adjusted for
	sectional Study on Men and Violence in Asia and the Pacific.			Cambodia, Indonesia										
Machisa et al, 2016	Structural pathways between child abuse poor mental health outcomes and male perpetrated intimate partner violence	416	18+	South Africa	LMIC	married or cohabiting or dating	cross-sectional	physical and or sexual IPV	lifetime	Binge drinking	1.20	0.7	2.1	child trauma score, employment status, ptsd score, depression score, other traumatic life events, gender attitudes
Gonzalez et al,2016	Childhood maltreatment and violence: mediation through psychiatric morbidity	2928	21-34	Great Britain	HIC	married or cohabiting or dating	cross-sectional	Physical IPV	lifetime	Alcohol dependence	4.25	2.03	8.90	age, marital status, ethnicity, social class/unemployment, drug dependence, psychosis, aspd, survey type
Renner LM, Habib L, Stromquist AM, Peek-Asa C, 2014	The association of intimate partner violence and depressive symptoms in a cohort of rural couples.	548	18+	USA	HIC	married	cross-sectional	Physical IPV	Past 12months	Depression	0.9	0.3	2.7	Age, Education, Financial stress
Machisa M.T, Shamu S,2018	Mental ill health and factors associated with men's use of intimate partner violence in Zimbabwe	2838	18+	Zimbabwe	LMIC	married, cohabiting or dating	cross-sectional	physical sexual or psychological IPV	Past 12months	Depression	1.03	0.98	1.08	age, education, child abuse, binge drinking, PTSD, life events, sexual relationship power, gender attitudes
Jewkes et al 2017	Enduring impact of conflict on mental health and GBV perpetration	873	18-49	Papua New Guinea	LMIC	married, cohabiting or dating	cross-sectional	physical sexual or psychological IPV	Past 12months	Depression	1.51	1.03	2.2	conflict trauma perceived enduring impact, alcohol abuse, depressive symptoms, past year drug use

Author	Title	Sample size	Age	Country	Setting	Participants	Study design	IPV type	IPV time	Mental health variable	Effect size-AOR	95% LCI	95% UCI	Other covariates adjusted for
Chirwa et al, 2018	Prevalence and risk factors of physical or sexual violence perpetration amongst men in four districts in the central region of Ghana: Baseline findings from a cluster randomised controlled trial	1973	18+	Ghana	LMIC	married, cohabiting or dating	cross-sectional	Physical and or sexual IPV	Past 12 months	Depression	1.00	0.98	1.02	age, marital status, household food insecurity, child abuse, witnessing mother abuse, gender attitudes, number of sexual partners, transactional sex, depression, other life trauma, partner education, partner employment status
Brown MJ, Perera RA, Masho SW, Mezuk B, Cohen SA,2015	Adverse childhood experiences and intimate partner aggression in the US: sex differences and similarities in psychosocial mediation.	11796	18+	USA (NESAR C 2004-2005)	HIC	men from the general population	cross-sectional	Physical IPV	Past 12months	major depressive episode-depression	1.1	0.94	1.26	age, race/ethnicity, income, education, marital status and insurance status.
Grest CV, Amaro Ho,Unger J, 2007	Longitudinal predictors of intimate partner violence perpetration and victimisation in Latino emerging adults	345	21-24	USA	HIC	Latino adolescents from Southern California	longitudinal	Physical IPV	Past 12months	Depression	0.99	0.96	1.03	traditional gender roles, Hispanic, depressive symptoms, tobacco use, marijuana use, history of child abuse, witnessed domestic violence
Grets et al, 2007 sexual ipv*	Longitudinal predictors of intimate partner violence perpetration and victimisation in Latino emerging adults	345	21-24	USA	HIC	Latino adolescents from Southern California	longitudinal	Sexual IPV	Past 12months	Depression	0.99	0.97	1.01	traditional gender roles, Hispanic, depressive symptoms, tobacco use, marijuana use, history of child abuse, witnessed domestic violence

Author	Title	Sample size	Age	Country	Setting	Participants	Study design	IPV type	IPV time	Mental health variable	Effect size-AOR	95% LCI	95% UCI	Other covariates adjusted for
Peltzer et al, 2017	Victimization and perpetration of intimate partner violence among female and male youth and adults in South Africa	7384	15+	South Africa	LMIC	married, cohabiting or dating	cross-sectional	physical and or sexual IPV	Past 12months	depression or anxiety disorder	2.21	1.43	3.42	Age, education, population group, employment status, health status, alcohol dependence, illicit drug use, multiple sexual partners, victim of violent crime, sex with someone with unknown HIV status, HIV status
Gass JD, Stein DJ, Williams DR, Seedat S, 2011	Gender differences in risk for intimate partner violence among South African adults.	641	18+	South Africa	LMIC	married or cohabiting men	cross-sectional	Physical IPV	Past 12months	mood disorder	2.91	1.5	5.7	age, education, rural vs urban, employment status, income, race, childhood physical abuse, witnessing parental violence, closeness to caregiver, onset of DSMIV disorders- alcohol abuse, PTSD, major depressive disorder, disorders before 20
O'Leary KD, Tintle N, Bromet EJ, Gluzman SF, 2007	Descriptive epidemiology of intimate partner aggression in Ukraine.	558	18+	Ukraine	HIC	married, cohabiting or dating	cross-sectional	Physical IPV	Past 12months	mood or anxiety disorder	1.65	0.39	7.02	
Machisa M.T, Shamu S, 2018	Mental ill health and factors associated with men's use of intimate partner violence in Zimbabwe	2838	18+	Zimbabwe	LMIC	married or cohabiting or dating	cross-sectional	physical sexual or emotional IPV	Past 12months	PTSD	1.02	1	1.03	age, education, child abuse, depression, binge drinking, life events, sexual relationship power, gender attitudes
Jewkes et al, 2017	Enduring impact of conflict on mental health and GBV perpetration	746	18-49	Papua New Guinea	LMIC	married or cohabiting or dating	cross-sectional	physical sexual or emotional IPV	Past 12months	PTSD	1	0.65	1.52	conflict trauma perceived enduring impact, alcohol abuse, depressive symptoms, past year drug use

Author	Title	Sample size	Age	Country	Setting	Participants	Study design	IPV type	IPV time	Mental health variable	Effect size-AOR	95% LCI	95% UCI	Other covariates adjusted for
Brown MJ, Perera RA, Masho SW, Mezuk B, Cohen SA, 2015	Adverse childhood experiences and intimate partner aggression in the US: sex differences and similarities in psychosocial mediation.	11796	18+	USA	HIC	married or cohabiting or dating	cross-sectional	Physical ipv	Past 12months	PTSD	1.28	1.09	1.47	age, race/ethnicity, income, education, marital status and insurance status.
Gass JD, Stein DJ, Williams DR, Seedat S, 2011	Gender differences in risk for intimate partner violence among South African adults.	641	18+	South Africa	LMIC	married or cohabiting men	cross-sectional	Physical ipv	Past 12months	Anxiety disorder including PTSD	2.91	1.5	5.7	age, education, rural vs urban, employment status, income, race, childhood physical abuse, witnessing parental violence, closeness to caregiver, onset of DSMIV disorders- alcohol abuse, PTSD, major depressive disorder, disorders before 20

4.5 Results

4.5.1 IPV perpetration and alcohol abuse

Eighteen studies were included that investigated the association of IPV perpetration and alcohol abuse (Table 1a and b)(1, 19, 26, 65, 162, 287-303). Sixteen of the studies used a cross-sectional design. Ten studies were from low and middle-income country settings. Ten studies measured “alcohol abuse” (19, 23, 26, 162, 287, 290, 292, 294-296, 301) and eight studies used a binge drinking alcohol measure (1, 65, 288, 289, 293, 297, 298, 302). Three studies investigated lifetime IPV perpetration and alcohol abuse.

Fifteen studies investigated the relationship of IPV in the past 12 months and alcohol abuse. These studies were included in a meta-analysis. The studies showed an overall positive association between alcohol abuse and IPV perpetration (OR 1.77 [95%CI 1.37-2.28]). However, the studies showed high heterogeneity ($I^2=86.3\%$) (**Figure 4:2**). Contour-enhanced funnel analysis showed that non-significant studies were published and confirmed that the observed heterogeneity cannot be accounted for by publication bias (**Figure 4:3**).

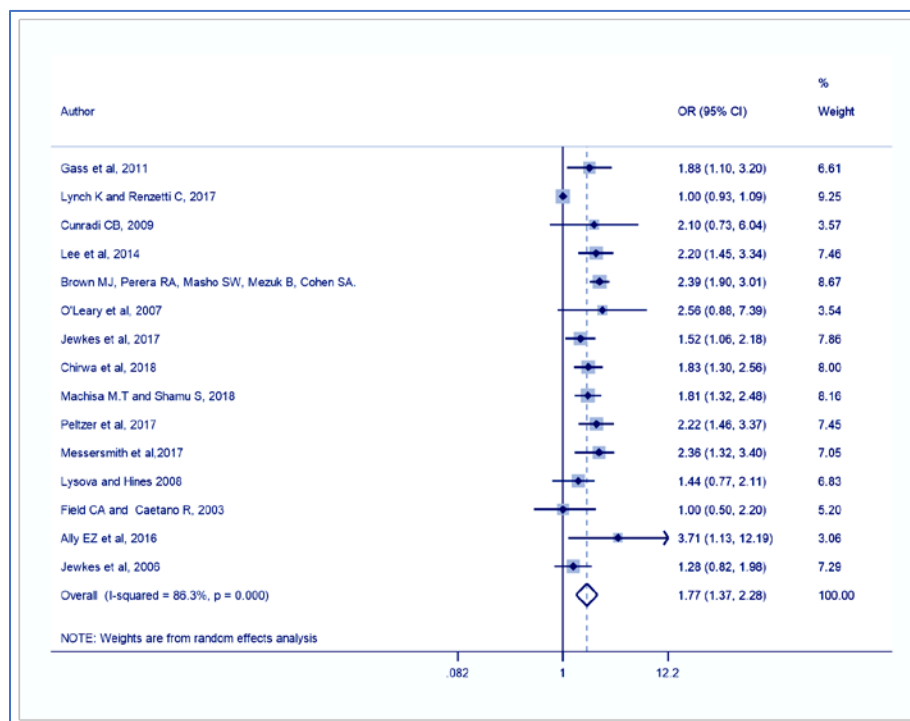


Figure 4:2 Forest plot of studies showing associations between past year IPV perpetration and alcohol abuse

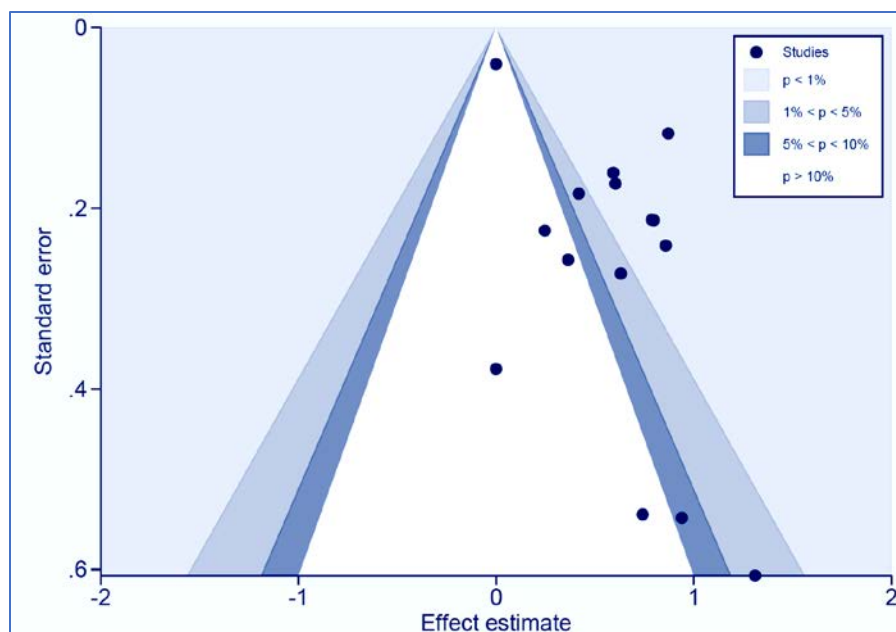


Figure 4:3 Contour-enhanced funnel showing associations between past year IPV perpetration and alcohol abuse

4.5.2 IPV perpetration and depressive symptoms

A total eleven studies investigated the association between current depressive symptoms and IPV. Five studies investigated the association between lifetime IPV perpetration and current depression symptoms (1, 19, 293, 303, 304). The findings from studies were inconsistent: three studies found associations between lifetime IPV (1, 19, 293, 304) and current depressive symptoms and two studies found no association (303, 304).

Nine studies investigated the association between past year sexual and or physical IPV perpetration and current depressive symptoms or mood disorders among married or cohabiting men. Meta-analysis of these studies showed no association between depression or mood disorder and past year IPV perpetration (**Figure 4:4** (OR 1.05; 95% 0.99-1.11)). The studies also had moderate heterogeneity ($I^2=73.8\%$ $p=0.000$). Contour enhanced funnel analysis showed that the observed heterogeneity could not be attributed to publication bias. Six of the studies reported non-significant association between depression and IPV perpetration (**Figure 4:5**)

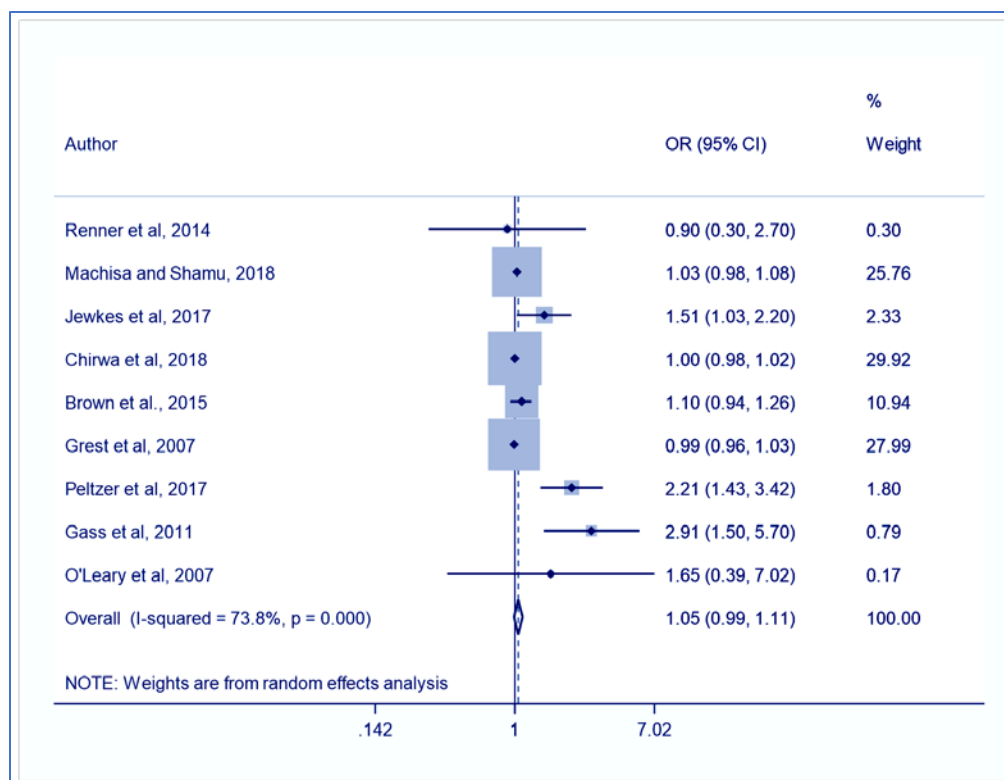


Figure 4:4 Meta-analysis of studies investigating depression or mood disorder and past year IPV perpetration

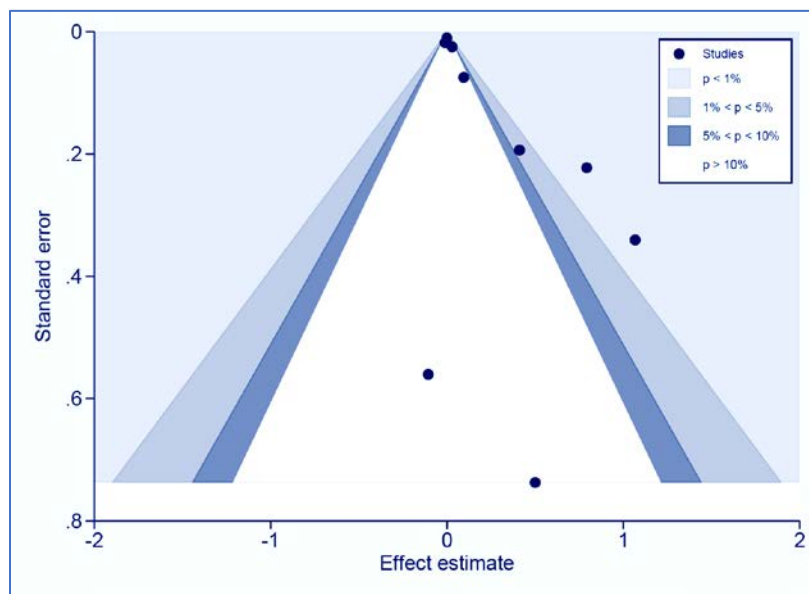


Figure 4:5 Contour-enhanced funnel showing associations between past year IPV perpetration and depressive symptoms

4.5.3 IPV perpetration and PTSD

Two studies investigated the association of current PTSD symptoms and lifetime IPV and found inconsistent associations (1, 293). Four studies investigated the associations between PTSD or anxiety symptoms (including PTSD measures) and past year IPV perpetration (26, 65, 293, 301). Overall three studies found an association between PTSD symptoms and past IPV perpetration. (OR 1.21 [95%CI 0.96-1.54]). Jewkes et al (2017) study in post conflict Papua New Guinea showed no association between PTSD symptoms and past year IPV perpetration. The studies included in the meta-analysis also had high heterogeneity ($I^2=83.5\%$; $p=0.000$) indicating probability for publication bias (Figure 4:6). However, because the studies were few, we were limited in establishing this because tests require more studies.

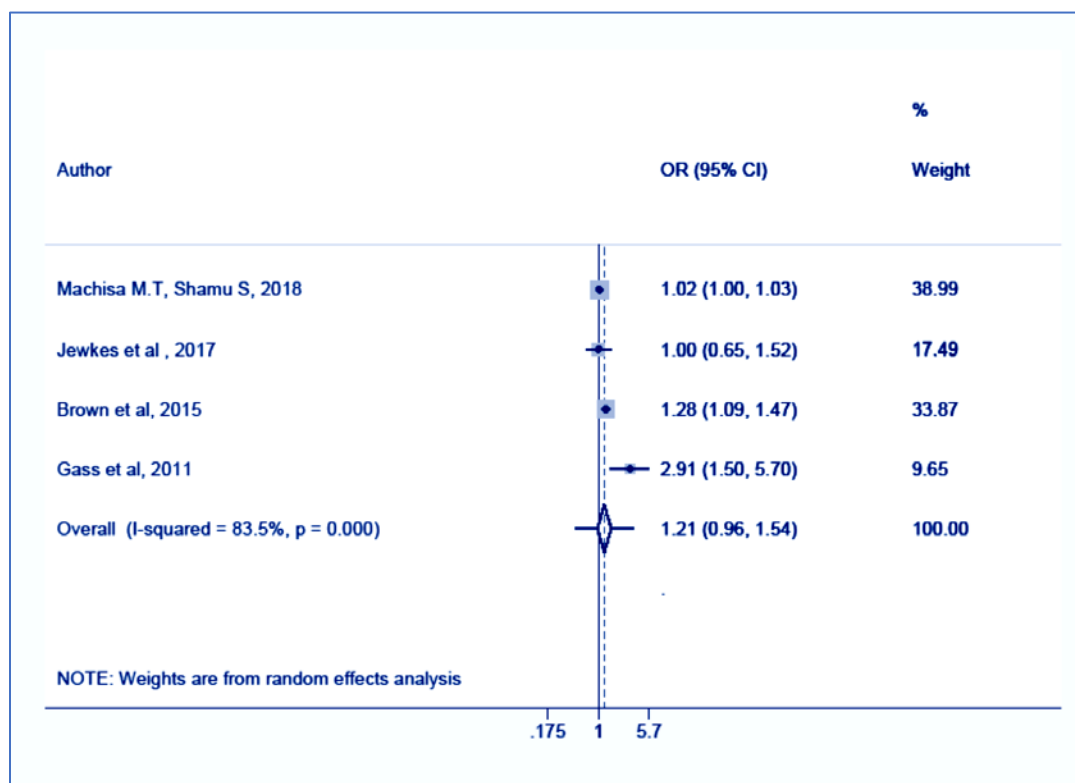


Figure 4:6 Meta-analysis of studies investigating PTSD symptoms and past year IPV perpetration

4.5.4 Studies adjusting for multiple disorders

Several studies adjusted for more than one disorder in multivariate analysis (26, 65, 292, 293, 301). Gass et al. (2011) found significant positive associations between past year IPV perpetration with alcohol abuse, depressive or mood disorders and PTSD or anxiety disorder (26). Jewkes et al. (2017) measured binge drinking, depressive symptoms and PTSD and past year IPV perpetration. Binge drinking and depressive symptoms were significantly associated with IPV perpetration. IPV perpetration was not associated with

PTSD symptoms (65). Similarly, Machisa et al. (2018) found significant associations between past year IPV perpetration and binge drinking and marginal associations with PTSD symptoms, but depressive symptoms were not associated with IPV perpetration (293). Likewise, Brown et al. (2015) found associations between IPV perpetration with alcohol abuse, a marginal association with PTSD symptoms and no significant associations with depressive symptoms (301). Chirwa et al. (2018) found significant associations with alcohol abuse and no association with depressive symptoms (292). Peltzer et al. (2017) found significant associations between past year IPV and alcohol abuse and depressive symptoms (294). The associations between IPV and multiple disorders may be indicative of comorbidity of disorder.

4.6 Discussion

We aimed to estimate the associations between alcohol abuse, mental ill health symptoms and IPV perpetration by adult males in the general population. We identified 22 papers, with the majority examining the association between IPV perpetration and alcohol abuse. Meta-analyses showed that alcohol abuse and PTSD symptoms are associated with past year IPV perpetration in extant literature. No such association was found in extant studies measuring depressive symptoms and IPV perpetration by men. Studies included in meta-analyses were moderate to highly heterogenous, which was not accounted for by publication bias reflecting that the studies may have been truly heterogenous in terms of their settings or other factors.

The association of alcohol misuse and male perpetrated physical IPV has been studied extensively over time. Different alcohol misuse measures and consumption patterns have been used across studies ranging from no alcohol, alcohol consumption, binge drinking or problem drinking. The type of alcohol misuse measure used affects the observed association. Measures of binge drinking and problem drinking show stronger associations with IPV perpetration compared to when participants are asked whether they drank alcohol or not (126). This is the first meta-analysis, to our knowledge, to assess exclusive meta-analytic relationships between IPV perpetration and alcohol abuse among men from the general population in population-based studies, since all previous reviews have included studies of smaller sample sizes and clinical, military or convenience samples (18, 126, 229).

Similar to previous reviews with different methodologies and sample considerations, we found positive significant associations between alcohol abuse and past year IPV perpetration (18, 54, 126). However, the overall association between alcohol and IPV in the general population samples is weaker than in previous meta-analysis that included convenience and clinical samples. There is evidence that the association between alcohol and IPV is impacted by the types of samples included.

Firstly, prevalence of alcohol use or abuse is higher in clinical, military, court-referred offender, intervention or batterer samples than in representative community samples (120, 153, 305). Secondly, associations between alcohol and IPV are stronger in clinical, military samples and studies comparing clinical to non-clinical community samples than they are in general population-based samples (126). Moreover, previous reviews included independent bivariate associations between alcohol measures, depression and PTSD and found small to medium effects of mental health factors on IPV perpetration (18, 54, 81, 122, 126). Because IPV perpetration has many risk factors that span the individual, relational, community and societal levels of the socio-ecological model, it is possible that significant independent associations between variables may weaken or become insignificant in multi-variate analyses that adjust for other potentially confounding variables (54).

We found the meta-analytic relationship between PTSD and IPV perpetration was marginally significant and weaker than that reported in meta-analysis that included military, clinical or court-referred offender samples (139, 180). These findings suggest that data from the general population is essential for considering the impact of mental ill health on men's propensity for IPV perpetration.

No overall association was found between depression and IPV perpetration. However, in studies measuring multiple disorders the reported associations from regression models were varied showing the importance of adjusting for more than one disorder in analysis. Notwithstanding, there is evidence from literature suggesting network theories of mental disorders including that PTSD symptoms are a risk factor for depression and that depression is a risk factor for alcohol abuse (206, 208, 209, 306). Moreover, PTSD is a risk factor for alcohol abuse (210, 305, 306). Yet, from this review, only a few of the papers investigated the impact of alcohol abuse and depression or PTSD. The impact of comorbid mental ill health in most studies that investigated only the association of alcohol misuse and IPV are thus unclear. It is possible that by not adjusting for mental ill health, researchers may be under-estimating the relationship between other mental ill health and IPV. Therefore, our findings show the need for studies to reflect the inter-relationships between mental health related, substance abuse and other risk factors for IPV perpetration. Furthermore, these findings show the importance of addressing men's mental ill health in particular alcohol abuse which had stronger associations with IPV perpetration than the mental ill health symptoms. Addressing these co-occurring issues will be important to reducing adult male IPV perpetration.

This work showed the limited literature available from longitudinal studies which provide better estimates of associations between risk factors and outcomes. Most studies included in this review were cross-sectional, therefore are limited in establishing causality and the direction of influence of variables.

Additionally, our work shows that is that while many studies have been published investigating the associations between alcohol abuse, mental health symptoms and IPV perpetration, many screened, but excluded studies used convenient, non-population- based samples that are not generalisable to the general population. Also, the majority of studies identified here used a lifetime measure which is not a good indicator of ongoing and current IPV.

However, the approach taken in this work in restricting the meta-analysis to IPV reported in the past year and current or past year alcohol abuse, PTSD or depression implied that the directionality of the observed associations was constrained in that the outcome and mental health or alcohol abuse was measured simultaneously or for the same time period. Conversely when lifetime IPV measures and current mental health symptoms are measured it becomes difficult to avoid the possibility that the perpetration could have occurred prior to the mental ill health or alcohol abuse. Other studies have suggested bidirectional associations such that IPV perpetration could predict MH outcomes (307, 308). Accordingly, future work should focus on high quality, methodologically sound, longitudinal, general population and larger sample studies that examine the associations between ongoing IPV perpetration and transitioning mental health.

These findings should be viewed in light of limitations. Firstly, studies were searched in two databases and some articles not archived on the databases could have been missed out introducing potential for search bias. Secondly articles that were not available in English were excluded. There could have been study selection or inclusion bias but the extent of this was mitigated by two reviewers participating independently in the screening process. Moreover, some studies were excluded due to the lack of response from authors to provide effect sizes of mental health risk factors that may have been adjusted for in analysis but not presented in tables of multivariable regression results.

4.7 Conclusion

To our knowledge, this work is the first that has investigated associations between alcohol abuse, depression and PTSD symptoms and IPV perpetration from studies using general population samples only and where adjusted effects are reported. By including only studies reporting multi-variate associations, this review may be more accurately reflecting on the associations between the mental ill health symptoms, alcohol abuse and IPV perpetration in the general population. These findings show a critical gap in studies that investigate the contribution of mental ill health and alcohol abuse to male perpetrated IPV. Future IPV research studies may need to consider including measures of PTSD, depression and alcohol abuse as potential risk factors. Extensive research on mental ill health risk factors for IPV holds promise to generate more evidence from different contexts to guide the development of interventions to reduce the global burden of IPV.

05

Paper Two

5 STRUCTURAL PATHWAYS BETWEEN CHILD ABUSE, POOR MENTAL HEALTH OUTCOMES AND MALE-PERPETRATED INTIMATE PARTNER VIOLENCE (IPV)

Citation: **Machisa M.T.**, Christofides N., Jewkes R. (2016) Structural Pathways between Child Abuse, Poor Mental Health Outcomes and Male-Perpetrated Intimate Partner Violence (IPV). PLoS ONE 11: e0150986.

5.1 Abstract

Background

Violent trauma exposures, including child abuse, are risk factors for PTSD and comorbid mental health disorders. Child abuse experiences of men exacerbate adult male-perpetrated intimate partner violence (IPV). The relationship between child abuse, poor mental health and IPV perpetration is complex but research among the general population is lacking. This study describes the relationship and pathways between history of child abuse exposure and male-perpetrated IPV while exploring the potentially mediating effect of poor mental health.

Methods

We analysed data from a randomly selected, two-stage clustered, cross-sectional household survey conducted with 416 adult men in Gauteng Province of South Africa. We used multinomial regression modelling to identify associated factors and Structural Equation Modelling (SEM) to test the primary hypothesis that poor mental health (defined as abusing alcohol or having PTSD or depressive symptoms) mediates the relationship between child abuse and IPV perpetration.

Results

Eighty eight percent of men were physically abused, 55% were neglected, 63% were emotionally abused and 20% were sexually abused at least once in their childhood. Twenty four percent of men had PTSD symptoms, 24% had depressive symptoms and 36% binge drank. Fifty six percent of men physically abused and 31% sexually abused partners at least once in their lifetime. Twenty two percent of men had one episode and 40 % had repeat episodes of IPV perpetration. PTSD symptomatology risk increased with severity of child trauma and other trauma. PTSD severity increased the risk for binge drinking. Child trauma, other trauma and PTSD symptomatology increased the severity of depressive symptoms. PTSD symptomatology was comorbid with alcohol abuse and depressive symptoms. Child trauma, having worked in the year before the survey, other trauma and PTSD increased the risk of repeat episodes of IPV perpetration. Highly equitable gender attitudes were protective against single and repeat episodes of IPV perpetration.

There was a direct path between the history of child trauma and IPV perpetration and three other indirect pathways showing the mediating effects of PTSD, other trauma and gender attitudes.

Conclusions

Child trauma is a risk factor for both poor mental health and male-perpetrated IPV among men in Gauteng. Male-perpetrated IPV in these settings should be explained through a combination of the Trauma, Feminist, and Intergenerational Transmission of Family Violence theories. Prevention interventions for male-perpetrated IPV in South Africa need to incorporate strategies and therapies to address poor mental health conditions.

Keywords: intimate partner violence, perpetration, PTSD, child abuse, trauma, depression, binge drinking

5.2 Introduction

Effects of child abuse and neglect in adults include persisting mental health problems such as personality disorders, PTSD, dissociative disorders, depression, anxiety disorders and psychosis (163, 309). PTSD, depression and alcohol abuse are comorbid and among the endemic mental health problems in South Africa (243, 310, 311). The high prevalence of PTSD symptoms in the country is attributed to multiple violence exposures both in the pre and post-apartheid eras (230, 311). The violence exposures include child abuse, interpersonal and political violence throughout the life course (173, 175, 250, 312).

The Trauma theory posits that life experiences of terror, violence and abuse whether in combat or at home are harmful and lead to psychological effects (93, 94). Victims of abuse therefore process their experiences as traumatic events similar to the response in individuals with post-traumatic stress (93). Having PTSD is also a risk factor for other long-term and negative relational outcomes (92). To date this theory has been substantiated by work among military veterans in developed countries and fewer studies have been conducted in general populations in low and middle-income countries (313-315). The body of knowledge showing a relationship between PTSD and male-perpetrated IPV in the general non-clinical populations is still emerging (316)

In South Africa, IPV (emotional or psychological, economic, physical and sexual violence) and rape are pervasive social problems. In a study conducted in the Eastern Cape and KwaZulu Natal Provinces, 28% of men reported rape perpetration and 42% of men reported being physically violent towards an intimate partner (38). More recent studies reported lifetime prevalence of physical IPV perpetration of 19% to 33%; lifetime prevalence of sexual IPV perpetration of 5% to 19% ; and lifetime prevalence of non-partner rape perpetration of 9 % to 37% (25). Research in South Africa has shown child abuse to be a risk factor for IPV perpetration (59, 96, 98, 133, 317). To date, male-perpetrated IPV in South Africa has mostly been explained through Feminist theory which posits that IPV has its root in gender inequality and socialization that is the result of patriarchal societal norms in which men dominate over women.

The mediating role of mental health in the association between being a victim of child abuse and becoming an adult male IPV perpetrator has not been extensively investigated. It is critical to further elucidate the complex relationship in a South African setting where the three constructs (poor mental health, child abuse and IPV) overlap as public health concerns.

We have analysed data to further understand the relationship between child abuse, poor mental health and IPV perpetration in Gauteng province of South Africa in a sample of men from the general population. Our study obtained self-report data from adult males on traumatic events and other factors under conditions of complete confidentiality and anonymity. We aimed to test four hypotheses: first that child physical and sexual abuse experienced by men are traumatic events that increase the risk for PTSD, depression and binge drinking; secondly PTSD and other poor mental health conditions, due to child physical or sexual abuse or other traumatic experiences, increases the risk to aggression and partner abuse among male child abuse victims compared to men who were not victims; thirdly that PTSD and the poor mental health symptoms: alcohol abuse and depression mediate the relationship between experiencing child physical or sexual abuse and the risk of becoming an IPV perpetrator as an adult; and lastly that there is a direct relationship between child abuse history and IPV perpetration.

5.3 Methods

In 2010, we conducted a cross-sectional population-based household survey of men aged 18 years and older in Gauteng province of South Africa. A two-stage sampling design was implemented. Seventy-five primary Sampling Units (PSUs) were randomly sampled and 20 dwelling points were selected per PSU. Within each dwelling point we randomly selected one household and within each household we selected one eligible participant. Researchers did not replace or substitute households or individuals if they did not have an eligible member or selected person was unavailable or unwilling to be interviewed. Ethics approval for this study was given by the University of Witwatersrand Faculty Of Health Science Human Ethics Committee and the Medical Research Council Ethics Review Committee. The WHO Ethical and Safety Recommendations for Research on Domestic Violence against Women were followed in the study to ensure safety of the researchers and participants (318). Participants gave their written informed consent to participate in the study. Researchers assured participants that their interview would be anonymous, and data kept confidential. Interviews were conducted with 487 men who were mentally competent and stayed four nights a week or more in a selected household. Highly trained male interviewers administered the questionnaire in the participants preferred language i.e. English Zulu, Sotho or Afrikaans. Responses from the participants were captured using Personal Digital Assistants (PDAS). All interviews were conducted in private to achieve more open disclosure of sexual behaviours (22). For the purpose of this study, data used were anonymous and did not contain any identifiable indicators.

5.3.1 The questionnaire

The main outcome of the study was sexual or physical IPV perpetration. IPV was measured using the WHO Multi-country Study on Women's Health and Domestic Violence: Core Questionnaire and WHO Instrument – Version 9 designed for use in developing countries (319). Men were asked questions about perpetration of violence against female partners. Questions contained specific, objective descriptions of violent behaviour by men and asked about perceived frequency. Men were asked about perpetration of sexual violence against women who were not girlfriends, and also about their experiences of sexual victimization. Physical IPV perpetration included any of the following acts of violence (5 items): slapping, throwing dangerous objects, pushing, kicking, hitting, dragging, choking, beating, burning or threatening a current or previous intimate partner with a weapon. Sexual IPV perpetration included any of the following: physically forced non-consensual sex or sex because their partner was afraid of what he might do or forcing a partner to do something sexual that a partner found degrading or humiliating (3 items). For our analysis we created a combination variable that included physical and sexual IPV with the following categories: no sexual or physical IPV, sexual or physical IPV once and sexual or physical IPV more than once. We used this approach because previous research has shown overlap between sexual and physical IPV perpetration. Men who are physically violent towards their partners are at increased risk of risky sexual behaviours and to have raped (55). We adopted this approach which has also been used in other research (19).

5.3.1.1 *Child abuse*

The main exposure variable was child abuse. We used a modified version of the short form of the Childhood Trauma Questionnaire (CTQ) (13 items, Cronbach's $\alpha=0.75$) (320, 321). The CTQ had a four-point Likert range of responses. Participants were asked whether they had experienced each act in their childhood. Possible responses were “never” (0), “sometimes” (1), “often” (2), or “very often” (3). For this study we created categorical variables for four dimensions of adversity namely physical abuse and punishment; sexual abuse; emotional abuse; or emotional neglect (**Table 5:1**). We also created a continuous variable of child trauma by summing up the scores from all the CTQ item responses. We used the continuous child trauma score in regression and SEM model analyses.

Table 5:1 Childhood trauma dimensions and scale items.

Before I reached 18:	
Emotional neglect-	Emotional abuse
I did not have enough to eat.	I saw or heard my mother being beaten by her husband or boyfriend.
I lived in different households at different times.	I was insulted or humiliated by someone in my family in front of other people.
One or both of my parents were too drunk to take care of me.	I was told I was lazy or stupid or weak by someone in my family.
I spent time outside the home and none of the adults at home knew where I was.	
Sexual abuse	Physical abuse
Someone touched my buttocks or genitals or made me touch them when I did not want to.	I was beaten at home with a belt or stick or whip or something else which was hard.
I had sex with a woman who was more than 5 years older than me.	I was beaten so hard at home that it left a mark or bruise.
I had sex with someone because I was threatened or frightened or forced.	I was beaten or physically punished at school by a teacher.
Gender Equitable Men Scale	
You don't talk about sex, you just do it.	Men are always ready to have sex.
There are times when a woman deserves to be beaten.	I would be outraged if I asked him to use a condom.
Changing nappies, giving kids a bath, and feeding the kids are the mother's responsibility.	If someone insults me, I will defend my reputation, with force if I have to.
It is a woman's responsibility to avoid getting pregnant.	To be a man, you need to be tough.
A man should have the final word about decisions in his home.	Men should be embarrassed if they are unable to get an erection during sex.

5.3.1.2 Poor mental health

In this study, we hypothesized that poor mental health has a mediating effect in the relationship between child abuse (exposure) and adult IPV perpetration (outcome). We measure poor mental health outcomes namely PTSD, depression and alcohol abuse. PTSD was measured using the Harvard Trauma Questionnaire (HTQ) which has been validated in other populations and cultural settings (30 items, Cronbach's alpha= 0.95). Respondents were asked whether they were bothered by each symptom in the past weeks and rated on a four-point Likert scale: "not at all" (0), "a little" (1), "quite often" (2) and "extremely often" (3). Scores for each respondent that responded to all the items were summed to give a PTSD scale score. Only seven percent of men scored above the critical cutoff of 75 that is used for PTSD screening in refugee populations (322-324). Because we are unaware of any previous studies validating cut off points of the HTQ in a general South African population sample we considered a conservative score equal or greater than 25 as being 'checklist-positive' for PTSD.

Depressive symptoms were measured using the 20-item Center for Epidemiologic Studies Depression (CESD) self-report measure which was designed for use in the general population to assess current symptoms of depression (Cronbach's $\alpha = 0.86$) (325). The CESD scale assesses how often an individual experienced symptom associated with depression over the past week. The items were responded to on a four-point Likert scale, with response categories ranging from "rarely or none of the time" (0) to "most or all of the times" (3) which we summed up to a total CESD score. Higher scores indicated more severe depressive symptoms (range of possible scores 0 to 60). We used the CESD scale as a continuous scale and as a dichotomous variable with a cut-off score of 16. Previous research in South Africa have used the 16+ as a cut-off point for probable depressive symptoms in community-based research studies (216, 326)

We used two items of the Alcohol Use Disorders Identification Test (AUDIT) scale (327) to assess for hazardous alcohol use. We assessed item 1: How often do you have a drink containing alcohol? Responses were never (0), monthly or less (1), 2-4 times a month (2), 2-3 times a week (3), 4+ times a week (4). We also assessed item 3: How often have you had 5 or more drinks on one occasion in the last year . Responses were: never (1), less than monthly (2), monthly (3), weekly (4), and daily or almost daily (5). The measures are part of AUDIT C (first three questions on the Audit scale). For regression analysis we confined measurement of alcohol to AUDIT-3 (third question). We considered a score of 4 or more (equivalent to drinking 5 or more drinks on one occasion weekly or daily) as binge or hazardous drinking. Several studies have found that both the AUDIT-C and AUDIT-3 are comparable to the original AUDIT across various settings and different racial or ethnic groups (328-331)

5.3.1.3 Other trauma

We also measured other trauma exposures through an adapted Life Event Checklist from the PTSD Checklist (10 items). Participants were asked whether they had experienced any of the following traumatic events imprisonment/detainment, civil unrest/war, serious injury requiring hospitalization, being close to death, witnessing a murder of family or friend, unnatural death of family or friend, witnessing the murder of stranger/s, torture, robbed or carjacked at gun or knife point and kidnapping. Participants had to respond for each of the checklist items with yes (1) and no (0) responses. For this analysis we summed the scores for the items including witnessing murder of someone close, stranger murder, torture, death, and having been kidnapped to create a continuous "other trauma exposure" variable. A greater score was indicative of more lifetime traumatic events or exposures. Because other traumatic exposure is a known risk factor for PTSD we adjusted for this continuous variable in all regression analysis with a PTSD outcome.

We created another dichotomous trauma events exposure with a score of zero being no other trauma exposure and a score of one or more being “other trauma exposure”. We used the dichotomous variable in descriptive cross tabulation methods.

Risk factors identified in previous research and collected in the survey included the socio-demographics age, education, employment status and number of sexual partners in the year before the study. To measure masculinities and gender attitudes, we used the Gender Equitable Men Scale (GEMS) (10 items, Cronbach’s alpha= 0.71) (**Table 5:1**). We categorized the GEMS score into three categories: low, neutral and high based on tertiles of the distribution.

5.3.2 Statistical analysis

All data analysis was conducted in Stata 13 accounting for the stratified, two-stage survey design with participants clustered within the PSUs. We cleaned the data set and excluded men that had never been in an intimate relationship or who had missing data on key variables (n=71: 23 cases of men who were never in an intimate relationship, 15 cases with missing data on child trauma variables, 1 case with missing data on the CESD variables, 1 case with missing data on the PTSD variables, 31 cases with missing data on IPV variables). We recoded data to create the child abuse, poor mental health and IPV categorical variables.

We assessed internal consistency of all the scales by evaluating the Cronbach’s alpha. We conducted bivariate analyses of the outcome variable against the exposure variable and other selected socio-demographic variables. We conducted bivariate analyses and reported on results as percentages together with the Pearson chi squared statistic test for differences in proportions. We used the 0.05 level of significance as a reference (**Table 5:2**).

To measure the association between child abuse exposure and IPV outcome we used the three-category compound variable for IPV perpetration: no sexual or physical IPV; one episode of sexual or physical IPV only; and more than one episode or type. The child physical and sexual abuse variables were dichotomous (never vs ever). We conducted bivariate logistic regression models to test the association between child abuse variables and the poor mental health outcomes (**Table 5:3**). We then conducted multinomial regression analysis to test child abuse variables as risk factors for sexual or physical IPV perpetration while adjusting for poor mental health variables and other potential confounding variables that had a significance ≤ 0.3 in bivariate analysis (**Tables 5:4**). We used a stepwise backwards elimination to drop variables with non-significant p-values until the models appeared parsimonious. We report on the odds ratios and the alpha statistic at the significance level of 0.05.

We conducted Structural Equation Modelling (SEM) with maximum likelihood estimation to test pathways/structural relationships between child abuse, poor mental health and sexual or physical IPV perpetration. First, we determined the appropriate latent factors for child abuse and poor mental health and IPV perpetration through fitting separate measurement models. We then fit models to test the relationship of child trauma (as a latent factor), the poor mental health dimensions (as separate observed variables) and sexual or physical IPV perpetration (also as observed variable). We included the gender attitudes variable (observed) to adjust for the relationship between child trauma and IPV perpetration; and other traumatic exposures (observed) to adjust from the relationship between child trauma and PTSD symptomatology. We also adjusted the model by adding the employment status variable (observed). We tested the fit of the model by assessing the Comparative Fit Index and the Root mean squared error of approximation (RMSEA). The standardized parameter estimates are displayed in the model and tabulated (**Table 5:5**). The data fit the model well and the fit indices are shown in **Table 5:6**.

5.4 Results

The study sample included 416 men above the age of 18 and had 77% response rate. The majority of men (38%) were aged 18-29 years, 35% were aged 30-44 and 27% were above 45 years. Over half the men had completed high school education (54%), 68% were employed in the year before the survey. Ninety-one percent of men were in current relationships at the time of the survey and 45% had two or more sexual partners in the year preceding the survey. As children, 80% of men were physically abused, 55% were neglected, 63% were emotionally abused and 20% were sexually abused. Twenty five percent of men had witnessed the abuse of their mother. Three quarters of men (75%) drank alcohol in the year preceding the survey, 36% binge drank weekly or daily, 24% had depression symptoms and 24% had PTSD symptoms. Thirty one percent of men perpetrated sexual IPV and 56% perpetrated physical IPV in their lifetime. Twenty two percent of men had perpetrated sexual or physical IPV on one occasion and 40% perpetrated sexual or physical IPV on more than one occasion.

Table 5.2 shows the characteristics of men by IPV perpetration group. Fewer men who had perpetrated physical IPV had completed high school but schooling otherwise did not vary across groups. Men who perpetrated physical IPV were more often employed than those who didn't, but employment did not vary with sexual IPV perpetration. Men in current relationships more often reported sexual IPV perpetration compared to those not in relationships at the time of the survey. More men that were physically or sexually abused as children, perpetrated physical IPV compared to men who had not been victimised but there was no difference in sexual IPV perpetration. More men who had PTSD or depressive symptoms perpetrated sexual or physical IPV at least once in their lifetime.

Table 5:2 Characteristics of men who perpetrated IPV.

	SEXUAL IPV NEVER		SEXUAL IPV ONCE OR MORE			PHYSICAL IPV NEVER		PHYSICAL IPV ONCE OR MORE			NO SEXUAL /PHYSICAL IPV		ONE EPISODE OF S/P IPV		MORE THAN ONE EPISODE OF S/P IPV		
	N	%	N	%	P value	N	%	N	%	P value	N	%	N	%	N	%	P value
Age group																	
18–29 years	105	36.6	53	41.1	0.08	74	40.7	84	35.9	0.1	60	38	38	24.1	60	38	0.3
30–44 years	95	33.1	52	40.3		54	29.7	93	39.7		47	32	32	21.8	68	46.3	
45+ years	87	30.3	24	18.6		54	29.7	57	24.4		50	45.1	23	20.7	38	34.2	
Education																	
High school incomplete and lower	137	47.7	56	43.4	0.5	72	39.6	121	51.7	0.01	68	35.2	41	21.2	84	43.5	0.3
High school complete and higher	150	53.3	73	56.6		110	60.4	113	48.3		89	40	52	23.3	82	36.8	
Employed in past 12 months	193	67.3	90	69.8	0.7	114	62.6	169	72.2	0.02	100	35.3	62	21.9	121	42.8	0.3
In an intimate relationship	255	88.9	124	96.1	0.01	163	89.6	216	92.3	0.4	141	37.2	84	22.2	154	40.6	0.6
Child abuse																	
Any child physical abuse	252	87.8	114	88.4	0.9	150	41	216	59	0.009	132	36.1	81	22.1	153	41.8	0.1
Any child sexual abuse	52	18.1	33	25.6	0.1	29	34.1	56	65.9	0.05	21	24.7	24	28.2	40	47.1	0.04
Any child emotional abuse	171	59.6	94	72.9	0.03	96	52.8	169	72.2	<0.001	85	54.1	51	54.8	129	77.7	<0.001
Any child emotional neglect	162	56.5	69	53.5	0.5	99	54.4	132	56.4	0.8	87	55.4	46	49.5	98	59	0.4
Other trauma exposures (> = 1)	248	86.7	115	90.6	0.2	146	80.2	217	93.9	<0.001	126	80.3	81	88	156	95.1	0.004
Mental health																	
Binge drinking	108	37.6	40	31	0.2	66	44.6	82	55.4	0.9	54	36.5	40	27	54	36.5	0.3
Depression (> = 16)	56	19.5	42	32.6	0.01	32	17.6	66	28.2	0.004	26	14.7	49	27.6	49	29.5	0.01
PTSD (> = 25)	54	18.8	44	34.1	0.003	29	15.9	69	29.5	0.001	23	23.5	23	23.5	52	53.1	0.005
Gender equitable norms																	
Low	24	8.3	15	11.6	0.5	8	4.4	31	13.3	0.004	6	15.4	14	35.9	19	48.7	0.005
Neutral	172	59.9	77	59.7		105	57.7	144	61.5		87	34.9	56	22.5	106	42.6	
High	91	31.7	37	28.7		69	37.9	59	25.2		64	50	23	18	41	32	
Total	287	69	129	31		182	43.8	234	56.3		157	37.7	93	22.4	166	40	

Table 5:3 shows associations between child trauma (continuous variable inclusive of all child abuse dimensions) and the poor mental health conditions. PTSD was associated with child trauma, other traumatic exposures, binge drinking and depressive symptoms. Depressive symptoms were also associated with child trauma and other traumatic exposures

Table 5:3 Associations between poor mental health outcomes, child abuse and other violence exposures

	PTSD		Binge drinking		Depressive symptoms	
	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value
Child trauma score	1.1 (1.1; 1.2)	<0.001	1.1 (0.9; 1.0)	0.5	1.2 (1.1;1.3)	<0.001
Other trauma exposures	8.5(1.8;39.2)	0.007	1.5 (0.8;3.0)	0.2	1.5(1.2;1.7)	<0.001
PTSD			1.7(1.0;2.7)	0.04	12.5(6.9;22.8)	<0.001
Binge drinking					1.3(0.7;2.4)	0.7

Table 5:4 shows that having mid-level gender attitudes [AOR 0.3; 95% CI (0.1; 0.9)] or highly gender equitable attitudes [AOR 0.2; 95%CI (0.1; 0.5)] (compared with very inequitable attitudes) was protective to one episode of IPV perpetration. Experience of child trauma and other traumatic events, having PTSD, and having been employed were associated with repeat episodes of IPV perpetration. High equitable gender attitudes were protective against repeated IPV perpetration. The more severe the childhood trauma, other trauma and PTSD symptoms, the higher the risk of repeated IPV perpetration.

Table 5:4 Multinomial regression model for IPV perpetration.

	One episode of Physical /sexual IPV perpetration		More than one episode of Physical /sexual IPV perpetration	
	AOR (95% CI)	P value	AOR (95% CI)	P value
Child trauma score	1.0 (0.9;1.1)	0.9	1.1 (1.0;1.2)	0.02
Worked in 12 months before survey	1.3 (0.7;2.4)	0.4	1.9 (1.1;3.4)	0.02
PTSD score	1.0 (1.0;1.1)	0.1	1.03 (1.0;1.1)	0.02
Depression score	1.0 (1.0;1.1)	0.7	1.0 (1.0;1.1)	0.9
Binge	1.2 (0.7;2.1)	0.5	0.8 (0.5; 1.4)	0.4
Other trauma exposures	1.2 (0.9;1.7)	0.1	1.6 (1.2;2.1)	<0.001
Low inequitable gender attitudes	1.0		1.0	
Mid-level gender attitudes	0.3 (0.1; 0.9)	0.03	0.6 (0.2;1.7)	0.3
Highly equitable gender attitudes	0.2 (0.1;0.5)	0.002	0.3 (0.1;0.8)	0.02

Fig 5:1; Tables 5:5 and 5:6 show the final SEM model estimating the associations between child abuse, poor mental health and sexual or physical IPV perpetration by men while adjusting for gender attitudes, other trauma exposures and employment.

Table 5:5 Structural model statistics.

	Coefficient (β)	P value
Gender attitudes		
➤ Child trauma score	-4.9	0.01
Other trauma score		
➤ Child trauma score	2.0	<0.001
PTSD		
➤ Other traumatic exposure	3.5	<0.001
➤ Child trauma score	18.3	0.003
Depression		
➤ PTSD	0.4	<0.001
➤ Child trauma	4.6	0.01
Binge drinking		
➤ Depression	-0.1	<0.001
➤ PTSD score	0.07	<0.001
Worked		
➤ PTSD score	-0.003	0.04
IPV perpetration		
➤ Gender attitudes	-0.04	<0.001
➤ Child trauma score	0.7	0.02
➤ PTSD	0.01	<0.001
➤ worked	0.2	0.02
➤ Other traumatic exposure	0.1	<0.001

Table 5:6 Model Goodness of Fit statistics.

Fit statistic	Value
<i>Likelihood ratio</i>	
p > chi2	<0.001
<i>Population error</i>	
RMSEA	0.045
<i>Baseline comparison</i>	
CFI	0.943
TLI	0.912

There is a direct path from childhood trauma to IPV perpetration. The relationship is also mediated by PTSD, other trauma and gender attitudes. PTSD mediates the relationship of child trauma with depressive symptoms; and other trauma with IPV perpetration. The relationship of PTSD and binge drinking is mediated by depressive symptoms. There are no paths from depressive symptoms or binge drinking to IPV perpetration. There is also a path from PTSD to IPV mediated by employment status (**Figure 5:1**).

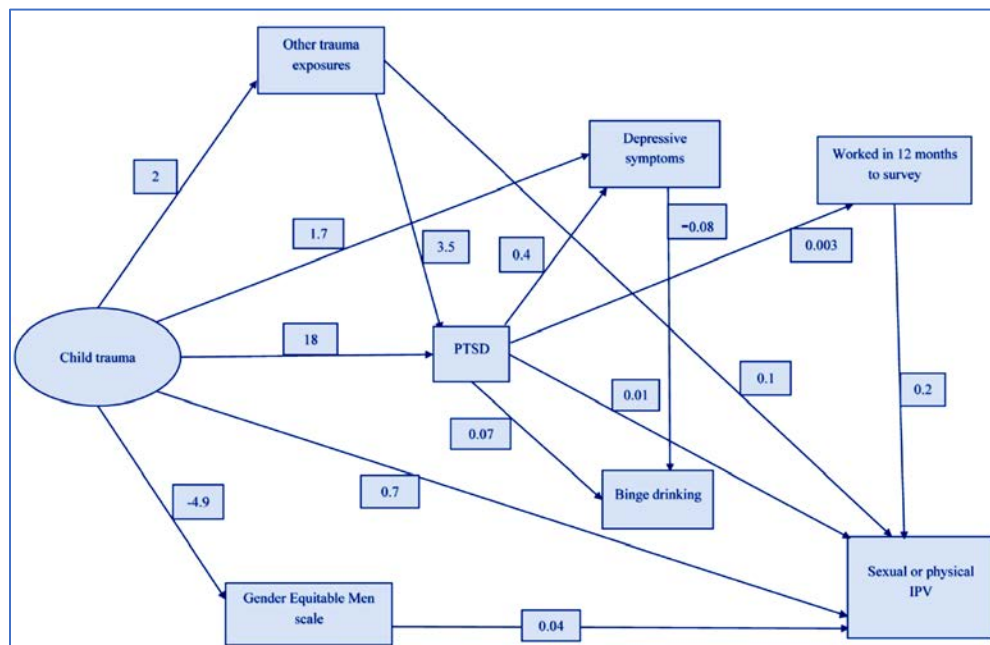


Figure 5:1 Structural model of IPV perpetration and poor mental health.

5.5 Discussion

Our study contributes empirical evidence to the limited body of knowledge on the pathways between child abuse, poor mental health and IPV perpetration among a representative sample of men in South Africa. The study confirms overlap between poor mental health, history of child abuse and adult IPV perpetration which constitute public health problems. In this study, an increase in child trauma was associated with an increase in risk of other trauma, PTSD, depressive symptoms and repeat IPV perpetration. PTSD and depressive symptoms were associated with child trauma in previous studies with South African youths.

An increase in PTSD score was associated with greater risk for binge drinking and depressive symptoms. The relationship of PTSD and depressive symptoms was however stronger compared to the relationship with binge drinking. While the study showed comorbidity of PTSD with depressive symptoms and binge drinking within the population, it found higher prevalence of these conditions compared to previous national surveys and this is attributable to measurement differences (243, 250, 312).

The study however did not find an association between child or other trauma and binge drinking. There was also no significant association between depression or binge drinking and IPV perpetration. In this regard our findings differ from previous studies showing binge drinking or alcohol abuse as a risk factor for IPV perpetration (58, 98, 332, 333). Nonetheless the findings are consistent with findings from a global meta-analytic by Foran et al 2007 that indicated small to moderate effect size for the association between alcohol abuse and male-perpetrated IPV with lesser or no association being found in non-clinical samples (334). Previous research has also shown no differences in size of effect when the full Audit scale or shorter version have been used therefore it is difficult to conclude whether our observation is a result of the restrictive use of the Audit-3 binge drinking measure (328, 329).

The structural model for the data mostly conforms to our priori-hypotheses. Child trauma increased PTSD and depressive symptomatology; PTSD increased risk of IPV perpetration; PTSD mediated the relationship between child trauma and IPV perpetration and there was a direct relationship of child trauma and IPV perpetration. These findings confirm that IPV perpetration in the studied population is explained by a hybrid of the known violence theories and emerging in this study is the contribution of the Trauma theory within the South African context. The direct path from child trauma to IPV perpetration which had the greatest coefficient in this study is consistent with previous studies that reported that men who experienced physical abuse during childhood or were exposed to parental violence are at greatest risk of perpetration (37, 96, 132). The direct path from child trauma to IPV perpetration is also consistent with the Intergenerational Transmission of Family Violence theory while the mediated path with gender attitudes conforms to the Feminist theory that has its roots in gender inequality and conservative gender norms (335, 336). The mediation effect of PTSD in the relationship of child or other trauma and IPV perpetration aligns to the Trauma theory which specifies an interconnection of violent experiences throughout life. According to the Trauma theory, abused boys more often are exposed to other forms of violent trauma and PTSD symptomatology and are at greater risk of aggression and partner abuse. In this study, we found a mediating effect of PTSD in the paths between child or other trauma exposures and IPV perpetration consistent with other studies in different settings (133, 337, 338). Moreover, other trauma exposures were a stronger predictor for PTSD and repeat IPV perpetration than child trauma consistent with previous South African studies (170, 173, 191, 250, 339, 340).

The mediating effects of PTSD in the relationship of child trauma and IPV perpetration by men suggests expansion in the understanding of violence in the South African context beyond the Intergenerational Transmission of Family Violence and the Feminist theories of patriarchal influences. These findings warrant further investigation to understand the differences in patterns and dynamics of IPV associated with PTSD and non-PTSD related IPV. The differences may highlight opportunities for potential interventions and have implications for the design of perpetrator programmes.

Our findings point to the need for IPV perpetration interventions to incorporate validated, appropriate and targeted psychotherapeutic approaches. They also give emergent evidence that can be basis for further research and baseline programme evaluations that assess whether implementation of current treatment therapies for PTSD among male IPV perpetrators could reduce both PTSD symptoms and IPV perpetration in this context (316). Therapies for PTSD and depressive symptoms have been shown to reduce IPV perpetration in other settings (341, 342).

The central position of PTSD in the pathways to IPV perpetration spell out the potential contributions of health professionals to a public health approach to responding to child trauma and in secondary prevention of violence. The evidence from this study supports the need to develop integrated primary and secondary prevention interventions that incorporate mental health components which build emotional resilience and coping mechanisms of participants. This may reduce the psychological impact of past trauma while preventing future violence perpetration among previously victimised boys and men. The collaboration of health practitioners and researchers in the field is critical in the design of future integrated psychosocial treatments that take a holistic approach and emphasize addressing mental health at the individual, family and societal levels (343). Another potential entry for prevention are psychosocial interventions in school based programmes with educator and learner participation that include stress modules and coping strategies which have been effective in other settings (343).

Notwithstanding, these findings underscore the need for development of more positive parenting interventions which break the intergenerational transmission of violence in this context. Parenting interventions that discourage physical beating as a punitive measure while not necessarily reducing PTSD symptomatology may potentially reduce the incidence of physical IPV perpetration in the next generation. In South Africa concerted efforts to discourage child maltreatment could contribute positively in the fight against partner abuse.

The study had limitations. Its relatively small sample size limited statistical power to detect small associations and secondly has the potential for residual confounding consistent when investigating a complex outcome such as IPV. This study was unable to gauge the chronicity of the PTSD reported by participants. Chronicity of PTSD could have impacted on the risk for IPV perpetration (344). Additionally, there is ambiguity in direction of variables because the study is cross-sectional. The cross-sectional design has the limitation of not elucidating the temporal relationship between PTSD and IPV perpetration. Further research which employs longitudinal studies with a male cohort on the relationship is critical and might be strengthened by biological indicators of mental health outcomes where available such as cortisol and alcohol abuse. Longitudinal prospective studies with cohort of abused boys and controls may also shed further light into the effect of chronicity of PTSD on IPV perpetration. The validation of cut-off points for CESD, PTSD and Audit-3 as a measure in the South African context is also critical in strengthening the quality of research. The study also did not adjust for several mental health related responses including insecure attachment, borderline personalities, hyper arousal and anger responses, which were found to mediate pathways to IPV in previous research. However, the study provides a basis for the inclusion of mental health variables in future large scale IPV perpetration surveys, to further investigate the relationship suggested by this study. Beyond understanding male-perpetrated IPV, increasing the mental health data is critical and has good value for money in a region like Africa where research on mental health is still limited .

5.6 Conclusion

The study confirmed a relationship between child trauma and IPV perpetration, which was partially mediated by PTSD. Evidence from this empirical study suggests a nexus of the Trauma, Feminist and Intergenerational Transmission of Family Violence theories in explaining the underlying factors why men perpetrate violence against intimate partners. The study showed that PTSD associated with childhood sexual abuse and other traumatic events increased risk for male-perpetrated sexual or physical IPV. A direct path from child physical adversity and physical IPV perpetration in this context was consistent with the Intergenerational Transmission of Family Violence theory. Reducing risk of trauma exposure due to abuse or witnessing family violence may impact on reduction of PTSD and male-perpetrated IPV. Pharmacotherapeutic and psychotherapeutic interventions for treating PTSD symptoms among men or boy sexual abuse victims may have the potential to reduce male-perpetrated IPV. There is need for future large-scale research to understand the contribution of a wider range of poor mental health conditions to male-perpetrated IPV perpetration using validated tools in the African context.

06

Paper Three

6 MENTAL ILL HEALTH IN STRUCTURAL PATHWAYS TO WOMEN'S EXPERIENCES OF INTIMATE PARTNER VIOLENCE

Citation: **Machisa M.T.**, Christofides N., Jewkes R. (2017). Mental ill health in structural pathways to women's experiences of intimate partner violence. PLoS one 12.4: e0175240.

6.1 Abstract

Background

Depression, post-traumatic stress disorder (PTSD), and binge drinking are among mental health effects of child abuse and intimate partner violence (IPV) experiences among women. Emerging data show the potential mediating role of mental ill health in the relationship of child abuse and IPV. There is evidence that PTSD, depression and alcohol abuse are comorbid common mental disorders and that a bidirectional relationship exists between depression and IPV in some settings. Furthermore, the temporal direction in the relationship of alcohol abuse and women's IPV experiences from different studies is unclear. We undertook a study with women from the general population to investigate the associations of child abuse, mental ill health and IPV; and describe the underlying pathways between them.

Methods

Data is from a household survey employing a multi-stage random sampling approach with 511 women from Gauteng, South Africa. IPV was measured using the WHO Multi-country Study on Women's Health and Domestic Violence Questionnaire. Child abuse was measured using a short form of the Childhood Trauma Questionnaire. Depression was measured using the Centre for Epidemiologic Studies Depression Scale (CESD). PTSD symptoms were measured using the Harvard Trauma Questionnaire. Binge drinking was measured using the Alcohol Use Disorders Identification Test (AUDIT) scale. All data analyses were conducted in Stata 13. Regression modelling was used to test the association between variables. Structural equation modelling with full information maximum likelihood estimation accounting for missing data was done to analyse the underlying pathways between variables.

Results

Fifty percent of women experienced IPV in their lifetime and 18% experienced IPV in the 12 months before the survey. Twenty three percent of women were depressed, 14% binge drank and 11.6% had PTSD symptoms. Eighty six percent of women had experienced some form of child abuse. Sociodemographic factors associated with recent IPV in multivariate models were younger age and foreign nationality. Depression, PTSD and binge drinking mediated the relationship of child abuse and recent IPV. Depression, PTSD and binge drinking were also effects of recent IPV. Other factors associated with recent IPV

experience included relationship control, having a partner who regularly consumed alcohol and experiencing other life traumatic experiences

Conclusion

Mental ill health plays a mediating role in the relationship of child abuse and recent IPV experiences among women. Conversely, IPV also negatively affects women's mental health. Interventions to reducing the incidence of IPV could help alleviate the burden of mental ill health among women and vice versa. Effective integration of mental health services in primary health care, detection of symptoms, brief interventions and strengthened referral mechanisms for sustained community-based care are necessary in responding to victims of intimate partner violence. Response for abused children needs to take similar approaches and reduce the long-term mental health effects associated with violent exposures.

Key words: intimate partner violence, child abuse, PTSD, depression, alcohol abuse

6.2 Introduction

Violence against women (VAW) is a global public health problem and research has shown that 35% of women experienced physical or sexual intimate partner violence (IPV) or non-partner rape at least once in their lifetime (109). Factors that increase risk for women's victimisation include history of child abuse, witnessing intra-parent abuse, mental ill-health, unequal gender power relations and relationship conflict (19, 34, 58, 74, 75, 345). The social learning and intergenerational transmission theories for violence explain that IPV is higher among women who were abused in childhood or who witnessed parental violence (346). The mental effects of child abuse can persist into adulthood and affect women's overall health (164). The long-term mental effects of child abuse include untreated depressive and post-traumatic stress disorder symptoms (PTSD) (92, 95, 163, 164). Child abuse is also associated with decreased self-esteem that increases risk for alcohol abuse and partner violence (95, 347, 348). Depression, alcohol consumption, and PTSD increased women's risk of experiences of IPV in some settings (54, 109, 110, 114). Women who have inequitable relationships and have less relationship power are at increased risk for IPV victimisation (76-79).

There is evidence that PTSD, depression and alcohol abuse are among the mental health effects of experiencing IPV (57, 108-114, 174, 253, 349). Studies have shown a dose-response relationship in which PTSD and depression increased with the frequency and severity of IPV experiences (109, 110, 114, 119, 216-218). Moreover, alcohol abuse is comorbid with PTSD, and depression in different contexts among women who have experienced IPV (217, 218). There is also evidence of strong associations between abusing alcohol, having a partner that abuses alcohol and women's experiences of IPV (114). Couple's drinking habits may pose as couple level risk factors for IPV (350, 351). In other instances mental ill health may affect women's choices of partners with tendencies to select or stay with partners with greater risk of IPV perpetration (352).

The complex interrelationship of child abuse, mental ill health and IPV victimisation are apparent yet understudied and evidence is limited in the South African context (353). Mental ill health is the third highest contributor to the burden of disease, after HIV and other infections disorders in South Africa (157). Research conducted in South Africa has demonstrated the high prevalence, chronicity, and morbidity of mental ill health in a context where the health sector experiences challenges of integrating mental health services into primary health care (156, 354, 355). Studies have demonstrated that South African children, adolescents and young people are exposed to high levels of violent trauma including child abuse, with a significant proportion developing PTSD, depression, suicidal notions and attempts (96, 135, 170-175). Studies in South Africa have shown significant prevalence of emotional or psychological, economic,

physical and sexual violence (21, 56, 57, 317, 356). Lifetime prevalence of physical IPV reported by women from different studies ranged between 19% and 51% (30, 34, 356-358). Physical IPV experiences by women were also associated with sexual IPV and the lifetime prevalence for sexual IPV was about 20% in different studies(358).

Mental ill health could play a mediating role in the relationship of child abuse and IPV victimisation in this context. Mental ill health could also be the effects of IPV experiences and moderate the risk for further re-victimisation. There is need to generate more evidence through investigating pathways between child abuse, mental ill health and IPV victimisation. This is important for identifying potential arena for violence prevention and response interventions.

We conducted a study to explore the potential mediating role of symptoms of mental ill health in the relationship between child abuse and women's experience of IPV, in addition to describing the mental ill health effects of IPV victimisation. The study primarily aimed to determine the associations and underlying pathways between child abuse as a primary exposure and IPV experiences as an outcome and mental ill health measures as potential mediators of the relationship. The study a-priori hypothesis was that there are pathways from child abuse to IPV experiences mediated by PTSD, depression and alcohol abuse. We also hypothesised that the mental ill health measures would be comorbid and there would be associated with each other and with IPV experiences. We therefore assumed a possibility of bi-directionality between mental ill health and IPV implying that PTSD, depression and alcohol could increase women's risk for IPV experience in addition to being effects of IPV experiences. By elucidating pathways between the interrelated variables, this study will be a significant addition to the body of existing literature (216, 253, 311, 359, 360).

6.3 Methods

Researchers collected data through a household survey with a representative sample of women from Gauteng Province of South Africa in 2010. Gauteng province is the most populous and fastest growing of South Africa's nine provinces with a population of 12.2.million people (361). The province is mostly urban spanning the country's largest city, Johannesburg and its administrative capital, Pretoria, and surrounds.

The survey used a multi-stage random sampling approach to randomly select 40 enumeration areas (EA) using the South African 2001 National census as the sampling frame. Researchers randomly selected 20 households in each EA and invited only one adult woman residing in a selected household to participate in the study.

Researchers reached 96% of the selected households and 89% of these households had an eligible participant. The response rate among women was 79%. Interviews were conducted with 511 eligible women who gave written consent to participate in the study (22).

The University of the Witwatersrand Faculty of Health Science Human Ethics Committee and the Medical Research Council Ethics Review Committee gave ethics approval for this study. All research was conducted conforming to safety guidelines for conducting research on domestic violence (11, 277). Interviews were conducted in private. Anonymous study identification numbers were allocated to participants and researchers assured them of confidentiality including that no data would be linked back to them. Researchers gave the women local referrals for support when they requested it (22).

The structured questionnaire was installed on personal digital assistants and administered by the researchers. Participants chose the language they preferred to respond in from English, Zulu, Sotho and Afrikaans.

6.3.1 Measurement

6.3.1.1 Outcome variable

The main outcome of the study was physical, sexual, emotional or economic IPV in the past 12 months. We used the WHO Multi-country Study on Women's Health and Domestic Violence: Core Questionnaire and WHO Instrument – Version 9 to ask women about experiences of emotional abuse, physical violence and sexual violence (319). We measured physical IPV by four items consisting of specific, violent acts perpetrated by a current or previous intimate partner with a weapon (**Table 6:1**). Three items of sexual violent acts by a current or previous partner (Table 1) measured sexual IPV. Six items that included different acts that were controlling, frightening, intimidating or undermined women's self-esteem, measured emotional IPV. Acts of economic IPV included four items that included prohibition of engagement in income generating activities, having income taken and being evicted from a family home by a partner. Researchers asked participants about the frequency of these acts i.e. never (1), once (2), few (3) and many (4). We defined ever lifetime physical or sexual IPV experience as having experienced any of the physical IPV or sexual IPV acts once, few or many times. We measured IPV in the past 12 months also referred to here as recent IPV by a follow up question to the IPV subscale items. Participants who reported experiences of the acts of violence were asked, "Have any of these acts happened in the past 12 months?" and they had to respond with a "yes or no". In this article, we define recent IPV as having experienced any acts of physical, sexual, emotional or economic violence in the 12 months before the survey.

6.3.1.2 *Explanatory variable*

Child abuse was measured using a 14 item modified version of the short form of the Childhood Trauma Questionnaire (CTQ) (**Cronbach's alpha= 0.89**) (320, 321). Researchers asked participants whether they had experienced each act in their childhood (**Table 1**). Possible responses were “never” (1), “sometimes” (2), “often” (3), or “very often” (4). We summed up the responses for all 14 items of the CTQ to get a child abuse score. Answering at least “sometimes” to any of the items equivalent to a score greater than 14 was considered to mean the woman experienced a form of child abuse. **Table 1** shows the CTQ items and other scales items used in the study.

6.3.1.3 *Mediating variables*

Mental health variables included self-report measures of depression, PTSD, and binge drinking. Depression was measured using 20 items of the Centre for Epidemiologic Studies Depression Scale (CES-D) (**Cronbach's alpha = 0.93**) (**Table 6:1**). The CES-D self-report measure was designed for use in the general population to assess current symptoms of depression (325). We asked women how often they experienced symptoms associated with depression over the past week and possible responses were “rarely or none of the time” (0) to “most or all of the times” (3). We summed up the item scores to create a continuous CES-D score that we use in all analyses. However, we dichotomized the score in order to describe the prevalence of depression in the studied population. As with previous South African studies we assumed that a score equal or greater than 21 indicated a high probability of clinical depression (269, 321, 326)

PTSD symptoms were measured using 30 items of the Harvard Trauma Questionnaire (**Cronbach's alpha=0.98**). The Harvard Trauma Questionnaire (HTQ) has been validated in other populations and cultural settings (362). Researchers asked participants whether each of the symptoms had bothered them in the past weeks and could respond by “not at all” (1), “a little” (2), “quite often” (3) and “extremely often” (4) (**Table 1**). We summed scores for all items to obtain a PTSD scale score. We calculated the PTSD DSMIV score by dividing the PTSD score with the number of items and assumed a mean score equal or greater than 2.5 to indicate significant PTSD symptoms as has been done with previous South African studies (119, 267, 311, 324, 326, 363)

Binge drinking was measured using items from the Alcohol Use Disorders Identification Test (AUDIT) scale (327). Researchers asked the participants whether they had drunk alcohol and their frequency of consuming five or more drinks on one occasion in the last year. Possible responses were never (1), less than monthly (2), monthly (3), weekly (4), and daily or almost daily (5). We considered a score of four or more (equivalent to drinking five or more drinks on one occasion weekly or daily) as binge or hazardous drinking.

6.3.1.4 Control variables

Socio-demographic data collected included age, education categorised into no schooling, primary, high school, tertiary; nationality and employment status in the year before the survey. We used the 11 item South African adaptation of the Sexual Relationship Power Scale (SRPS) (**Cronbach's alpha=0.92**) (**Table 6:1**) as a measure of gender imbalances (76, 79). We summed the responses for the SRPS items (Strongly Agree=1, Agree=2, Disagree=3, Strongly Disagree=4) to constitute a SRPS score. A lower SRPS score was indicative of more gender imbalance and less relationship power for the participant.

We measured other life trauma through an adapted 10 item Life Event Checklist from the PTSD Checklist (**Table 6:1**) (362). We summed the scores for the items to create a continuous "other life trauma score" and controlled for this variable in analyses.

Table 6:1 Variable and scale items.

Variable	Items
Outcome	
IPV in the past 12 months	Physical IPV items included slapping, throwing dangerous objects, pushing, kicking, hitting, dragging, choking, beating, burning or threatening. Sexual IPV items included physically forced non-consensual sex or sex because of fear of what a male partner might do or being forced to do something sexual by a male partner that they found degrading or humiliating. Emotional IPV included any of the following being insulted or made to feel bad about yourself, being belittled or humiliated in front of other people by a partner, a partner doing things to scare or intimidate on purpose for example by the way he looked, by yelling and smashing things, a partner threatening to hurt you or someone you love, a partner stopping you from seeing any of your family or friends and a partner boasting about or bringing girlfriends home girlfriends. Economic IPV included four items covering the following acts: being prohibited you from getting a job, going to work, trading, earning money or participating in income generation projects by a partner, a partner taking earnings from you, a partner forcing you or your children to leave the house where you were living and a partner not providing money to run the house or look after the children, but has money for other things.
Explanatory	
Child abuse	Fourteen items including: I did not have enough to eat; I lived in different households at different times; One or both parents were too drunk to take care of me; I spend time outside the home and none of the adults at home knew my whereabouts; Someone touched my buttocks or genitals or made me touch them when I did not want to; 1 had sex with a man who was more than 5 years older than me; 1 had sex with someone because I was threatened or frightened or forced and was forced to have sex against my will by a boyfriend; I was beaten at home with a belt or stick or whip or something else which was hard; I was beaten so hard at home that it left a mark or bruise; I was beaten or physically punished at school by a teacher; I saw or heard my mother being beaten by her husband or boyfriend; I was insulted or humiliated by someone in my family in front of other people; I was told I was lazy or stupid or weak by someone in my family.
Mediating	
PTSD symptoms	Thirty items including: recurrent thoughts or memories of most hurtful or terrifying events, feeling as though the event is happening again, recurrent nightmares, feeling detached or withdrawn from people, unable to feel emotions, feeling jumpy or easily startled, difficulties concentrating, trouble sleeping, feeling on guard, feeling irritable or having outbursts of anger, avoiding activities that remind of the traumatic or hurtful event(s), less interest in daily activities, feeling as if you have no future, avoiding thoughts or feelings associated with the traumatic or hurtful experience, sudden emotional or physical reaction when reminded of the most hurtful or traumatic event(s), feeling that people don't understand what happened, difficulty performing work or daily tasks, blaming yourself for things that happened, feeling guilty for surviving, hopelessness, feeling ashamed of the hurtful or traumatic event (s), spending time thinking why these events happened to you, feeling as if going crazy, feeling that you are the only one who suffered, feeling

Depression symptoms	Twenty items including: being bothered by things that usually don't bother, not feeling like eating or poor appetite, unable to cheer up even with help of family or friends, feeling as good as other people, trouble keeping my mind on what I was doing, feeling depressed, feeling everything I did was an effort, feeling hopeful about the future, thinking my life was a failure, restless sleep, feeling happy, talking less than usual, feeling lonely, feeling that people were unfriendly to me, enjoying life, having crying spells, feeling sick, feeling that people dislike me and feeling unable to get going.
Control	
Sexual Relationship Power Score	Items include: If I asked my partner to use a condom, he would beat or hit me; If I asked my partner to use a condom, he would get angry; My partner won't let me wear certain things; My partner has more say than I do about important decisions that affect us; My partner tells me who I can spend time with; If I asked my partner to use a condom, he would think I'm having sex with other people; I could leave our relationship any time I wanted to; My partner does what he wants, even if I do not want him to; When my partner and I disagree, he gets his way most of the time; Because my partner buys me things he expects me to please him; My partner always wants to know where I am; My partner gets more out of our relationship than I do.
Other life trauma score	Ten lifetime events items including: imprisonment /detainment, civil unrest/ war, serious injury requiring hospitalization, being close to death, witnessing a murder of family or friend, unnatural death of family or friend, witnessing the murder of stranger/s, torture, robbed or carjacked at gun or knife point and kidnapping. Responses to each trauma event were either "yes" or no.

Another control factor measured was the alcohol consumption frequency of a current or most recent partner. Women were asked whether their current or most recent partner drank alcohol and how often this happened. Responses were never, a few times or less than once a month and every day or nearly every day. We recoded the responses to occasional drinking if a partner drank alcohol a few times or less than once a month and regular drinking if the partner drank at weekends, every day or nearly every day.

6.3.2 Statistical analysis

We used Stata 13 for all analyses and took into account the stratified, two-stage survey design with participants clustered within the primary sampling units (PSUs). We excluded participants with missing data on key variables and recoded data to create derived variables that we used in analysis. The final study sample was 501 women aged 18 and above. We confirmed internal consistency for all the scales by examining the Cronbach's alpha. We conducted bivariate analyses using cross-tabulations with measures of association adjusted for survey design to obtain the proportions of women experiencing IPV and mental ill health over the measured sociodemographic, child abuse and other life trauma variables. We present summary proportions disaggregated by both lifetime and recent IPV experience (**Table 6:2**). We ran t-tests to compare the mean scores of explanatory variables among women that experienced vs those that did not experience IPV in the 12 months before the survey (**Table 6:2**). We ran mediation tests for mental ill health measures as potential mediators in the relationship of child abuse and recent IPV experiences using the seemingly unrelated regression (sureg) Stata command (364) (**Table 6:3**). We also used multivariable logistic regression modelling to test for factors associated with recent IPV and only included explanatory variables with p-values of less than 0.3 from the bivariate analyses. We used a backward elimination approach to remove non-significant variables until we obtained a parsimonious model (**Table 6:4**).

We specified a path model to analyse the underlying pathways that included the mediation of mental ill health based on the theoretically informed a priori hypothesis and the observed associations that were significant in the prior regression models. We also estimated a second path model that assumed mental ill health as being the effects of IPV. For both models we used SEM with full information maximum likelihood estimation accounting for missing variables(365). The model building approach included first building measurement models for a child abuse latent variable allowing the indicators consisting of the CTQ scale items. We also built an "other-life trauma" latent variable consisting of eight of the items from the life-events checklist. For each latent variable, we conducted confirmatory factor analysis to optimise the indicators and allowed the indicators to co-vary until we obtained acceptable measurement model fit. We used the mental health variables as observed separately in the models. We conducted a sequence of model

modifications including deleting non-significant paths until we obtained theoretically sound models with statistically significant pathways(279, 365). We allowed the errors of variables to co-vary in models when it was theoretically justifiable, this included the co-varying of errors of mental health variables. We controlled for the socio-demographic factors, nationality and age that were significantly associated with IPV in the regression models. We assessed the goodness of fit of the models by assessing comparative fit index (CFI $\geq$ 0.9) and Tucker-Lewis Index (TLI) ($\geq$ 0.9) and root mean square error of approximation (RMSEA $\leq$ 0.06) as indicative of acceptable fit (366, 367) .

6.4 Results

The sample comprised 30% women aged 18-29 years, 36% were 30-44 years and 33% were over 45 years. The majority (91.8%) were South African nationals and the rest were foreign nationals. Sixty-four percent had attended high school and only 44% had been employed in the 12 months before the survey. The majority (97.7%) had been in heterosexual sexual relationships and 78.7% were in a relationship at the time of the survey. Forty nine percent of women had current or most recent partners that did not take alcoholic drinks, 17% had partners who occasionally drank alcohol (once to a few times a month) and 34% had partners who consumed alcohol during weekends or daily.

Eighty six percent of women answered at least “sometimes” to one of the items on the CTQ and so had experienced a form of child abuse. Twenty three percent of women had depressive symptoms (CES-D score $\geq$ 21), 14.0% binge drank and 11.6% had PTSD symptoms (PTSD mean score $\geq$ 2.5). Thirty two percent of women had experienced one or more “other” traumatic event.

About one in five (18.4%) women had experienced any form of IPV in the 12 months before the survey and 13.8% of women had experienced physical or sexual IPV. Women experienced different forms of violence: 11.2% experienced all four forms of IPV i.e physical, sexual, economic and emotional; 2.6% of women experienced sexual, economic and emotional violence only; 2.4% experienced economic and emotional IPV and 2.2% experienced emotional IPV only in the 12 months before the survey.

Table 6:2. shows that higher proportions of younger women in the 18-29- and 30-44-year age groups and foreign nationals experienced IPV in the 12 months before the survey. Higher proportions of women who binge drank or who had partners that consumed alcohol occasionally or regularly reported recent IPV experiences. Women who experienced recent IPV also reported higher scores on the child abuse, PTSD, CESD and other life trauma scales. Women who experienced recent IPV reported lower scores on the Sexual Relationship Power Scale.

Table 6:2 Bivariate analyses of socio-demographic characteristics, child abuse, other life trauma, mental ill health and women's experiences of IPV.

	No IPV in past 12 months n = 409			Any IPV in past 12 months n = 92			Total			P-Value
	%	95% CI		%	95% CI		%	95% CI		
Age group										
18–29	28.0	23.6	33.0	37.0	27.1	48.0	29.7	25.2	34.5	0.0018
30–44	34.6	29.0	40.7	46.7	36.4	57.4	36.9	32.5	41.4	
45+	37.4	31.0	44.2	16.3	10.7	24.1	33.5	28.0	39.5	
Foreign National	7.2	3.9	12.9	13.0	7.1	22.6	8.3	4.6	14.4	0.0054
South African	92.8	87.1	96.1	87.0	77.4	92.9	91.7	85.6	95.4	
Education status										
No schooling	5.4	3.7	8.0	1.1	0.2	7.1	4.6	3.2	6.7	0.0681
Primary school	18.8	14.3	24.4	10.9	5.4	20.7	17.3	13.1	22.7	
High school	62.6	57.3	67.7	73.9	63.9	81.9	64.7	59.8	69.4	
Tertiary	13.1	9.2	18.4	14.1	8.1	23.6	13.3	9.7	18.0	
Employment and monthly earning past 12 months										
Unemployed	55.7	49.0	62.2	58.7	45.8	70.5	56.3	50.5	61.8	0.7493
ZAR 0–2000	21.3	17.2	26.0	20.7	13.9	29.5	21.2	17.7	25.1	
ZAR2001-5000	11.7	8.6	15.6	13.0	6.9	23.4	11.9	8.9	15.7	
ZAR5001 +	11.4	7.2	17.5	7.6	3.4	16.2	10.7	7.0	16.0	
Binge drinking										
No	89.3	85.3	92.3	71.9	64.9	78.0	86.0	82.5	89.0	<0.0001
Yes	10.7	7.7	14.7	28.1	22.0	35.1	14.0	11.1	17.5	
Partner alcohol										
Never	52.6	48.0	57.1	31.5	23.6	40.7	48.7	44.9	52.5	0.0011
Occasional	16.6	12.8	21.4	19.6	12.6	29.2	17.2	13.7	21.3	
Regular	30.8	26.5	35.5	48.9	39.7	58.2	34.1	30.2	38.3	
Child abuse score	20.1	19.4	20.7	24.6	22.7	26.5	20.9	20.2	21.6	<0.0001
Depression score	14.3	13.3	15.2	22.6	20.2	25.0	15.8	14.9	16.8	<0.0001
PTSD score	22.9	21.9	23.8	31.9	29.5	34.3	24.6	23.7	25.5	<0.0001
Other life trauma score	1.0	0.9	1.2	1.7	1.3	2.1	1.2	1.0	1.3	0.0001
Sexual Relationship Power Score	32.3	31.5	33.0	26.4	24.6	28.3	31.0	30.3	31.8	<0.0001

The tests for mediation effects showed that PTSD, depression and binge drinking gave statistically significant coefficients and confirmed that they were mediators in the relationship of child abuse and recent IPV (Table 6:3).

Table 6:3 Mediation effects from seemingly unrelated regression test.

	Coefficient	95% CI		P-value
Child abuse→ Depression	0.39	0.26	0.51	<0.0001
Child abuse → PTSD	0.45	0.33	0.57	<0.0001
Depression → IPV past 12 months	0.01	0.001	0.01	0.022
PTSD → IPV past 12 months	0.01	0.003	0.01	0.002
Binge drinking→ IPV past 12 months	0.18	0.08	0.27	<0.0001
Child abuse → IPV past 12 months	0.01	0.00	0.01	0.001

We tested for factors associated with IPV in past 12 months in a multivariate logistic model and included factors that had a p-value less than 0.3 in bivariate analyses. **Table 6:4.** shows that women who were 45 years and above were 74% less likely report recent IPV compared to women in the 18-29 age group. South African nationals were 58% less likely than foreign nationals to report IPV in the 12 months before the survey. There was no significant association between child abuse and recent IPV experiences. The risk for recent IPV increased with PTSD, depressive symptoms and other life trauma scores. The risk for recent IPV experiences was higher among women who binge drank. Recent IPV was not significantly associated with partner's alcohol consumption. Higher scores on the sexual relationship power scale were protective from recent IPV experiences.

Table 6:4 Multivariate regression models of factors associated with IPV in past 12 months.

	OR	95% CI		P-value
Age group: 18-29				
30-44	1.12	0.51	2.47	0.77
45+	0.26	0.09	0.75	0.013
Nationality: Non-South African				
South African	0.42	0.20	0.87	0.02
Child abuse score	1.01	0.96	1.06	0.661
Other life trauma score	1.22	1.01	1.46	0.04
Binge drinking	2.94	1.77	4.88	<0.0001
CESD score	1.04	1.01	1.06	0.004
PTSD Score	1.04	1.01	1.07	0.003
Partner alcohol: Never				
Occasional	1.62	0.67	3.89	0.272
Regular	1.57	0.93	2.64	0.088
Sexual Relationship Power Score	0.91	0.85	0.98	0.009

Figure 6:1 shows that mental ill health mediated the relationship of child abuse and recent IPV. There were no direct pathways between child abuse and IPV, but there was one pathway mediated by depression and another mediated by PTSD. There was also a pathway mediated by both depression and binge drinking. Other life trauma events had indirect effects on IPV, mediating a pathway from child abuse through PTSD and another through binge drinking. Sexual Relationship Power also mediated the relationship of child abuse and recent IPV.

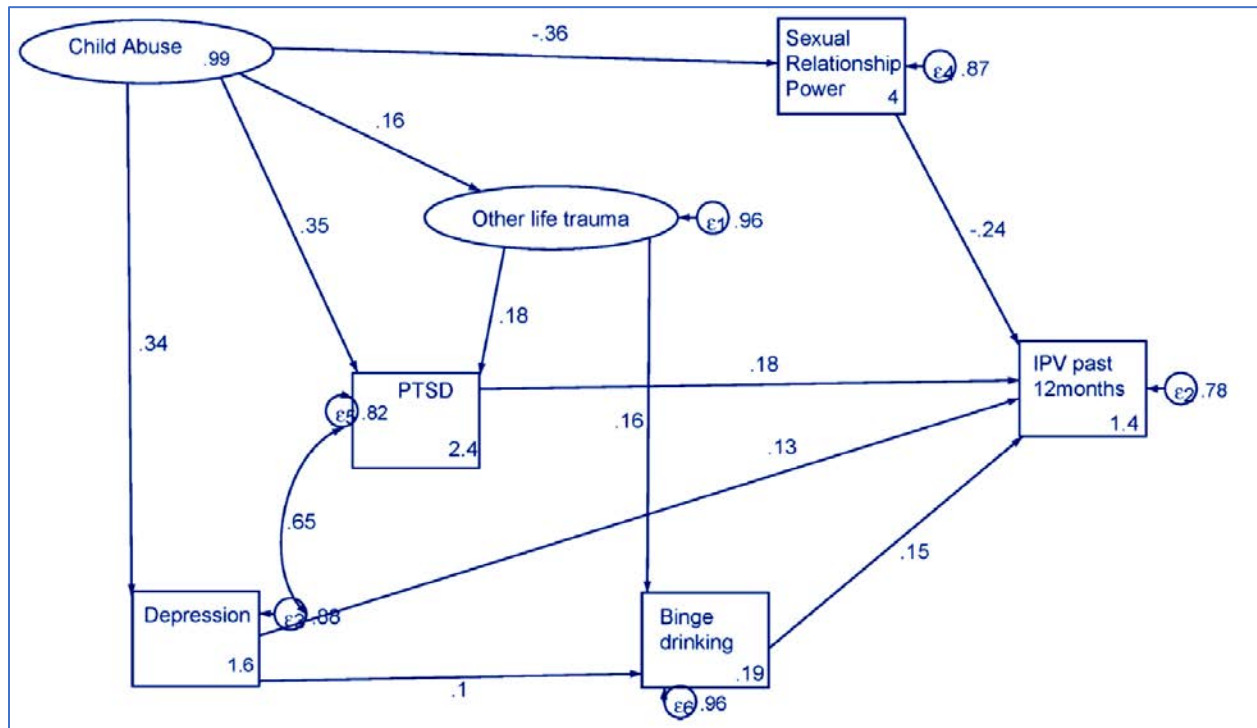


Figure 6:1 Mental ill health in pathways to IPV experiences.

The final modified model fit the data well (CFI = 0.92; TLI = 0.91; RMSEA = 0.04); p value = <0.0001).

Table 6:5. shows the model statistics observed in the path diagram in **Figure 6:1**.

Table 6:5 Structural model statistics for mental ill health in pathways to IPV experiences.

	Standardized coefficients	SE	z	P> z	95% CI	
Child abuse→ Depression	0.34	0.04	7.87	<0.0001	0.26	0.42
Child abuse→ Sexual Relationship Power	-0.36	0.05	-7.98	<0.0001	-0.45	-0.27
Child abuse → Other trauma	0.16	0.07	2.28	0.022	0.02	0.29
Child abuse → PTSD	0.35	0.04	8.3	<0.0001	0.27	0.44
Other life trauma → PTSD	0.18	0.05	3.37	<0.0001	0.08	0.29
Depression → Binge drinking	0.10	0.05	2.24	0.03	0.01	0.19
Other life trauma→ Binge drinking	0.16	0.07	2.19	0.03	0.02	0.31
Depression → IPV past 12 months	0.13	0.06	2.24	0.03	0.02	0.23
Sexual Relationship Power → IPV past 12 months	-0.24	0.04	-5.66	<0.0001	-0.32	-0.15
PTSD → IPV past 12 months	0.18	0.06	3.15	<0.0001	0.07	0.29
Binge drinking → IPV past 12 months	0.15	0.04	3.79	<0.0001	0.07	0.23
Disturbance variances	Estimate	SE			95% CI	
Depression	0.90	0.03			0.84	0.95
Sexual relationship power	0.87	0.03			0.81	0.94
PTSD	0.84	0.03			0.77	0.91
Binge drinking	0.96	0.02			0.91	1.01
IPV past 12 months	0.78	0.03			0.72	0.85
Child abuse	0.99	0.01			0.97	1.01
Other life trauma	0.96	0.03			0.91	1.01
Equation-level goodness of fit	r-squared					
Child abuse	0.008					
Other life trauma	0.041					
Model goodness of fit statistics						
p > chi2	<0.0001					
RMSEA	0.040					
CFI	0.922					
TLI	0.910					

Figure 6:2. shows the connections between child abuse and mental ill health. Child abuse had direct pathways to both PTSD and depression. There were also indirect effects of IPV experience and IPV mediated paths from child abuse, depression, PTSD and binge drinking. The model also shows the mediating effects of the sexual relationship power scale and exposure to other life traumatic events. In the model, the error of depression co-varied with those of both PTSD and binge drinking.

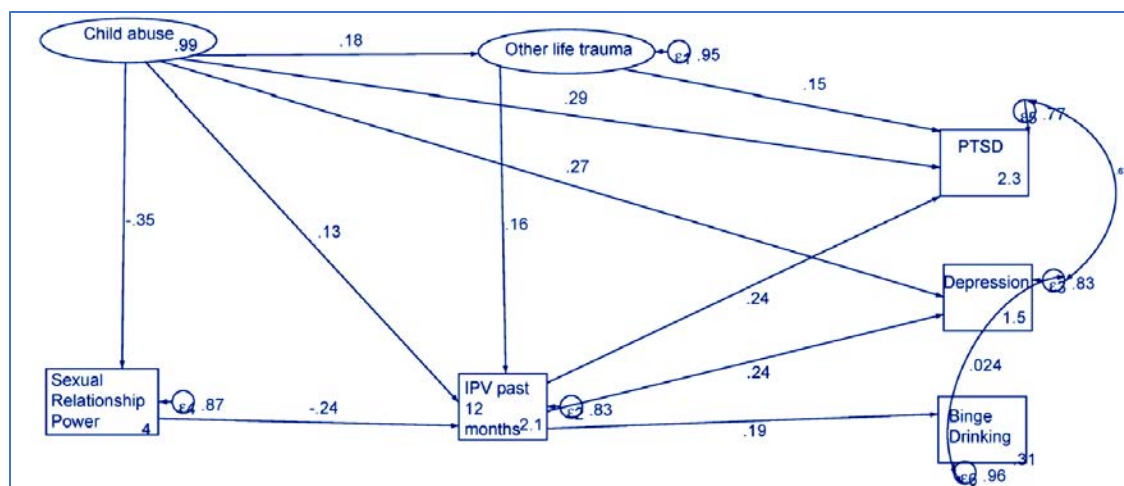


Figure 6:2 Mental ill health effects of IPV experiences

Table 6:6 shows the model statistics observed in the path diagram in **Figure 6:2**.

Table 6:6 Structural model statistics for mental ill health effects of IPV experiences

	Standardized coefficients	SE	z	P> z	95% CI	
Child abuse → Depression	0.27	0.05	6.07	<0.0001	0.18	0.36
IPV past 12 months → Depression	0.24	0.04	5.83	<0.0001	0.16	0.33
Child abuse → Sexual Relationship Power	-0.35	0.05	-7.84	<0.0001	-0.44	-0.27
IPV past 12 months → PTSD	0.24	0.04	5.71	<0.0001	0.16	0.32
Child abuse → PTSD	0.29	0.04	6.45	<0.0001	0.20	0.38
Other life trauma → PTSD	0.15	0.05	2.81	0.005	0.04	0.25
Sexual Relationship Power → IPV past 12 months	-0.24	0.05	-5.22	<0.0001	-0.33	-0.15
Child trauma → IPV past 12 months	0.13	0.05	2.46	0.014	0.03	0.23
Other life trauma → IPV past 12 months	0.16	0.06	2.60	0.009	0.04	0.28
IPV past 12 months → Binge drinking	0.19	0.04	4.43	<0.0001	0.11	0.28
Child abuse → Other trauma	0.18	0.07	2.64	0.008	0.05	0.32
Disturbance variances		Estimate	SE		95% CI	
Depression		0.86	0.03		0.80	0.91
Sexual Relationship Power		0.87	0.03		0.81	0.94
PTSD		0.80	0.03		0.73	0.87
IPV past 12 months		0.85	0.03		0.78	0.92
Binge drinking		0.94	0.03		0.89	0.99
Child abuse		0.99	0.01		0.97	1.01
Other life trauma		0.95	0.03		0.89	1.01
Equation-level goodness of fit		r-squared				
Child abuse		0.008				
Other life trauma		0.050				
Model fit statistics						
p > chi2		<0.0001				
RMSEA		0.04				
CFI		0.92				
TLI		0.91				

6.5 Discussion

This study aimed to investigate the underlying pathways from child abuse to recent IPV. We hypothesised that comorbid mental ill health measures could mediate the relationship of child abuse and IPV in addition to being effects of IPV. In this study, we found that the significant inter-relationships of mental ill health measures mediated the relationship of child abuse and recent IPV. Child abuse had direct effects on PTSD symptoms and depression together with indirect effects on binge drinking. These findings show the persistence of mental ill health associated with childhood exposures of violence. Moreover, they conform to the theory of intergenerational transmission of violence. The findings also suggest bi-directionality in the relationship of IPV and mental ill health that is suggested in other studies(112). PTSD, depression and binge drinking had direct effects on recent IPV and vice versa.

The study findings extend the existing literature by showing multiple pathways from child abuse to adult women's experiences of IPV. The multiple pathways observed in this study reflect the potential to prevent women's experiences of IPV by implementing different interventions and with different target groups. Of particular note is the role of mental health services and psychosocial support in addressing mental ill health among women. Interventions with women and girls that present with symptoms of mental ill health may have potential to reduce their further victimisation.

The prevalence of mental ill health among women substantiates the need for efforts to integrate mental health services into primary health care as a response to IPV in these settings. Nevertheless, other research in the same study settings has shown that health care providers do not take into consideration the patient's illness narrative, miss the symptoms of mental ill health presented by victims of IPV, are uncertain of how to respond to IPV and lack knowledge of referral systems (368, 369). The result is that common mental disorders remain largely undetected and untreated in primary healthcare and this impact on the overall health of women (354). Continued training of health care providers in targeted identification of symptoms of mental ill health and strengthened referral systems between health care service providers, psychosocial services and community based care are critical to curb the risk of women's experience of IPV (370, 371). Collaboration between community based non-governmental organisations, stakeholders from the health sector, police, justice and community structures is necessary to strengthen a coordinated response and addressing child abuse, mental ill health and violence against women (354).

Other priority areas for the mental health and IPV response include the identification and reduction of barriers to women's access to available services. This should include the promotion of mental health literacy to improve positive help-seeking behaviours for common mental health disorders (372). Another potential

entry point for addressing mental health could be in the provision of reproductive health services and Voluntary Counselling and Testing services. Women who are at a higher risk of IPV access these services and research has shown that women welcomed being screened for IPV in these settings (373). Lay counsellor training could be tailored to include detecting mental ill health symptoms and provide the necessary referrals to mental health services providers (374).

These findings also show mental health as an effect of social problems. Addressing mental health in this context ought to go beyond a biomedical approach of treating symptoms to the development of brief culturally adapted interventions that can be administered in resource poor settings and help women to develop coping strategies or resilience (375). The availability of effective referral systems to community-based care ensures sustainability of interventions. However, there is also need for adequate support, resourcing and capacity building for community-based organisations to be able to deliver quality psychosocial services.

The study findings showed a positive association between alcohol abuse and IPV that is consistent with previous literature. We also found that partner alcohol consumptions patterns were independently associated with recent IPV. Additionally, our study showed the comorbidity of alcohol abuse with PTSD and depressive symptoms. In South Africa, alcohol abuse is also associated with structural factors that we have not accounted for in this study. Nonetheless, this study adds to the evidence suggesting that society-level strategies, couple level and individual level interventions that address harmful alcohol use are pertinent in reducing the prevalence of IPV in South Africa.

The study provides evidence of the need for primary interventions aimed to reduce child abuse or address its mental health effects among women and girls may have the potential to reduce lifetime and recent IPV. Secondary prevention may entail strengthening school and community based linkages to care for children with symptoms of common mental disorders or other mechanisms for mental health surveillance among children and youths (376, 377). Future research needs to investigate social support and personal characteristics that increase resilience to mental ill health and inform interventions for reducing women and girls' risk to further victimisation (378, 379).

This study also showed the significant contribution of other life trauma on PTSD, binge drinking and IPV experiences among women. Another study with men from the same population showed that experiencing of other life traumatic events exacerbated their perpetration of IPV and the relationship was also mediated by PTSD (1). These findings reflect on South Africa's societal context of high rates of interpersonal

violence and crime impacting on violence in the home including child abuse and violence against women (380). The findings are consistent with research showing that in communities with higher prevalence of community crime and violence, children and women are more vulnerable to abuse because social control is lower and violence has been normalised (381).

The mediation of sexual relationship power in the relationship of child abuse and IPV experiences is consistent with findings of previous studies showing associations between IPV and male controlling practices (60, 77, 216). Scoring higher on the relationship power scale was protective of recent IPV risk. These findings highlight the continued need to address inequitable norms around gender relations in this context. However, given the findings from this study, interventions need to include both IPV prevention interventions focusing on empowering women and shifting in gender norms and the acceptability of violence, as well as and addressing mental ill health.

This study was limited in that it was cross-sectional and the models presented specifically focused on the relationship between child abuse, mental ill health symptoms and IPV experiences by women. The child abuse measure in the study is retrospective and may differ from the current incidence, however the findings reveal high prevalence of child abuse that could be averted by measures to mitigate corporal punishment of children and promote positive discipline at home and in schools(382). The study did not include several other factors that have been fairly well established to be causally related to IPV at different levels of the integrated ecological model (46). Therefore, these findings only relate to the inter-relationships of the observed variables and so do our conclusions and recommendations. While the data was from a survey and thus limited in establishing temporality, the use of the past 12 month estimated for IPV, current mental health allowed for testing of pathways from child abuse, a component that makes this study novel in our context.

Further research is necessary to investigate the observed relationships through longitudinal studies with larger samples, using clinical diagnoses and biomarkers for mental ill health and including other factors that are associated with abuse but not measured in this study for example poverty. Studies should employ analytical approaches to explore the multiple pathways and the overall impact of child abuse or mental ill health on IPV risk. Future psychosocial interventions should incorporate strategies to enhance women's resilience to mental ill health in these settings and reduce women and girls' risk of further victimisation. (378, 379).

6.6 Conclusion

This study has shown that mental ill health mediates the relationship of child abuse and IPV among women. Recent IPV is also associated with mental ill health effects. Treatment for mental disorders may form an important part of an effective package of interventions to prevent IPV, along with other gender transformative, parenting, and alcohol reduction programmes. IPV prevention programmes also have potential to reduce mental ill health among women. Evaluating current advocacy practice, developing and building consensus on effective, evidence-based violence reduction interventions needs to be a priority for improving the overall health of women in South Africa.

07

Paper Four

7 SOCIAL SUPPORT FACTORS ASSOCIATED WITH PSYCHOLOGICAL RESILIENCE AMONG WOMEN VICTIMS OF INTIMATE PARTNER VIOLENCE

Citation: **Machisa M.T.**, Christofides N., Jewkes R. (2018). Social support factors associated with psychological resilience among women survivors of intimate partner violence in Gauteng, South Africa. Global Health Action. Special Issue Gender and Health Inequality. VOL. 00, 1491114 (3)

7.1 Abstract

Background: Women's experiences of intimate partner violence (IPV) increase their risk for mental ill health. However, some women exposed to IPV and adversity are psychologically resilient and function well despite these exposures.

Objectives: We conducted a study to investigate the factors that are associated with psychological resilience among abused women using data collected in a household survey conducted in Gauteng province of South Africa.

Methods: Data is from a cross-sectional study. A multistage random sampling approach was used to select a sample of 501 women. The WHO Multi-Country Study on Women's Health and Domestic Violence Questionnaire was used to measure lifetime experience of physical and sexual IPV in lifetime. Only 189 women who had experienced lifetime IPV were included in this secondary analysis. Resilience was measured as scoring below the threshold for the Centre for Epidemiological Studies Depression Scale and the Harvard Trauma Questionnaire. Other explanatory factors measured included child sexual abuse, non-partner rape, other traumatic life events, social support indicators, binge drinking and socio-demographic variables. Multivariable regression analysis was used to test factors associated with resilience.

Results: Forty two percent of women scored below the threshold for PTSD or depressive symptoms at the time of the survey and so were categorized as resilient. Social support indicators were associated with increased resilience. Women who perceived that their communities were supportive, and they would easily find money in an emergency were more likely to be resilient. Women who binge drank, experienced severe IPV in past 12 months, received negative reactions to disclosure and utilized medical or psycho-social services were less likely to be resilient.

Conclusion: Social support indicators including social connectedness, stronger network ties and perceived supportive communities are key factors in fostering resilience among abused women. Interventions should aim to promote stronger and supportive social networks and increase women's utilization of formal support services

Key words; Resilience, intimate partner violence, social support

7.2 Introduction

Women survivors of intimate partner violence (IPV) are at increased risk of mental ill health including depression and posttraumatic stress disorder (PTSD) (115, 118, 280, 282, 284, 286, 383), notwithstanding the fact that the relationship of IPV and mental ill health may be bi-directional (2, 118, 119). Mental ill health among women has also been partially explained by pathways from other violent exposures, including histories of childhood physical and or sexual abuse, rape by non-partners or other life traumatic events such as being near death experiences or being victims of crimes (2, 45, 250, 303, 355). Multiple and repeat victimisation compounds the negative mental health effects experienced by women. Socio-economic factors such as social class and poverty, low levels of education, unemployment, and limited social support also negatively impact on women's mental health (283, 355, 384, 385).

While women's IPV experiences increase their risk of mental ill health, some women exposed to IPV, adversity and multiple forms of victimisation, function well despite these exposures. The absence of psychopathology after traumatic exposure is an indicator of resilience (386). Pathways to psychological resilience include positive adaptation to adversity including overcoming highly stressful events or trauma or challenging situations and maintaining mental health (219-221). Psychological resilience is therefore both a dynamic process and outcome that results from individuals being able to interact with their environments to promote mental well-being or protect themselves against the influence of adverse risk factors (221). In the context of social support psychological resilience entails the ability to harness key supportive resources , which may be emotional, informational, or practical in nature, in order to sustain well-being (222, 223). The outcome of resilience is therefore the result of cumulative protective factors effectively countering cumulative risk factors that an individual is exposed to (180, 224).

Social support, which refers to one being part of a supportive social network of other people that care and are available to help through life challenges, is key to sustaining mental well-being and has been shown to assist with victim coping after experiencing a traumatic event (73, 169, 387). Social support, or the lack of it, is important in enabling or hindering perpetrators' ability to sustain abusive relationships through social isolation of victims. Levels of social support are lower among abused women compared to non-abused women (72, 73). Moreover, mental ill health symptoms for example depression and suicidality are heightened among victims who are more socially isolated (70, 73).

Among abused women, seeking support from a network of people that are supportive and sympathetic, enhances women's coping skills and mitigates the adverse mental health outcomes of IPV (70, 72, 73, 225). On the contrary, in many instances women victims of abuse receive negative reactions from social resources who may blame or be unsupportive. This is not beneficial and may pose as a further deterrent to women seeking help (72).

The availability of positive social support is associated with women's greater access and utilisation of services. Abused women who lack positive social support tend to be less knowledgeable about available formal support systems, and are less likely to utilize formal services (72). However, the relationship of positive social support and service utilisation is confounded by socioeconomic status in particular the lack of financial resources or low accessibility of services that is common in low income settings (72, 388). The utilisation of formal services is also influenced by severity and frequency of abuse, availability of personal resources, perceived efficacy and reactions of formal support systems (72, 388, 389).

The persistence of negative societal attitudes that seek to maintain traditional gender roles and justifies male dominance over women also impacts negatively on abused women's willingness to disclose violence experiences and seek social support (388). When severe abuse is met with stigma in the community, women will be less likely to disclose it to family and even less likely to disclose outside the family, or report it to police or other formal service providers (388).

The body of knowledge on resilience among abused African women is limited, yet it is important to understand why some abused women are resilient while others develop mental ill health. Fewer studies have explored the mediating effects of social support, use of services and self-disclosure of abuse in reducing the risk of mental ill health amongst abused women. In the present study, we took the absence of psychopathology to be an indicator of resilience. This paper describes the characteristics of abused women who did not report PTSD or depressive symptoms and distinguishes them from those who were abused and reported symptoms. We also present factors associated with the absence of depressive and PTSD symptoms among abused women.

7.3 Methods

We used data collected through a household survey with a representative sample of women from Gauteng Province of South Africa. The survey design included a multi-stage random sampling approach to randomly select 40 enumeration areas (EA) at the first stage.

At the second stage, 20 households were randomly selected in each EA and lastly only one adult woman residing in a selected household was invited to participate in the study. Researchers reached 96% of the selected households and 89% of these households had an eligible participant. The response rate among women was 79%. Interviews were conducted with 511 eligible women who gave written consent to participate in the study (22). In this secondary analysis, only women who had experienced sexual or physical IPV in their lifetime were included (N=189)

We obtained ethical approvals for the studies from the University of the Witwatersrand Faculty of Health Science Human Ethics Committee and the South African Medical Research Council Ethics Review Committee. All research was conducted conforming to safety guidelines for conducting research on domestic violence (11, 277). Researchers allocated anonymous study identification numbers to participants, conducted interviews in privacy and assured them of confidentiality including that no data would be linked back to them. Women also received local referrals for support when they requested it from the researchers.

7.3.1 Measurement

7.3.1.1 Outcome variable

The main outcome of the study was resilience to PTSD and or depression among abused women. Depression was measured using 20 items of the Centre for Epidemiologic Studies Depression Scale (CES-D) (Cronbach's $\alpha = 0.942$) (266). We summed up the item scores to create a continuous CES-D score, then we used 16 as a cutoff to dichotomize the score. A score equal or greater than 16 indicated a high probability of clinical depression. PTSD symptoms were measured using 30 items of the Harvard Trauma Questionnaire (Cronbach's $\alpha=0.975$) (270). Researchers asked participants whether each of the symptoms had bothered them in the past weeks and could respond by "not at all" (1), "a little" (2), "quite often" (3) and "extremely often" (4). We summed scores for all items divided by 30 items to obtain a PTSD score and a 2.5 cut-off to indicate PTSD symptoms. We created a resilience variable by combining the depression and PTSD variables. Consistent with other studies, resilience was defined having less than the threshold for depressive (CESD score<16) and PTSD symptoms (PTSD score<2.5) (224).

7.3.1.2 Exposure variables

The main exposure variables of interest were physical and or sexual IPV in lifetime. Physical and or sexual IPV experiences were measured using the WHO Multi-country Study on Women's Health and Domestic Violence: Core Questionnaire and WHO Instrument – Version 9 (319). Physical IPV was defined as being slapped, having dangerous objects thrown at you, being pushed, kicked, hit, dragged, choked, beaten, burnt or threatened by an intimate partner with a weapon.

Sexual IPV was defined as being physically forced to have non-consensual sex or sex because of fear of what a male partner might do or being forced to do something sexual by a male partner that they found degrading or humiliating. Only women that had experienced acts of physical or sexual IPV were included in the study. Women's experiences of IPV in the 12 months before the survey were generated using a recode of responses to the questions "Have any of these acts happened in the past 12 months?" which followed the physical and sexual IPV item questions.

Child sexual abuse was measured by four items from the Childhood Trauma Questionnaire (272). The items included "Before I turned 18 someone touched my buttocks or genitals or made me touch them when I did not want to; I had sex with a man who was more than 5 years older than me; I had sex with someone because I was threatened or frightened or forced and was forced to have sex against my will by a boyfriend. Possible responses for items of the Childhood Trauma Questionnaire were never true, sometimes true, often true and very often true. We created dichotomous variables of never vs ever.

Lifetime experience of non-partner rape was measured by the question "How many times have you been forced or persuaded to have sex against your will by a man who wasn't your husband or boyfriend? Possible responses were never, once and more than once. We created a binary variable of never vs once or more times.

Other experiences of life traumatic events were measured using the Life Events checklist (390). Traumatic events included imprisonment /detainment, civil unrest/war, serious injury requiring hospitalization, being close to death, witnessing a murder of family or friend, unnatural death of family or friend, witnessing the murder of stranger/s, torture, robbed or carjacked at gun or knife point and kidnapping. Responses to each trauma event were either yes (1) or no (0). We summed the responses to create a continuous trauma score and a binary outcome of no traumatic events (score=0) vs one or more traumatic events exposures (score>0).

Sociodemographic variables measured were age grouped into three categories: 18-29, 30-44 and 45+; education grouped into three categories: primary school and lower, secondary education and tertiary education and employment in the year before the survey. Current relationship status was measured by the question "Do you currently have a husband or boyfriend". Alcohol consumption was measured using items from the Alcohol Use Disorders Identification Test (AUDIT) scale (274). Researchers asked the participants whether they had drunk alcohol in the last year and whether they had consumed more than five drinks on one occasion.

Socio-economic status related questions asked included, “Would you say people in your home often, sometimes, seldom or never go without food?”. We created a binary variable of sometimes or often vs seldom or never. We also created a variable that combined employment status and income i.e no employment, employed and earning less than 2000R and earning more than 2000R.

Several social-support related questions were asked including “If you had an emergency and 200 South African Rands (equivalent of USD8) was needed immediately would you say would be very easy, easy, quite difficult or very difficult to find the money. We created a binary category of easy or very easy vs quite or very difficult. This variable was used as an indicator for social connectedness and perceptions of social resources available in emergency.

Seeking family support was measured by variables that assessed self-disclosure of IPV experiences and seeking help from family when facing emotional difficulties. Questions included “Did you tell anyone in your family about abuse incidents” and “When feeling sad, disappointed or frustrated have you ever sought help from (1) older relatives (2) through family meetings?” Possible responses were yes or no. Women who sought were also asked questions about how the family members responded. Possible negative responses were: they blamed me, they were indifferent, and they told me to keep it quiet. Positive responses were: they supported me, they were hurt by it and they advised me to report to police. We created a categorical variable for not seeking support, seeking family support and receiving either positive or negative reactions. Informational support was measured by a proxy question “How often have you talked to someone about domestic violence? Possible responses were never, once or twice, sometimes and often. We created a binary variable of never talked about IPV vs talked about IPV once or more.

Formal support services available to support abused women include medical and or psychosocial services. We therefore assessed women’s utilization of services through questions about whether they had sought medical attention, had been to a shelter for abused women or received counselling for the abuse. Women were also asked the questions, “When feeling sad, disappointed or frustrated have you ever sought help from (1) professional counselling or (2) a doctor. We created a binary service utilization variable of using none of the services vs using one or more services.

Women's perceptions of community attitudes towards gender relations and intimate partner violence were used as a proxy for cultural beliefs and perceived community support. Attitudes were measured by six questions with Likert responses of "strongly agree (1), agree (2), disagree (3) and strongly disagree (4)" (Cronbach's 0.84). Examples of questions were "My community thinks that if a wife does something wrong, her husband has the right to punish her"; "My community thinks that if a man beats you, it shows he loves you" and "My community thinks that if a man has paid lobola (bride price) for his wife, she must have sex whenever he wants it". The scores from the six items were summed up and scores ranged between 6 and 24 with lower scores indicating that women perceived their communities to be supportive of inequitable gender dynamics within intimate relationships and condoning or legitimizing the use of violence by male partners to control women. We created a binary variable of unsupportive vs supportive community perceptions using a cutoff of 15.

7.3.2 Data analysis

All analyses were done in Stata using "svy" commands taking into account the multi-stage sampling design of the survey. We conducted bivariate by cross-tabulation of variables by the resilience outcome variable to describe the prevalence of resilience by the different characteristics (**Table 7:1**). Secondly, we built a multivariable logistic regression model and included socio-demographic variables that had p-value less than 0.3 in the bivariate analyses and all the explanatory variables that were associated with resilience in literature. (**Table 7:2**). Socio-demographic variables included in the regression model included employment and income, alcohol consumption, utilisation of medical or psychosocial services and severity of IPV in past 12 months. Social support variables were ease of finding money in emergency, alcohol consumption, family support and reactions, knowing someone who is abused in community or family and talking about IPV. We adjusted the model for the traumatic exposures namely history of child sexual abuse, non-partner rape and other traumatic events.

7.4 Results

The sample comprised of 189 women who experienced physical or sexual IPV in their lifetime. Forty two percent of women in the sample experienced IPV in the year before the survey. **Table 7:1** shows that most of the women were less than 44 years of age (69.4%), had attended secondary education (80%), had not worked in the past year (56.6%) and were in a current intimate relationship (77.3%). The majority of women found it difficult to obtain 200 South African Rands in an emergency (79.9%) and close to half (44%) did not have food in their households. Twenty two percent of women had been raped by a non-partner, 38.1% had experienced child sexual abuse, and 54.6% had experienced other traumatic events. Over half of women (51.3%) consumed alcohol and 24.7% binge drank in the past year.

The majority of women sought family support (71.4%) and more women received supportive reactions than negative reactions. Fewer women utilized medical or psychosocial services (40%) or reported to police (18.5%). About half of the women perceived their communities to be more supportive of equitable gender norms (46%). Almost two thirds of women knew another abused woman in their community or family and over half of the women had talked to someone about domestic violence (52.7%) (**Table 7:1**)

Forty two percent of women scored below the threshold for PTSD or depressive symptoms at the time of the survey and so were categorized as resilient. Fifty eight percent of the women scored above the thresholds: 56% of women scored above the 16+ threshold for depression and 15.4% had above the 2.5 threshold on the PTSD scores. Forty two percent of women had depression symptoms only, 1.1% women had PTSD symptoms only and 14.3% had both depression and PTSD symptoms.

A significantly higher proportion of resilient women were in current relationships and cohabiting (57.5% vs 37.6%) perceived that their community was supportive (53.8% vs 40.4%) and found it easy to find money in emergency (28.8% vs 13.8%) compared to the women who reported mental ill health symptoms. Women who experienced IPV in the 12 months before the survey (28.7% vs 51.4%), knew some other woman who was abused (60% vs 74.3%), who sought family support (65% vs 76.2%), or utilized services (30% vs 46.8%) were less likely to have scores less than the threshold for PTSD or depressive symptoms. There were no significant differences in the proportion of non-resilient vs resilient women by age group, level of education, employment status, availability of food in the home and experiences of child sexual abuse, non-partner rape or other traumatic event exposure. Almost similar proportions of resilient and non-resilient women had talked to someone about domestic violence (**Table 7:1**).

Table 7:1 Resilience disaggregated by socio-demographic, trauma exposures and social support.

	PTSD or depression symptoms		Resilient (below threshold for PTSD or depression)		Total		P value
	N	%	N	%	N	%	
Age group							
18–29	33	30.3	24	30.0	57	30.2	0.859
30–44	41	37.6	33	41.3	74	39.2	
45+	35	32.1	23	28.8	258	30.7	
Education							
Primary schooling and below	21	19.3	17	21.3	38	20.1	0.936
Secondary schooling	74	67.9	53	66.3	127	67.2	
Tertiary education	14	12.8	10	12.5	24	12.7	
Relationship status							
Not in relationship	25	22.9	18	22.5	43	22.8	0.015
In relationship but not cohabiting	43	39.5	16	20.0	59	31.2	
In relationship and cohabiting	41	37.6	46	57.5	87	46.0	
Employment and income							
Not employed	63	57.8	48	60.0	111	58.7	0.317
Employed earned < 2000R	17	15.6	17	21.3	34	18.0	
Earned more than 2000R	29	26.6	15	18.8	44	23.3	
No alcohol consumption in past 12 months	49	45.0	50	62.5	99	52.4	0.017
Alcohol consumed, no binge drinking	27	24.8	18	22.5	45	23.8	
Binge drinking	33	30.3	12	15	45	23.8	
Difficult to find money in emergency	94	86.2	57	71.3	151	79.9	0.031
Easy to find money in emergency	15	13.8	23	28.8	38	20.1	
Family often or sometimes without food	49	45.0	34	42.5	83	43.9	0.772
Family seldom or never without food	60	55.1	46	57.5	106	56.1	
History of child sexual abuse							
Never	63	57.8	54	67.5	117	61.9	0.184
Once or more	46	42.2	26	32.5	72	38.1	
Non-partner rape							
None	78	72.9	66	83.5	144	77.4	0.058
Once or more	29	27.1	13	16.5	42	22.6	
Other life traumatic event							
None	43	40.2	42	52.5	85	45.5	0.100
One or more	64	59.8	38	47.5	102	54.6	
Perceptions of community attitudes							
Unsupportive	65	59.6	37	46.3	102	54.0	0.091
Supportive	44	40.4	43	53.8	87	46.0	
Family support							
No	26	23.9	28	35.0	54	28.6	0.039
Yes	83	76.2	52	65.0	135	71.4	
Medical or psychosocial services utilization							
No	58	53.2	56	70.0	114	60.3	0.006
Yes	51	46.8	24	30.0	75	39.7	
Physical, sexual or emotional IPV in past 12 months							
None	53	48.6	57	71.3	110	58.2	0.014
Once or more	56	51.4	23	28.8	79	41.8	
Severity/frequency of IPV							
Mild	65	59.6	57	71.3	122	64.6	0.149
Severe	44	40.4	23	28.8	67	35.5	
IPV gradient							
No IPV in last 12 months	53	48.6	57	71.3	110	58.2	0.011
Mild IPV in past 12moths	28	25.7	15	18.8	43	22.8	
Severe (repeat sexual and physical) IPV in past 12 months	28	25.7	8	10.0	36	19.1	
Know someone else abused by partner							
No	28	25.7	32	40.0	60	31.8	0.047
Yes	81	74.3	48	60.0	129	68.3	
Talk about IPV							
No	52	48.2	37	46.3	89	47.3	0.779
Yes	56	51.9	43	53.8	99	52.7	

Table 7:2 shows that women who binge drank, had unsupportive reactions from family, used medical or psychosocial services or experienced repeat IPV episodes in the past year were less likely to be resilient. Women who worked and earned over R2000 a month were less likely to be resilient compared to unemployed women (AOR 0.36; 95% CI 0.14-0.91). Women who binge drank were less likely to be resilient compared to women that had not drunk alcohol in the past year (AOR 0.39; 95% CI 0.17-0.91). Women who received negative family reactions were less likely to be resilient compared to women that did not seek family support (AOR 0.22 95% CI 0.05-0.98). Increased resilience was associated with perceptions of a supportive community (AOR 2.35; 95% CI 1.03-5.35) and being able to find money in an emergency (AOR 5.37; 95% CI 1.63-17.64) (**Table 7:2**).

Table 7:2 Factors associated with resilience among abused women.

	AOR	95% CI		P value
Unemployed in past 12 months	1.00			
Employed earned < 2000R	1.75	0.49	6.27	0.375
Earned more than 2000R	0.36	0.14	0.91	0.033
No alcohol consumption in past 12 months	1.00			
Alcohol consumed, no binge drinking	0.54	0.21	1.39	0.195
Binge drinking	0.39	0.17	0.91	0.03
No IPV in past 12 months	1.00			
Mild IPV	0.57	0.21	1.53	0.253
Severe IPV	0.29	0.12	0.74	0.011
Other trauma exposure	0.88	0.40	1.94	0.744
History of child sexual violence	1.32	0.61	2.82	0.468
Experienced non-partner rape once or more in lifetime	0.62	0.24	1.61	0.311

7.5 Discussion

This study shows evidence that among women who experienced sexual or physical IPV in their life, about half of women did not report symptoms of PTSD or depression and so were considered to be resilient. Severity of IPV was associated with resilience and women who experienced more severe IPV in the past 12 months were less likely to be resilient. This is consistent with research that shows a strong dose-response relationship between severity of abuse and mental ill health (169, 181, 195, 210, 391-393).

Other research has shown that due to social isolation by perpetrators, women who experience severe IPV are less likely to disclose abuse and receive social support from their informal networks or from formal services (394).

After adjusting for IPV severity and violent exposures, the main factors that were associated with increased resilience were indicators of social support. Women's social capital and connectedness influence their ability to mobilise resources from their networks and has been identified associated with positive effects on health outcomes (395). More of the women in this study, said they would find it difficult to get money in emergency. This may be indicative of their poor social connectedness, weaker social ties or limited practical support available from their support networks. In contrast, being able to find money in an emergency was a proxy indicator that women are sufficiently socially connected or have practical social support. We found that the women who found it easier to find money in emergency were more likely to be resilient and this could relate to both resource access and stronger social ties. Stronger social ties are associated with greater disclosure to informal networks coupled with the greater practical support that may result in greater access to formal support (72, 396).

The social context in which abused women live impacts on their connectedness to others and their access formal services and ultimately on their ability to cope in or leave abusive relationships (396). Inherently, the social contexts in which women live can vary substantially. Some communities have greater social cohesion than others. Prevailing community attitudes play an important role in responses to violence against women (68). In communities with less social cohesion and where inequitable gender and subjective norms are prevailing, people are more likely to justify the abuse of women and victims will be less likely to disclose abuse or seek help (69). Conversely, abused women living in supportive communities are more likely to disclose abuse compared to women living in unsupportive communities where women are blamed for the abuse (70). However, the beneficial health outcomes of social capital occur at the individual level and so may vary among individuals even within the same community (397). When individuals perceive their communities to be supportive towards victims of abuse, this has benefits for the mental health of individuals making them more likely to be psychologically resilient as shown in this study (224, 398).

Similar to many studies, most women in the study sought family support for emotional difficulties and disclosed abuse to family members (72). Disclosing abuse and seeking help from formal support services has been shown to avert the long-term mental health impact of abuse. Consistent with other literature, seeking family support in itself was not associated with a positive impact on mental health but rather the positive effect was dependent on positive reactions of the people the women disclosed to (70, 72).

In this study, women who received negative family reaction were less likely to be resilient. Research has shown that women who receive negative reactions when disclosing violence, feel revictimized (72, 399).

The utilization of formal support services increases with available resources for example having transportation access, severity of the abuse and its association with psychiatric or mental illness, community attitudes towards victims, and previous trauma history (70, 195, 224, 400-404). In our study, we found that generally a smaller proportion of women consulted mental health practitioners indicating the presence of barriers in women's access to services. Contrary to the expected positive mental benefits of service utilisation, we found that the fewer women who utilized services were less likely to be resilient. This finding should be further investigated as it may point to the limited efficacy of the services provided to victims. It is a possibility that interventions could be symptom focused and not address other needs of women such as the continued exposure to violence and thus have short-lived benefits (85, 405).

Among abused women, heavy drinkers have been found to report more severe symptoms suggesting that the relationship of trauma, PTSD and alcohol use could be motivated by reasons such as "drinking to cope" (210). However, in this study, women's binge drinking as a coping strategy did not confer increased resilience.

Women who were employed and earned more were less likely to be resilient, a deviation from other studies showing higher socio-economic status having more resources and becoming less resilient (391, 406). This observation may be explained by the differential access to informal social support and coping resources available to women that may supersede the ownership of material resources in conferring resilience.

This study is not without limitations. The restriction of the survey data to only abused women resulted in a smaller sample size for analysis. This may have limited study power or affected the associations and effect sizes against variables. Smaller studies sometimes show different, often larger effects than large ones. Moreover, the analysis is based on individual factors and did not measure other factors such as biological, environmental and societal factors that play a role in the development of psychological resilience. As such the conclusions made in this study only pertain to the observed associations. Other social support measures could also be used in addition to longitudinal research which may be more appropriate in investigating a phenomenon such as resilience that is not static and can change in response to different life stressors over time. This study was limited in that it was cross-sectional and focused on resilience at one time point. As a result, we cannot be sure whether the direction of some relationships. For example, the association between alcohol use and mental ill health may be bi-directional.

Pathways to resilience differ at individual level and may not always lead to the absence of psychopathology (180, 224). However for an individual exposed to violent exposures it was appropriate to define resilience in terms of the absence of psychiatric diagnoses (219, 224). In this study, we took the approach that resilience is the absence of psychopathology, but future research could explore other definitions and indicators for resilience including using standardised resilience scales among abused women to expand the body of knowledge for the field in African settings.

7.6 Conclusion and policy implication

Notwithstanding, our findings suggest that social support indicators including social connectedness, stronger network ties and perceived supportive communities are key factors in fostering resilience among abused women. Negative family reactions negatively impacted women's mental health and accessing formal services was not positively associated with resilience. In the study settings where mental health services are limited and often not accessed as shown in this study, the value of family or community-based support cannot be overemphasized. In addition to interventions to increase women's utilization of available services, there is need to promote stronger social support and social networks in families and communities. Support groups can be platforms through which women network with other women who are abused and opportunities to obtain instrumental support that could help them cope better as well as foster self-efficacy and esteem (399). Capacity building for community-based organisations to provide effective social support within the reach of women is also critical. Further prospective research on social support and other protective factors is necessary using bigger samples and longitudinal design to inform context-specific and targeted interventions that work.

08

Discussion

8 DISCUSSION

This thesis aimed to investigate the relationships between childhood trauma, mental ill-health, women's experiences and male perpetration of intimate partner violence in Gauteng province of South Africa in 2010. Specific objectives were a) to conduct a global systematic review and meta-analyses to estimate the associations between alcohol abuse, mental ill health symptoms and perpetration of IPV as an outcome; b) to investigate the relationships and pathways between childhood trauma and men's IPV perpetration including the mediating effects of mental ill health; c) to investigate the inter-relationships of childhood trauma, mental ill health and women's experiences of IPV and lastly d) investigating the factors associated with absence of psychopathology among women survivors of IPV. Four journal article manuscripts were produced which align to the set four objectives (1-4). Three of the manuscripts have been published and the last manuscript has been submitted for publication.

The purpose of this concluding chapter is to draw out the over-arching findings already presented in preceding chapters; discuss what has been learned overall from the different aspects and the implications of this for research and programming in the IPV field. In doing so, I also return to the research objectives and gaps identified in scoping this work and show how these have been addressed through this work.

8.1 Comparison of women's and men's reports of IPV

This study reflects higher reporting of lifetime IPV perpetration by men (62%) compared to reporting of IPV experiences by women (50%) using similar measures and in the same settings. More so, a higher proportion of men (22%) reported perpetrating all forms of physical, sexual, emotional and emotional IPV as compared to women's (11.2%) reports of experiences in their lifetime. These findings are consistent with those of the UN Multi-country study, which uniquely measured both women's violence experiences and men's perpetration in the same countries using the WHO domestic violence questionnaires similarly used in this thesis, which compared women's and men's reports to find higher reporting of lifetime IPV perpetration by men compared to reporting of experiences by women (407). The higher reporting of lifetime IPV perpetration by men demonstrates the additional benefits of gathering data from male perpetrators as opposed to just relying on data exclusively from samples of women (19, 407). Population based men's studies, which are increasing in the field of VAW, are very important in understanding perpetration risk factors and provide an evidence base for effective programmes and policy (19, 304, 408). Nevertheless, these findings show the potential unreliability of using a lifetime measure of IPV only when conducting gender-based violence studies with women. It also shows that the documented estimates on violence against

women, deduced from women only study samples and focusing on victimisation, as is the case with many studies, could under-estimate the true extent of the problem (407, 408). A recent global systematic review conducted by WHO reported that one in three women had experienced physical and or sexual IPV in their lifetime yet men's studies in different low and middle-income countries have reported an even higher prevalence of lifetime IPV perpetration (5, 19, 304).

However, consistent with research in other settings, the reporting of women's experiences (18%) and men's perpetration (19.7%) of IPV in the past year in this study was comparable (407). The comparable findings of women's reports of experience and men's reports of perpetration of IPV strengthens confidence in the reliability and validity of a past year IPV measure with women, in contexts of limited financial resources available for research, as a reliable indicator of the true extent of VAW in line with the monitoring of the global United Nation's Sustainable Development Goals, especially in contexts of limited financial resources available for research (407, 409).

Under-reporting of women's IPV experiences in their lifetime or in the past year is influenced by factors including the community's norms around gender roles and power, social desirability, shame and guilt (410). In contexts of where social norms are accepting or condone men's use of violence to control women, men are more confident to disclose perpetration in a research context where there are no punitive repercussions for doing so (407). Conversely, inequitable gender norms are associated with attitudes that blame women victims discouraging them from disclosing their experiences (72). Women victims are thus more likely to under-report or minimise their experiences. Recall bias is also associated with under-reporting of lifetime measure of IPV since victims may have forgotten some experiences, or feel they have or want to move on with their lives (72, 407). Other work has found that women under-report IPV experiences because they discount, downplay, or excuse their partners, normalise violent acts as expressions of love, blame themselves for the abuse. This may be the case when women are economically dependent on abusive partners (410). While our study did not measure IPV severity, other studies showing differential reporting of IPV perpetration by men and experiences by women have found that men were more willing to report IPV perpetration that was less severe and were less willing to disclose more severe IPV (410). Conversely, women were more likely to report more severe experiences of IPV than they were to report less severe IPV (410).

8.2 Comparison of IPV prevalence to previous South African studies

We found a significantly higher reporting of IPV in lifetime in Gauteng province experienced by women or perpetrated by men from the general population compared to previous South African studies conducted in other provinces. For example, 33% of women in this study reported lifetime physical IPV experiences while 25% of women in a study conducted in Eastern Cape, Mpumalanga and the Northern Provinces (87) ; 23% of women in a study in Limpopo province, 25% of women in a study in the Western Cape and 24% of women in a study in KwaZulu Natal (25); 31% of women in the national South Africa Stress and Health Study (SASHS) (411), 21% of women in the recent national South African Demographic Health Survey (SADHS) 2016 and 17.7% of women in the SADHS reported lifetime experiences of physical IPV (27).

Similarly, we found higher prevalence of men's perpetration of IPV in lifetime in Gauteng province compared to previous violence focused studies conducted with men in other provinces. We found that 56% of men in this sample perpetrated physical IPV compared to 28% of men in the national SASHS (37); 42% of men in a study in rural KwaZulu Natal and Eastern Cape (38) and between 19% to 33% of men in other province specific studies perpetrated physical IPV in their lifetime (25). Prevalence of men's perpetration of lifetime IPV from this study was also higher than that reported in non-population based studies; 42% of men working in three Cape Town municipalities perpetrated lifetime physical IPV (39).

Eighteen percent of women reported experiences of IPV in the past year. These figures are higher than those reported in previous South African studies which found that about a tenth of women participating in surveys reported being in current or recent abusive relationships: 10 % of women in Eastern Cape, Mpumalanga and Northern Province experienced past 12 months physical IPV (28); 6% of women reported past 12 months physical IPV in the SADHS 1998 (29); 11% of women in KwaZulu Natal experienced past 12 months physical IPV, 6% of women in Limpopo and Western Cape reported past 12 months physical IPV (25) and 8% of women reported past 12 months physical IPV in the SADHS 2016 (27). In all the comparison studies, prevalence of sexual IPV was lower than physical IPV. All studies except the SADHS and the Three Provinces study which was conducted much earlier and did not have very good measures, were violence-focused surveys that used refined measures of IPV borrowing from the WHO's Domestic Violence Module (10).

Various factors influence the reporting of IPV in surveys. These include differential risks to IPV across different geographic locations, different population groups included in studies for example clinical vs non-clinical samples, methodological differences in sampling for example convenience samples vs random samples, data collection methods for example telephonic administered vs self-administered vs face to face interviewer administered questionnaire and training and support for fieldworkers (6, 11, 277, 410, 412). How research assistants are trained to collect data is critical in IPV research. Survey methods that minimise the under-reporting of IPV include careful selection, specialised training and ongoing support to fieldworkers; strategies to reduce distress to participants and refer women for support; measures to ensure women's safety including conducting interviews in privacy and protecting confidentiality and measures to increase disclosure such as having same sex fieldworkers (i.e women interviewing women and men interviewing men) (277, 412). There is also strong evidence showing that IPV prevalence violence-focused surveys produce higher prevalence statistics compared to broadly focused surveys such as the SADHS which is an omnibus health survey with a domestic violence module as an add on (6). Yet, the methodological considerations mentioned above could be taken to minimise under-reporting when violence questions are incorporated into omnibus surveys (277, 412). All the same, these findings also indicate the need for a South Africa violence-focused nationwide survey rather than relying on omnibus surveys like the SADHS so that the true extent of VAW and its drivers across different contextual settings could be understood better and inform programmes and policy.

8.3 Prevalence and factors associated with childhood trauma experiences

Consistent with previous studies we found high reporting of childhood trauma with the most commonly reported forms of childhood trauma being child physical abuse followed by emotional abuse. Child physical abuse includes the beating of children as a form of discipline, a norm that lends its acceptability to wider societal beliefs that condone and justify harsh parenting practices and punitive discipline in schools (413-416). Furthermore, we found gender disparate reporting of the different childhood trauma forms. More men participating in the study reported experiencing childhood physical abuse (men 88% vs women 72%) and emotional abuse (men 63% vs women 54%) compared to women. The findings in our study are similar to previous South African studies for example in an Eastern Cape intervention cohort 86% of women and 91% of men reported experiencing child physical punishment, 53% of women and 56% of men reported experiencing emotional abuse and neglect (273). Existing evidence suggests that boys are more likely to report physical abuse. The higher risk for boys' experiences of physical beating as discipline compared to girls has been associated with perceptions that boys are more likely to engage in deviant behaviours compared to girls (417-420).

In contrast, women reported more childhood neglect experience (men 55% vs women 59%), and child sexual abuse experience (men 20% vs women 28%) compared to men, although the differences were not large. Consistent to global trends and previous South African studies, more women compared to men reported child sexual abuse experience (273, 413, 421-424). Evidence suggests that for many girls, their first sexual encounter was forced sex (424). The prevalence of child sexual abuse in this study was higher than reported in other South African studies in clinical settings or intervention studies (273, 425)

Yet, the prevalence of the sexual victimisation of boys in this study is higher than in other settings (421, 423). More men in our study disclosed child sexual abuse compared to previous South African studies 20% vs 16% in an Eastern Cape cohort study and 9.4% in the men's study conducted in the Eastern Cape and KwaZulu Natal provinces (62, 273). In other research, 3.4% of men reported being sexually forced by a man, and 9.7% by a woman, 7.8% of men reported unwanted sexual touching and 2.3% reported being threatened or forced to have sex with someone who wasn't a girlfriend (23).

Rapes involving male victims are less studied compared to rapes of female victims. Male sexual victimisation by other men is characterised by patterns of sexual coercion that include the use of power from a position of age hierarchy, the use of physical force and abuse of trust by known persons. This is often the context of child sexual abuse. The prevalence of adult male rape has been shown to be higher among prison inmates or institutionalised men, and gay and bisexual men compared with men from the general population (426). Also, in most contexts, rape myths for men's rapes border on homophobia. Rape myths about male rapes include notions that male victims of rape exhibit lower levels of masculinity and that men who conform to society's masculine standard, cannot be raped. (23, 426-428). Most sexual crimes committed by against men and boys are perpetrated by men. However, women also perpetrate sexual crimes against men and boys but the dynamics therefore are under-studied (427).

Notwithstanding, our findings add to the body of evidence indicating disproportionately higher prevalence of child physical and sexual abuse reported by adults in South Africa compared to other settings of the world (250). According to WHO, about 25% of adults have been physically abused (vs 70+ in this study), about 20% of women (vs 28% in this study) and about 7.7% of men have been sexually abused in childhood (vs 20% in this study)(429)

Reflecting on methodology and reported estimates, the prevalence of child abuse reported in this study with adult participants is higher than that reported in studies with child, adolescents or youth participants showing that over 50% of adolescents have experienced child physical abuse, 35% experienced child emotional abuse and as high as one in three adolescents reported sexual abuse experiences (413, 430-434). These findings show the importance of considering the study population, measurement and methodological differences for purposes of policymaking. While the childhood trauma measures among adults are important, they reflect violent exposures of the past and more research should be undertaken to understand current exposures from children. Population based, representative and large-scale research of children's traumatic experiences in South Africa is limited but should be prioritised.

Although this study did not investigate the risk factors for childhood trauma in South African settings, these are well documented in literature. It is important that these are noted and discussed here since they relate to the broader intergenerational transmission of violence that involves IPV and to the mental and substance risk factors for IPV that we have studied here (46, 64, 67, 103). All forms of childhood trauma are associated with other family conflict and witnessing abuse of mother or primary female caregiver, caregiver substance abuse, poverty or socio-economic disadvantage and societal norms that condone violence (434-436). Violence experienced by children relates to the broader context of a violent society such that children are vulnerable at a societal, community and family level. As highlighted before, violence against children and women overlap at a societal level through broader norms supportive of male dominance which justify the use of violence to assert control (90). Societal norms that fuel childhood physical abuse include accepted use of harsh punishment for example spanking as a disciplinary tool by adults at home and in school environments (437).

Currently, at a societal level there is ongoing debate about the banning of corporal punishment in schools and at home. While legislation including the South African Children's Act 38 of 2005 and the South African Schools Act No 84 of 1996 criminalise corporal punishment, regulation in home settings remains a challenge with several lobby groups contesting the criminalisation of parent's use of corporal punishment (413, 438). Furthermore, there is evidence that educators' perceptions remain supportive of corporal punishment as an effective learner disciplining tool hence their continued meting out of corporal punishment in public schools despite it being banned (432, 439).

Children who live in families that are unstable and violent are directly impacted and vulnerable to physical abuse in the home by men may as a means of asserting their authority. Harsh parenting has been associated with witnessing the abuse of mothers or primary caregivers through direct and indirect pathways (91, 436).

Witnessing mother or female primary caregiver abuse in childhood has been associated with men's perpetration of violence against women partners and child maltreatment (91, 436, 440). There is evidence of a co-occurrence of men's abuse of partners and their physical abuse of children in their household. Children are also directly at increased risk of by abused mothers or female caregivers because of social norms at the family level that condone it. Other evidence shows patterns of displaced aggression whereby abused mothers or female caregivers may direct their relationship frustration to children by maltreating them (91, 440, 441). Indirectly, children abused at home are more likely to avoid the home environment, and this makes them more vulnerable to other forms abuse, peer and community violence outside the home (90, 436). Conversely, children that have stable home environments, strong emotional attachments with parents, social support from the community and supportive school environments are less likely to be victimised (90, 434)

While this study has shown associations between substance abuse and IPV victimisation or perpetration, other evidence has shown that substance abuse is associated with neglect and interferes with parents' ability to care for their children. From our data, 13.4% of men and 11% of women reported that their parents were sometimes or often too drunk to care for them. Also, 30% of men and 21.5% of women reported that parents or caregivers were sometimes or often not aware of their whereabouts. The poor care for children, often associated with caregivers abusing substances, makes children vulnerable to victimisation especially of a sexual form by other family or community members (413, 431, 435). Caregiver substance abuse also relates to physical abuse experiences because poor impulse control and lowered inhibition are associated with using violence as a form of discipline for women and their children by men (90, 413, 431).

The pathways between poverty and childhood trauma experiences are both direct and indirect. Children are at increased risk of victimisation due to living conditions which result in a home that is not safe. For example children may be vulnerable when sharing sleeping arrangements with older children and adults that may prey on them (413, 435). Indirectly, poverty conditions have been associated with childhood trauma because parents must work long hours for a decent living and are unable to afford child-minding arrangements. As a result, children are left alone or in the care of their family or other adults that may abuse them, this is often the context of child sexual abuse (413, 434, 435). Moreover, the broader community living conditions that may include over-crowding, poor lighting, high unemployment and limited policing which all make children less safe (435). Economic pressures may impact parents' or caregivers' mental health and increase their risk for displaced aggression and use of physical beatings for disciplining children (413, 441)

8.4 Prevalence and factors associated with other trauma

Consistent with previous studies, we found gender disparate reporting of other traumatic exposures between men and women. More men (87%), compared to women (32%), reported experiences of other traumatic events. Previous research indicated about 70% of the population has experienced one traumatic event in their lifetime and over half have experienced multiple life traumas (246). These findings are consistent with literature showing that the more commonly experienced traumatic events reported in the South African context involve interpersonal violence compared to other types of trauma exposure (246, 247). However, in our study the prevalence of life trauma was higher than reported in other studies including the SASHS, a national study dedicated to investigate trauma and psychiatric conditions (442).

Men were more likely to report a violent exposure relating to being a crime victim compared to women which is consistent with existing literature (249). Patterns of trauma experiences as adults varies between men and women. The trauma event reported more frequently by men was being robbed/carjacked at gunpoint or knifepoint or being kidnapped (49.3%) and this was higher than the 25% prevalence reported in the national SASHS (249). The most common trauma reported by women was witnessing abuse of their mother (35.7%) and this was higher than the proportion of men reporting this (25%). The proportion of women and men in this study reported a higher prevalence of witnessing the abuse of their mother compared to the SASHS (249). The least common exposure for women was witnessing the murder of a stranger while for men it was witnessing mother abuse. A higher proportion of men witnessed murders of someone close (men 26% vs 15.8% women), witnessed murders of strangers (men 34.4% vs 9.7% women,) being robbed or carjacked at gunpoint or knifepoint or being kidnapped (men 49.3% vs women 19.2%), and being close to death (men 28.7% vs women 13.3%). Our findings further add to the body of literature that shows that trauma exposures do not occur in isolation and that the societal structure and the status of women in society is important for understanding trauma and mental health (443). Consistently we found higher reporting of interpersonal violence related traumas and multiple trauma among men compared to women (249, 443). This may reflect that men may have more freedom of movement and are exposed to more contexts in which violence is occurring in the community (443), whereas, women are more likely to experience traumas that are confined to the home environment which relates to social norms of gender and power playing out in the home (87, 249, 443). Taken together the findings show a context of high levels of reporting of traumatic exposures by both women and men that is associated with violence at a societal level or in public life and violence in the home. These intersections will be discussed in greater detail later.

Through a behavioral pathway, children who are abused at home are more likely to avoid that home environment and thus be directly become more vulnerable to other exposures to interpersonal violence outside the home at the community or societal levels. In avoiding the home environment children may socialize with other children or youths without supervision and engage in delinquent behaviours such as using illicit drugs, drinking alcohol, fights or engaging in petty crimes and that may put them at more risk of traumatic exposures (247). Childhood trauma and other life trauma also have shared common risk factor at a structural level in poverty and the development of sub-group masculinities and femininities that are often involve lots of risk-taking competition, fighting, use of violence to assert power and gain self-esteem and defend honour, substance use, and rape. Indirectly, family, community and structural factors interact to increase other traumatic exposures among maltreated children (206, 444). Consistent with this assertion, in our study we found direct pathways between men's and women's experiences of child trauma and other-life traumatic events. We found that a higher score on the childhood trauma score co-related with scores on the life events checklist score. Poly-victimisation among youths which includes multiple violent or traumatic exposures are risk factors for increased psychopathology, substance abuse and increased delinquency (184, 206, 445-447)

8.5 Prevalence and risk factors for mental ill health and alcohol abuse

We found a high prevalence of self-reported and current substance abuse and mental ill health symptoms in the general population that was higher than that reported in previous studies (238, 243, 250). Thirty six percent of men and 14% of women reported binge drinking in the past year. In other studies, between 17 and 25% of adult males, between 3 and 10% adult females reported harmful alcohol drinking (242, 243, 340, 448).

Twenty four percent of men and 11.6% of women in our study reported PTSD symptoms. Twenty four percent of men and 23% of women reported depressive symptoms. A study conducted in the Eastern Cape using similar instruments to this study showed prevalence of depressive symptoms of 21.1% among women and 13.6% among men; 26% of men binge drank (303). Higher prevalence of PTSD symptoms was reported using similar measures in informal settlements of KwaZulu Natal: 15.2% of men and 21.2% of women reported PTSD symptoms (449). Lower mental ill health symptoms prevalence was reported in South African studies using different measures especially those that seek to establish a clinical diagnosis (even if lay-administered) of mental symptoms. For example in the nationwide SASHS lower levels of mental ill health were reported: 17% of participants reported one or more 12-month mental disorder; 4.9% of participants reported past-year major depressive symptoms, 4.5% reported past year alcohol abuse and 3.4% of participants reported past year PTSD symptoms (156, 246, 450).

The main methods used to measure symptoms of depression and PTSD are screening instruments and structured clinical interviews (451). The clinical interviews are the “gold” standard and are measured by clinicians although non-clinicians can be trained to administer them (451). Screening instruments are designed to be mainly patient self-report, administered by lay persons or by clinicians and are validated using clinical methods of assessment (451). Typically screening instruments measure symptoms but may not always also reflect the clinical diagnosis. This makes it impossible to compare estimates from studies using self-report measures and studies using clinical measures of mental ill health. Comparability of study estimates is also difficult because clinicians tend to apply diagnostic criteria differently to make clinical diagnoses. Researchers also inconsistently apply cut-off points for validated screening instruments across studies making comparability of studies challenging even when similar instruments are used. Nevertheless, our findings show a high prevalence of mental ill health symptoms after applying self-report measures that have been validated in our context and assessment of scales using data collected in this study showed high reliability (CESD Cronbach’s alpha women=0.93vs men=0.86; HTQ Cronbach’s alpha women=0.98 and men=0.95).

8.5.1 Gender

Consistent with global and local literature showing gender differences in alcohol abuse patterns, more men in this study reported a higher prevalence of binge drinking (36%) than women (14%) (153, 156). Similar to previous studies the prevalence of PTSD symptoms was higher among men (24%) compared to women (11.6%) (247). The observed gender differences in PTSD symptoms may be explained in part by the higher and more frequent exposures to multiple traumatic events reported by men compared to women i.e 87% of men vs 32% of women reported experiences of other life traumatic events (246, 247). Notwithstanding, the prevalence of depressive symptoms was similar among men and women (24% vs 23%). In this respect, our findings were divergent to studies that have shown higher prevalence of depression among women compared to men (142, 156, 176, 238).

Existing evidence supports network theories of mental disorders including that PTSD symptoms precede and are a risk factor for depression, substance abuse and other anxiety disorders (208, 305). Depression is also a risk factor for alcohol abuse (206, 208, 209, 306). Initially, alcohol consumption is among the behaviours that men and women develop and use to ameliorate the symptoms of mental ill health. Secondly, alcohol dependence and abuse may co-occur with mental ill health symptoms. In most studies alcohol abuse is the most commonly co-occurring disorder among men with PTSD followed by depression (305). Amongst women with PTSD symptoms, depression is the most common co-occurring disorder followed by other anxiety disorders and alcohol abuse.

Consistent with existing literature, we found evidence of more multiple symptoms of mental ill health among men than among women (156). Depression was comorbid with PTSD: 9% of women and 14.2% men reported both PTSD and depressive symptoms; 5% of women and 10% of men reported both binge drinking and depressive symptoms. Three percent of women and 10.6% of men reported both binge drinking and PTSD symptoms. In logistic regression analysis, we found that PTSD increased risk for depression (OR 12.5; 95% CI 6.9-22.8) and binge drinking among men (OR 1.7; 95% CI 1.0-2.7). In path analysis using the men's data, PTSD symptoms had direct effects on depressive symptoms. PTSD also had direct effects on men's binge drinking and indirect effects mediated by depressive symptoms. However, with the women's data, PTSD co-varied with depressive symptoms in both path models. Moreover, depressive symptoms impacted on binge drinking while PTSD symptoms had no effects on women's binge drinking.

8.5.2 Childhood trauma

In analyses of the men's and women's data, overall child trauma was associated with decrease resilience indicated by increased psychopathology. Among men, an increase in one score of the child trauma score implied a 10% and 20% risk for reporting PTSD and depression symptoms respectively. Among women, experiences of child sexual abuse and emotional neglect were associated with double the risk of reporting PTSD symptoms. Child neglect or physical abuse were not significantly associated with PTSD symptoms however in multivariate regression, the overall child trauma score was associated with women's PTSD symptoms. While the overall child trauma score was associated with depression symptoms, analysis of the different dimensions showed only a positive association between depression and child emotional abuse at significance level of $p < 0.05$. Child sexual abuse was significant at $p < 0.1$. No associations were found between men's or women's childhood trauma and adult binge drinking.

Our findings are consistent with existing evidence that shows childhood trauma experience to be a risk factor for mental ill health including depression and anxiety disorders, substance abuse (95, 444). Harsh early environments and childhood trauma have been associated with biological changes in the brain structure for example by altering the sensitivity of receptors, reducing the hippocampal volume or physically altering the hypothalamic-pituitary-adrenal (HPA) axis and exacerbating the brain's vulnerability to future psychopathology such as mood and anxiety disorders (227, 452).

8.5.2.1 *Resilience among maltreated children*

Yet, research has shown that not all maltreated children experience short- and long-term negative effects on functioning or wellbeing due to their exposures. These observations led to pioneering work in the study of resilience, a concept that is considered as either an outcome or dynamic process of maintaining or recovering mental health or well-being at one or different developmental stages or time points despite adverse and traumatic exposures (227). Accordingly, the concept of resilience has become more understood at one life development stage especially among children or adolescents but less focus has been placed on a life course approach that includes understanding resilience among adults (227). The focus of studies has since become broader and more inclusive of different trauma exposures. To date, the competing multi-disciplinary interests of scholars, eg psychologists, psychiatrists, sociologists, biologists, geneticists and neuroscientists, have posed a challenge to reaching a uniform operational definition of resilience that captures the various and complex domains identified in the different fields of study (227, 453). However, there is general consensus that resilience constitutes both the process and outcome of interactions of genetics, biological and environmental factors among trauma or stressor exposed individuals to contribute to good mental well-being and functioning (227).

In analyses with the full women's data set, we found significant and positive associations between childhood trauma score with PTSD (β 0.45; 95 CI 0.33-0.57; $p < 0.0001$) and depression scores (β 0.39; 95 CI 0.26-0.51; $p < 0.0001$). Moreover, PTSD and depressive scores fully mediated the relationship of childhood trauma and IPV victimisation. We also investigated the factors associated with resilience. We defined psychological resilience as the absence of PTSD and depressive symptoms despite traumatic exposures namely child sexual abuse, other life trauma and non-partner rape in a sub-sample of women who also reported lifetime experiences of IPV. In regression analysis, we adjusted for several protective factors well demonstrated in literature including seeking help for abuse and emotional difficulties, supportive family and community environments. From the sub-sample analysis, we found negative family support was significantly associated with decreased resilience. In contrast, perceptions of supportive community increased resilience. Our findings are consistent with literature showing that social support from family, friends and community increases likelihood of disclosure and buffers against the negative effects of child sexual abuse (454).

8.6 IPV victimisation and mental ill health effects

In the path analysis that had mental ill health as outcomes, we found that women's childhood trauma and IPV experience in the past year had direct effects on both PTSD and depression symptom scores. Consistent with the extant literature, path analysis showed direct effects of IPV victimisation in the past year leading to current PTSD (β 0.24; $p < 0.0001$), depressive symptoms (β 0.24; $p < 0.0001$) and binge drinking (β 0.19; $p < 0.0001$) (5, 83, 119, 455, 456). Depression co-varied with both PTSD and binge drinking and these findings show the prevalence of co-occurrent multiple disorders among victimised women. Our findings are consistent with existing evidence showing that depression, PTSD and alcohol use disorders associated with childhood trauma, other trauma or IPV experience are often comorbid and that the effects are more severe with higher frequency and or severity of IPV (92, 95, 109, 110, 114, 119, 163, 216, 217). The comorbidity of alcohol abuse with PTSD, and depression has also been found in different contexts among women who have experienced IPV (217, 218).

8.7 Factors associated with psychological resilience among IPV victims

Yet, many women victims of IPV in our study did not report mental ill health symptoms or substance abuse indicative of their psychological resilience. Forty two percent of the women that reported lifetime sexual or physical IPV experiences reported scores below the cut-offs for PTSD or depressive symptoms. In our study, we took the absence of psychopathology after traumatic exposure to be an indicator of resilience and the outcome of cumulative protective factors effectively countering cumulative trauma risk factors that an individual is exposed to (180, 386).

8.7.1 Severity of IPV

Research shows a strong dose-response association between severity of trauma and severity of mental health effects (122, 169, 195). Twenty nine percent of women who experienced IPV in the past year were resilient to PTSD and depressive symptoms compared to 51.8% who had experienced IPV in their lifetime but not in the past year. Likewise, 34% of women reporting severe IPV were resilient compared to 46% of the women reporting less severe IPV who were resilient. Psychological resilience was associated with having experienced less severe IPV and having experienced IPV in the past but not in the year preceding the survey. Women who reported severe IPV were 70% less likely to be resilient compared to women who did not report IPV in the past year (AOR 0.29; 95% CI 0.12-0.74; $p=0.011$)(3). The reduced resilience among victims of severe IPV in models that adjusted for help seeking, services utilisation and other social support indicators shows that these factors while being useful to foster resilience for less severe IPV, may not be enough in cases of more severe IPV.

In fact, severe PTSD symptoms have been associated with greater future risk for IPV even when other factors are considered including help-seeking behaviours and social support (457-459). Moreover, severe PTSD symptoms have been associated with multiple disorders that include substance abuse disorders which may compound to reduce effectiveness of intervention (305). We also found that women who binge drank were less likely to be resilient compared to women who had not consumed alcohol in the past year (AOR 0.39; 95% CI:0.17–0.91). Severe chronic and multiple mental ill health effects of IPV may require pharmacotherapeutic treatments and specialised psychotherapeutic interventions that were not measured in this study and may not have been made available to women (3). For example, cognitive behavioural and cognitive processing therapies have been found effective in treating PTSD and depression as well as reducing future risk for IPV (457).

8.7.2 Social support and help seeking

In multivariate regression analysis, we found that social support factors fostered women's resilience despite experiences of IPV. Social support refers to one being part of a supportive social network of other people who care and are available to help through life challenges (3). In our study we measured several social support indicators which included seeking family or informal support and the reactions received, being able to find money for emergency as a proxy for social connectedness, utilising formal medical or psychosocial support services and perceptions of community attitudes towards gender relations and intimate partner violence were used as a proxy for cultural beliefs and perceived community support.

Seventy percent of women victims disclosed IPV experiences or sought family support for emotional difficulties or abuse while only 40% of women had used medical or psychosocial services in dealing with emotional difficulties or abuse (3). Sixty eight percent of women victims knew other women who experienced IPV, yet only half of the women victims reported that they never talked about IPV in their discourses (3). These findings corroborate the extant body of literature showing that while IPV is common, women are more likely to disclose to informal networks especially to friend or family (72). Factors associated with disclosure include situational factors for example violence frequency and severity and whether the violence is witnessed by others (72). Similarly, women's disclosure of victimisation was associated with the severity of abuse experienced i.e. women that experienced more severe IPV were more likely to disclose to informal networks (3).

We also found that the reactions of informal support networks are important in fostering women's resilience despite IPV experience. In our study, women who received negative family reactions were less likely to be resilient compared to women who did not seek family support (AOR 0.22; 95% CI 0.05–0.98)(3). Research has shown that women who receive negative reactions when disclosing violence feel revictimized (72).

8.7.3 Social connectedness and perceptions of supportive communities

Many women in our study (80%), reported that they would find it difficult to find money in emergency (3). While this may be considered an indicator of the women's socio-economic status, we used this measure as an indicator of social connectedness (3). This finding is consistent with research showing low levels of social support and connectedness among victims of abuse. Moreover, this assertion was supported by the finding that women who reported being able to find money in emergency were more likely to be resilient compared to those who found it difficult. Research has shown that strong social ties are protective factors enabling resilience, and in some cases confer protective effects to victimisation (70, 386).

Over half of the women victims (54%) perceived that their community was not supportive of women and this could have minimised disclosure(3). There is evidence that victims' feelings of shame or embarrassment and community responses, stigmatising norms or reactions affect women victim's disclosure of IPV experiences (72). In our study, women who perceived that their communities were supportive (AOR 2.35; 95% CI 1.03–5.35), and they would easily find money in an emergency (AOR 5.37; 95% CI 1.63–17.64) were more likely to be resilient (3). However, our findings also suggest a culture of silence around IPV in which victims also participate in various ways. As shown in this data, many women victims do not disclose IPV or VAW experiences and get help for themselves informally or through established response services (72, 460). Also, we found that although women victims know others going through similar experiences, they often choose not to speak about it.

8.7.4 Utilisation of formal services

Women were also more likely to utilise formal services when they experienced more severe IPV demonstrating that many less severe acts of IPV go unreported and are not reflected in administrative data sources such as police or hospital or service provider records (3). It is also more likely that administrative data sources may exclude forms of abuse that are primarily psychological or economic and place emphasis on physical or sexual aggression which are more likely to lead to physical injuries or sexually transmitted infections or criminal charges. Our findings also show that response services for addressing domestic violence including medical or psychosocial support provided by government departments and NGOs are not fully utilised by victimised women.

This reflects the presence of barriers in women victims' access to general and mental health services. Additionally, we found that women who used formal services were less likely to be resilient compared to those that did not utilise services. Further enquiry into barriers to access and rigorous evaluation of the effectiveness of mental health responses for IPV are necessary in this regard.

8.8 Factors associated with women's IPV experiences

8.8.1 Childhood and other trauma

Previous research has shown associations between women's experiences of childhood trauma and women's adult IPV experiences (46, 54, 64, 67, 83, 90). Childhood trauma is also associated with mental ill health effects including depression, PTSD and alcohol problems that could persist into adulthood and affect women's overall health (90, 95, 164, 189, 461-463). Limited research has shown that mental ill health symptoms and alcohol abuse are risk factors for women's IPV experiences (54, 116, 118). In multivariate regression analysis, we found that overall childhood trauma scores were not significantly associated with women's IPV experience in the past year. An increase of one score on the life events checklist was associated with a 22% increase in risk of women's IPV experience in the past year (2). However, in path analysis we found that while there were no direct effects of childhood trauma on women's IPV experiences, there were indirect paths to IPV mediated by mental ill health symptoms, other life trauma and sexual relationship power (2). Similarly, other life trauma did not have direct effects on IPV experiences (2). Rather, this relationship was mediated by mental ill health symptoms and alcohol abuse (2). These findings show that while being a victim of one form of trauma increases the risk of revictimisation by the same or another form of trauma, in comparison to those who are non-victims, pathways to revictimisation are not direct. This implies that, victims' risk for future revictimisation is impacted on by their mental health and psychological resilience. Also, these findings indicate the potential for mental ill health and alcohol abuse treatments and interventions as a potential entry point for IPV response and prevention among women who have a childhood trauma history or experience other traumas and develop mental ill health symptoms

8.8.2 Sexual relationship power and gender beliefs

Childhood trauma had indirect effects on women's IPV experience through a pathway mediated by women's power in their current relationship (2). Childhood trauma score was inversely associated with the sexual relationship power score (SRPS) i.e children with higher CTQ scores were more likely to have lower SRPS scores(2). The relationship of childhood trauma, including witnessing mother abuse, and sexual relationship power is consistent with literature aligning to social learning and intergenerational transmission of family violence theories (103). At a societal level child physical abuse is among the practices stemming from social norms that justify men's use of violence to control women and children (90).

“Women who did not report IPV in the past year had a higher mean score on the SRPS Scale (mean score 32.3; 95% CI 31.5-33.0) compared to women who experienced IPV (mean score 26.4; 95% CI 24.6-28.3)”(2). “An increase of one score on the sexual relationship power scale was associated with a 9% decrease in IPV victimisation risk among women” (2). Women’s personal inequitable views on gender relations, a product of norms at community and societal levels, make them accept and justify men’s use of violence as normal (46, 67). Our findings show that inequitable gender beliefs and sexual relationship power mediate the relationship of child abuse and IPV experiences. Previous South African studies have shown that child abuse experience and women’s support for male controlling practices are associated with their IPV experiences (21, 67, 87, 276, 464). These findings show the influence of socialisation and women’s personal gender attitudes in driving IPV at the individual level, which has been emphasised by gender and feminist theories (48, 51).

8.8.3 Mental ill health

“Women who experienced IPV in the past year had significantly higher mean scores for depression (22.6 vs 14.3) and PTSD (31.9 vs 22.9) compared to women that did not experience past year IPV”(2). “A higher proportion of women who experienced IPV in the past year binge drank (28.1% vs 10.7%) compared to those who did not experience IPV” (2). “In regression analysis, an increase of one score on the CESD depression score was associated with a 4% increased risk for IPV experience in the past year” (2). Similarly, a one score increase on the HTQ PTSD score was associated with a 4% increased risk for IPV experience in the past year (2). Women who binge drank were almost thrice more likely to report IPV experience in the past year (AOR 2.94; 95% CI 1.77-4.88 $p < 0.0001$) (2). IPV in the past year was not associated with the frequency of partner’s alcohol consumption (2).

In the path analysis, with IPV experience as outcome, the relationship between child abuse and IPV victimisation was indirect and mediated by PTSD, depression and binge drinking (2). In both path analyses using the women’s data there were no direct paths between childhood trauma and women’s binge drinking (2). In the IPV outcome path analysis, other life trauma had indirect effects on women’s IPV that were mediated by PTSD symptoms and binge drinking. In the same model PTSD covaried with depression and depression had direct effects on binge drinking. In the mental health outcome path analysis, other trauma had direct effects on IPV and on PTSD symptoms that covaried with depression and binge drinking.

These findings show that PTSD, depression and binge drinking are prevalent among women victims of IPV as risk factors of abuse as has been documented in literature (18, 81, 116, 118, 126, 218, 229). They also show the co-occurrence of multiple mental ill health symptoms and alcohol abuse associated with IPV experiences as has been shown in other studies (218, 280). Moreover, by focusing on variables that accounted for a similar time period, this work elucidated the inter-relationships of variables. First, the model fit demonstrated that the relationship of IPV and mental ill health symptoms maybe bi-directional, i.e. IPV can increase mental ill health symptoms or alcohol abuse and vice versa. Secondly, mental ill health symptoms are important mediators of the association of childhood trauma or other trauma exposure and IPV experience that has been reported in previous studies (18, 54, 81, 303). Pathways from mental ill health to women's victimisation have been explained in literature and attributed to the interaction of PTSD's emotional numbing symptoms and the affective symptoms of depression. The numbing symptoms are associated with the suppression of emotional responsiveness and are also associated with internalising problems among women that are exposed to trauma (457, 465, 466). Emotional numbing impedes a victim's ability to detect or respond to actual risk (457, 458, 466). Depression reduces victims' cognitive and affective capacity making them less able to detect potential abusers, physical IPV triggers or make decisions to avoid risk (457, 467). Low energy and motivation that are features of depression, together with feelings of guilt, helplessness and hopelessness may also impede women's resolve to leave violent relationships or avoid dangerous situations (457, 467). Further research may be necessary to elucidate the mediating role of the interactions of PTSD and affective symptoms in increasing women's risk for violent experiences in our settings.

Lastly, the findings show the cumulative impact of various traumas, including childhood trauma, other trauma and IPV experience on women's mental health. Previous studies have shown high prevalence of mood and anxiety disorders associated with multiple trauma exposures with IPV being the highest contributor for co-occurring mental ill health symptoms among women (238, 246, 247, 450). Our findings also provide evidence of a high burden of undetected or untreated mental ill health symptoms that is associated with the low utilisation of formal services reported in the study. This could be putting women at increased risk of further victimisation.

8.9 Factors associated with men's perpetration of IPV

8.9.1 Childhood trauma and other trauma

Childhood trauma was a significant risk factor for men's IPV perpetration. We found that an increase in one score of the overall child trauma score was associated with 10% increased risk for repeat lifetime IPV perpetration (1). Narrowing down the associations of IPV perpetration with the different trauma domains,

we found only child sexual abuse ($p=0.04$) and emotional neglect ($p<0.001$) were significantly associated with IPV perpetration in lifetime(1).The associations of child sexual abuse or emotional neglect and IPV perpetration have been reported in previous. Jewkes et al 2011, in a men's study conducted over two provinces found that men who reported greater adversity in childhood measured by higher scores on the childhood trauma scale and who reported rape experiences were more likely to perpetrate rape against partners or non-partners(38). From the UN Multi-country Cross-sectional Study on Men and Violence, Fulu et al 2013, reported that after gender-related factors, experiences of childhood trauma were an important risk factor for IPV perpetration.(19) Men who experienced childhood emotional, physical or sexual abuse were more likely to be to use violence against their partners.(19)

In path analysis, childhood trauma had direct effects on men's perpetration of IPV and other indirect effects through paths mediated by personal gender attitudes, other life trauma and mental ill health symptoms (1). The direct effects of childhood trauma on IPV perpetration conform to the intergenerational transmission theories of family violence (103). Violence against children and violence against women have shared risk factors amongst them norms condoning the use of violence (90). Men who are maltreated in childhood are also more likely to have witnessed the abuse of their mothers or other female caregivers perpetrated by men and often consider violence against women as socially acceptable behaviours, having learned it in their childhood often from their father figure (19, 67, 103, 468).

8.9.2 Personal gender attitudes

Highly equitable gender attitudes were protective against men's IPV perpetration. An increase of one score on the GEM score was associated with an 80% decreased risk of perpetrating IPV once in a lifetime and a 70 % decrease of perpetrating repeat IPV incidents (1). In path analysis, personal gender attitudes mediated the relationship of childhood trauma and IPV perpetration (1). Our findings are consistent with other research showing that embracing harmful patriarchal masculinities and expressing inequitable gender beliefs or attitudes that condone IPV are associated with men's IPV perpetration (18, 19, 51, 52, 62, 64, 67). The associations of personal gender attitudes and IPV perpetration conform to the social theory of gender and power that explains that men's collective and individual gender attitudes including their beliefs on power relations and decision-making authority within intimate relationships impact on their behaviours and have health implications for them and for their partners (52, 63, 76, 101, 102).

8.9.3 PTSD, depression and alcohol abuse

A higher proportion of men with PTSD symptoms (34.1% vs 18.8%) perpetrated sexual IPV or physical IPV in lifetime (29.5% vs15.9%) compared to men who did not have PTSD symptoms (1). Similarly, more

men who had depressive symptoms perpetrated sexual (32.6%vs 19.5%) or physical IPV in lifetime (28.2% vs 17.6%) compared to men who did not have symptoms (1). There was no significant difference in the prevalence of binge drinking among perpetrators and non-perpetrators (1). In regression analysis, an increase of one score on the HTQ PTSD scale was associated with a 3% increased risk of repeat lifetime IPV perpetration (1). No significant associations were found between depression scores or binge drinking and lifetime IPV perpetration in multivariate regression (1). In path analysis, childhood trauma had direct effects on PTSD symptoms (β 18; $p=0.003$) and depressive symptoms (β 4.6, $p=0.01$). Both PTSD and depressive symptoms had direct effects on binge drinking (1). PTSD had direct effects on IPV perpetration, thus being a mediator of the relationship of childhood trauma or other life trauma and lifetime IPV perpetration (1).

In meta-analytic work, alcohol abuse was associated with increased risk of past year IPV perpetration but the association was weaker than in previous meta-analyses that have included in clinical, military, court-referred offender, intervention or batterer samples (4, 18, 54, 120, 126, 153, 305). No associations were found between current depressive symptoms and IPV perpetration. Four studies showed a marginal association between current PTSD symptoms and past year IPV perpetration (OR 1.02 [95% CI 1.0-1.54] $I^2=83.5\%$; $p=0.000$) (4). There was, however, evidence from studies that measured multiple disorders that indicated that depression was co-morbid with PTSD and alcohol abuse among men who perpetrate IPV (4).

Our findings confirm the literature that has shown associations of PTSD, alcohol abuse and aggression by men. PTSD symptoms increase risk for perpetration through different pathways. Behaviourally, PTSD symptoms are associated with more irritability, anger reactivity, emotional dysregulation, impulsivity, which are dynamic factors that are associated with increased risk for interpersonal aggressive behaviours (122, 465, 469, 470). Other research has shown that the hyperarousal symptoms of PTSD, which include exaggerated startle responses, hypervigilance, irritability and outbursts of anger, are predominantly associated with aggression compared to the other PTSD symptom clusters of re-experiencing and avoidance symptoms (465, 471). Of note is that anger, is included as part of diagnostic criteria for PTSD and is defined as an emotion that is characterised by cognitive, physiological, motivational and behavioural components (465, 472). According to the survival mode theory, people suffering from PTSD have reduced threshold to judge threat and threat perception activates a biologically predisposed survival mode, including fear and flight reactions as well as anger and fight reactions (465, 473). The hyperarousal symptoms of PTSD are also indirectly associated with IPV perpetration through mediation by alcohol problems (471). Physiologically, traumatic experiences are associated with changes in brain structure and reduced production of serotonin, a neurotransmitter associated with inhibition behaviour. Reduced serotonin is

associated with greater impulsivity and aggression (470). Impulsivity refers to deficient inhibition and a predisposition toward actions without regard to negative consequences. Similarly, pathways from alcohol abuse to perpetration are mediated by impulsivity (471). There is also evidence that shows that men are more likely to externalise the problems resulting from trauma and hence PTSD symptoms may be more strongly associated with interpersonal aggression perpetration among men than women (122). Serotonin levels are also associated with depressive symptoms. There is evidence that serotonin plays a role in inhibiting chains of thoughts that lead to negative affective states that are part of depressive symptoms and facilitates bias towards optimistic evaluations of thoughts (474, 475). However, when serotonin levels are reduced, its effects are undermined leading to greater access to negative thinking patterns and depressive symptoms (474, 475).

8.10 Positioning mental health within established frameworks of IPV

Mental health symptoms i.e. PTSD, depression and alcohol abuse are among the established effects of women's experiences of IPV in literature. Similarly, we found this to be the case with our data. However, few studies have acknowledged the network theories of mental disorders associated with trauma exposures and emphasised the co-occurrent or multiple disorders that are effects of traumatic exposures. In our study, we found co-occurrent PTSD, depressive symptoms and binge drinking among victimised women and men who experienced childhood trauma. Findings from path analyses suggest the centrality of PTSD in the co-occurrence of disorders. PTSD symptoms from childhood trauma, other life trauma or IPV experience had direct effects or co-varied with depression. PTSD also had either direct or indirect effects, mediated by depression, on binge drinking.

The IPV frameworks in most research emphasize risk factors that conform with theories of family violence and domains related to gender, power and intergenerational transmission of violence. Childhood abuse, traditional gender norms at the societal level and personal inequitable gender beliefs are well-studied risk factors for IPV victimisation and perpetration. To date, scholars in the IPV field have tended to mostly consider mental ill health as negative effects of childhood trauma and women's IPV experience and research on mental health risk factors for IPV in general population samples in low to middle income settings is limited. Many published studies have also lacked focus on the contribution of other multiple life traumatic events or exposures, besides childhood trauma or rape exposure, as being important factors to IPV risk. Furthermore, most IPV research does not reflect how the complex relationships or interactions of mental ill health symptoms and alcohol abuse increase risk for IPV.

Findings from our empirical data from Gauteng show the differential effects of child abuse experiences, other trauma and mental ill health symptoms to men's IPV perpetration. In a separate pathway PTSD mediated the relationship of childhood trauma or other trauma and lifetime IPV perpetration. From the global reviews that we conducted, we found that fewer studies that have investigated PTSD, depression and alcohol abuse as risk factors for men's perpetration of IPV (4). In the meta-analysis which included four studies focusing on the associations of current PTSD symptoms and past year IPV perpetration using general population samples we found that PTSD had a positive, but weak, association with IPV perpetration. Studies with military samples have shown stronger associations but this could well be explained by the higher severity of PTSD symptoms, multiple mental disorders and particularly engrained acceptability of use of violence that are prevalent among military personnel compared to that in general population samples.

In path analysis, although depression and binge drinking were associated with PTSD, they did not have direct effects on IPV perpetration. Similarly, in a meta-analysis including nine studies we found no association between current depressive symptoms and past year IPV perpetration. In contrast, in another meta-analysis including 15 studies we found a positive association between alcohol abuse and past year IPV perpetration. The overall association in our meta-analysis between alcohol and IPV in the general population samples was weaker than in previous meta-analysis that included convenience and clinical samples. The majority of studies included for the alcohol meta-analysis did not adjust for other mental ill health symptoms including depression and PTSD, and given the complex relationships of multiple disorders in increasing IPV risk shown in our path analysis, we suggest that by not adjusting for PTSD or depression scholars may have over-estimated the association between alcohol and IPV perpetration (54). Our findings suggest that PTSD symptoms are an important risk factor for IPV perpetration worth inclusion in IPV research with non-military general population samples. Evidence from the systematic review and meta-analytic work shows that fewer scholars have studied this association in the general population, hence the inclusion of PTSD as a variable in future IPV research is required.

Our investigation of risk factors for women's victimisation showed indirect effects of childhood trauma on IPV experience mediated by other trauma, PTSD, depression and binge drinking. PTSD, depression and alcohol abuse all had direct effects on IPV victimisation. Furthermore, PTSD co-varied with depression while depression had direct effects on binge drinking. PTSD did not have any effects on women's alcohol abuse. Like the men's data the findings show co-occurrence and complex relationships of mental ill health symptoms and alcohol abuse that have not been explored extensively or documented by IPV scholars. Scholars have emphasized that IPV is traumatic and is associated with negative mental health effects among

women. However, limited research focus has been given to understanding resilience or protective factors among women who have experienced IPV but do not report mental ill health and alcohol abuse. Consistent with existing evidence, our study found that many victimised women maintained mental health and well-being as measured by the lack of PTSD or depressive symptoms. Yet our findings also show that PTSD and depressive symptoms are significant risk factors for IPV experiences. Together our findings show that fostering psychological resilience is important for primary and secondary prevention of women's IPV experiences and therefore needs to be considered within frameworks to understand IPV. Resilience research was pioneered among children and related to physical and emotional development, hence the available literature on effective interventions to foster resilience is biased towards children and adolescent. Hitherto, resilience research and intervention among victimised women is emergent but limited in South African settings. Existing evidence has shown social support to be an important risk factor for women's resilience in other settings (70, 72, 386, 401, 476).

Likewise, in our study we found that positive social support from family and perceptions of a supportive community was associated with women's psychological resilience. Yet psychological resilience was less likely when the IPV experiences were severe or recent and among women who utilized formal support services.

Our findings provide evidence that PTSD symptoms which are the effects of cumulative and multiple trauma exposures in the life course, co-occur with depression and alcohol and are a critical risk factor associated with either men's perpetration of IPV or women's experience of IPV. There is need for further research to understand pathways to psychological resilience and use the evidence generated to inform IPV interventions.

Consistent with the social learning and intergenerational transmission of family violence theories, childhood trauma had direct effects on men's IPV perpetration and women's IPV experiences. The social learning and the intergenerational transmission of family violence theories attribute IPV perpetration to continual exposure to violence from childhood including abuse experiences, witnessing violence that becomes normalised as part of repertoire of behaviours to assert dominance and power that is acceptable such that individuals are more likely to become violent to others including intimate partners (336, 477). Also consistent with the social theory of gender and power, the relationship of childhood trauma and IPV perpetration were mediated by men's personal gender attitudes. Theories of gender and power emphasise that IPV has its roots in social norms about a gender order that is hierarchical with men being dominant

over women thus resulting in inequitable gender relations between men and women characterised by men's use of violence against women to control them (50, 477).

Notwithstanding, the findings of empirical and meta-analytic work that formed part of this study provides evidence for the need to consider mental health and psychological factors as a critical component in IPV frameworks in addition to the theories of gender and power and intergenerational transmission of family violence. This implies that risk factor frameworks for IPV in our settings need to consider the impact of traumatic exposures on mental health and IPV. Furthermore, resilience research in the general population must be prioritised as a means of generating evidence for IPV prevention.

8.11 Limitations

This work is not without notable limitations. In terms, of research designs used, the empirical work used survey data that simultaneously measured outcomes and explanatory factors limits our ability to understand temporal relationships between variables. However, the applications of structural equation modelling enabled measures of effects of variables on each other to be deduced. Furthermore, the use of past year IPV measures and current mental ill health symptoms countered the limitation of cross-sectional data.

It is notable, that the study used the childhood trauma questionnaire, which is a retrospective tool administered in adulthood and renders itself inherent to participant recall bias which may have minimised the occurrence of violence. The tool also measures frequency of items and does not capture severity. The use of a continuous score for items was intended to provide a proxy for a severity based on frequency. It is therefore possible that the impact of childhood trauma on adulthood variables may in fact be greater than the findings from this study. The effect of this limitation would be to bias the association towards the null.

Some constructs which would have added to our analyses and understanding important variables considered in IPV and mental health frameworks were not measured. These include poverty or wealth indicators that are a shared risk factor for IPV and mental ill health in literature. The survey also measured many variables that are risk factors for IPV at the individual level and missed variables that operate at relationship or neighbourhood or community levels of the socio-ecology. Important risk factors at these levels include relationship conflict, relationship satisfaction, communication and neighbourhood context. The study therefore relied on using only those variables used in the primary study giving potential for residual confounding in some analysis. Because of potential residual effects, the findings, conclusions and recommendations from this thesis are only interpreted in relation to the inter-relationships of observed variables.

Moderately sized samples used in this work may have limited statistical power to detect small associations between variables. Our analysis of factors associated with psychological resistance was constrained to a smaller sample size of 189 women who had reported experiences of IPV. We excluded women who were not abused by partners from the analysis. The smaller sub-sample size may have limited the study power and affected the associations and effect sizes against variables. There is evidence that smaller studies sometimes show different, often larger effects than large ones. The size of our samples also limited the kind of sub-analysis that could have been possible with a bigger sample, for example looking at the combinations of PTSD sub-cluster contributions to IPV would require big samples.

The work was also limited in terms of the measures of PTSD and depression used. PTSD and depression were measured using self-report validated scales which are less reliable measures compared to clinical diagnoses. Self-report mental health scales and measurements tends to overestimate the prevalence of mental disorders because of its reliance on a symptomatic approach. Many people that may report mild symptoms may fail to obtain a clinical diagnosis for the disorders. While the mental health scales used are validated in these settings, and our tests found them highly reliable, the lack of consensus on cut off points by scholars posed a challenge. We had to rely on cut-off points used by scholars from published work and this could be problematic if there is possibility of publication bias based on reporting of the mental health scales.

The mental health scales provided time bound measures for current mental symptoms, e.g depression symptoms and were measured for the past four weeks but were limited in providing information about chronicity of symptoms beyond the specified timeline. Therefore, in analysis we were only able to adjust for the severity of mental symptoms but not for their chronicity. Yet there is evidence that chronicity may be an important aspect in terms of increasing risk for aggression or victimisation.

The life events checklist gave dichotomous answers for trauma exposures i.e. whether an event had occurred or not. It is possible that many participants may have experienced these traumatic events more than once therefore this nuance could have given biased impacts of trauma on MH. Moreover, the checklist measures lifetime exposure and therefore in analysis it was impossible to differentiate recent or past trauma and the associated effects on current mental health status. Our analysis was based on cross-sectional data therefore we will never definitely know which came first between the life trauma events and the MH symptoms. However, in our hypothesis we assumed that life events preceded violence perpetration in line with trauma theories. Our trauma exposure measurement was for events in the past and may therefore have been affected

by recall bias. We have noted that the childhood trauma measures may have been some decades in the past and it could have minimised reporting because participants may have forgotten, or their memories of traumatic events may not be so clear especially in the case of child sexual victimisation.

There were several constraints to our definitions and measures of resilience. We used imperfect proxy measures of social support because we relied on secondary data. While scholars in different fields agree on the concept of psychological resilience constituting aspects of response or adaptation to adverse exposures, there are contesting approaches regarding measurement so that many scales have been used. Some scholars have measured resilience at one time point therefore approaching resilience as an “outcome” of exposures preceding the time point of measurement. Other scholars advocate that resilience is a process that is constantly changing from time to time and that may manifest differently with different adverse exposure. Such scholars argue that resilience is a dynamic construct that should be measured at several time points. The salient definitions of resilience have led to different measurement approaches and consideration for multiple domains for the construct. Resilience scales have encompassed domains that include for example hardiness, developmental strength, personal or social competence, attitudes, emotional regulation and stress coping abilities. Scholars have also considered a range of protective factors for resilience that include personal attributes, family characteristics, other support systems including peers and community and material assets. There is consensus that the use of more resilience domains or constructs in measurement yields a deeper understanding of the resilience construct (219, 227, 453, 478, 479).

Scholars from psychiatry have defined resilience broadly as relative resistance to adverse experiences or competent functioning despite adversity or the avoidance of psychopathology(453). In this regard scholars have measured resilience through examining psychological outcomes and mental functioning following an adverse exposure(453, 478). The absence or avoidance of psychopathology, or low levels of symptoms are viewed as a good outcome.(453) Due to the secondary nature of the study, we were limited to studying resilience at one time point as an outcome based on psychopathology. We therefore used a deficit model for resilience and defined resilience as the absence of psychopathology despite traumatic exposures including experiencing IPV. This definition is limited because it measures resilience at a single time-point and confines resilience to be an outcome of the cumulative interaction of protective and risk factors. The chosen approach misses out on the dynamic changes and processes of resilience that other scholars have emphasised (227). Other scholars have also argued that the approach we used is limited because pathways to resilience may not always result in the absence of psychopathology (180, 224, 227). Our study was also limited, again because of the secondary nature, in terms of the measurement of protective or risk factors considered in analysis. We relied on individual factors associated with resilience. Biological,

environmental, societal , community and background or family-related factors that play a role in the development of psychological resilience were not measured in the primary study (227).

Notwithstanding, our study focused on a concept that has been scantily studied in our settings. Therefore, our study potentially lays a foundation on which future research can be designed including measurement of more risk or protective factors and consideration of different resilient domains and scales as well as longitudinal designs to increase understanding of the concept at different timepoints. Importantly our findings indicate potential for social support in conferring resilience and acting to prevent women's further revictimisation. This warrants further study in our setting.

09

Recommendations

9 RECOMMENDATIONS

At the onset of this study we described that that most IPV research in LMICs does not consider the impact of traumatic exposures on IPV experience and perpetration. From our empirical data, we found a high prevalence of childhood and other life traumatic exposures reported by women and men. More men reported traumatic exposures relating to interpersonal violence whilst more women reported more traumatic exposures within the home. Childhood trauma was directly associated with men's perpetration of IPV and indirectly through a path mediated by PTSD. The relationship of women's childhood trauma and IPV experience was mediated by alcohol abuse, depression and PTSD symptoms.

These findings indicate that preventing childhood and other life trauma, intercepting and changing trauma's negative effects on mental health across the life course, work to transform societal and personal gender attitudes of men and women, therapies to address women's negative mental effects of IPV and to strengthen women's psychological resilience are critical to break the cycle of violence against women within intimate relationships. Below we will outline specific strategies for IPV prevention and programming based on our findings. Broad areas for intervention include addressing structural risk factors for violence, mental health responses for trauma and referral mechanisms, gender transformative interventions, combinations of mental health and IPV interventions that involve building women's resilience.

9.1 Addressing structural and societal risk factors

Societal violence prevention interventions can reduce violent traumatic exposures especially those that include crime and potentially reduce IPV. The South African context is marred by high levels of structural drivers for violent crime including poverty and unemployment (157). Addressing structural drivers of violence has potential to reduce crime, levels of trauma including child sexual abuse, prevent mental ill health and potentially reduce IPV (23, 158). Structural interventions to reduce child sexual abuse include addressing adverse family environment, provision of adequate child care facilities for poor families and supportive school environment (23, 158). Supportive families and school environments are also critical for children's emotional development and resilience (23, 48, 159).

Primary interventions aimed to reduce child abuse and secondary response to address its negative mental health effects have the potential to reduce lifetime and recent IPV. Interventions should include community mobilisation, public education and social behaviour change programmes aimed to changing societal norms that condone VAC and prevent all other forms of violence and crime at community level (480). This approach may reduce children witnessing IPV or being the victims of abuse or other violent criminal exposures. An example of an effective community mobilisation programme is the SASA! that aims seeks to change community attitudes, norms and behaviours that result in gender inequality, violence and an increased HIV vulnerability for women. The programme was found effective as means for both primary and secondary prevention of IPV(481). More effective enforcement of legislation including the Children's Act, the Schools Act and the Sexual Offences Amendment Act will reduce prevalence of children's victimisation (434, 482).

Scaling up positive parenting interventions which break the intergenerational transmission of violence in South African settings through less harsh parenting and inculcation of more gender equitable, attitudes among young people. For example, the Skhokho Supporting Success, a multi-faceted programme implemented among high school learners, parents and educators showed reduced use of harsh parenting methods (483). The Sinovuyo Caring Families programme implemented among families of 2-9-year olds and aimed to improve child-parent relationships through positive behaviour management has been shown effective in improving positive parenting behaviour. Both interventions have been administered by trained lay facilitators (483). Interventions that address adverse family environments and change in dysfunctional families and link families to social protection services may reduce children's victimisation (413, 434, 484).

Interventions working with women to improve livelihoods, reduce their economic dependence on men and transform inequitable ideas about gender relations are effective in reducing IPV experience. For example, the Intervention with Microfinance for AIDS and Gender Equity (IMAGE) a microfinance intervention with components of gender transformation implemented with women was effective in transforming personal gender beliefs and reducing sexual IPV(89). The programme also increased their self-confidence, increased autonomy in decision making, reduced their dependence on partners, improved communication with partner and overall relationship quality (89). Stepping Stones Creating Futures programme, which combines livelihoods strengthening and gender transformation has been implemented and been effective in reducing IPV among women in South African informal settings (485). Gender transformative interventions for couples have also shown promise in improving communication and more equitable sexual relationships (486).

9.2 Mental health services provision

Mental health responses for trauma and violent exposures should include supportive structures that provide treatment and remedy mental ill health and thus are a critical arena for primary and secondary prevention of IPV as well as other types of violence. Improving primary healthcare settings and mental health services through ongoing training to enhance capacities of public health practitioners in detecting and treating mental ill health symptoms among trauma exposed persons is critical (487).

Mental health services should be integrated into primary health care as a response to IPV in these settings. Healthcare services should take a trauma focused approach to practice which includes consideration of the patient's illness narrative and exploring the possibility of underlying other social determinants of health so that they make appropriate referrals for social interventions when required (487). Strengthened referral systems between health care service providers, psychosocial services and community-based care are critical to curb the risk of women's IPV revictimisation (487).

9.3 Treatments for PTSD and co-morbid conditions

Consistent with extant literature, we found in this work that PTSD symptoms among men and women were associated with childhood and other life traumas and that these symptoms were co-morbid with depressive symptoms and alcohol abuse. The comorbidity of symptoms implies the need for multimodal and sequential treatments that address both PTSD and comorbid symptoms at different developmental levels i.e childhood and adulthood. Intervening with children is important because as demonstrated in this work and in literature childhood trauma contributes to later development of PTSD. There is also evidence that earlier intervention has better outcomes compared to later intervention for PTSD patients. Effective early trauma-focused interventions to reduce PTSD symptoms or enrich the therapeutic process among children include individual counselling, short-term cognitive behavioral therapy (CBT), pharmacotherapy, psychodynamic therapy, school-based treatment, child-parent psychotherapy and creative arts therapies(488). Early provision of CBTs can reduce both PTSD and associated symptoms especially depression and prevent chronic PTSD among trauma survivors. Exposure therapy, a form of CBT involves education about common reactions to trauma followed by repeated revisiting, recounting, and processing the traumatic events, has been found effective among adults whose PTSD was associated with child sexual abuse or adult sexual or physical abuse(488, 489). Re-experiencing or confronting the trauma as opposed to avoiding, affords individuals opportunity to have corrective experiences for fear structures induced on the memory through traumatic exposure which is important for recovery (489). Chronic PTSD may lead to difficulty in social functioning therefore interventions which emphasize functional improvement including case

management, psycho-social rehabilitation, couples and family therapy are more effective compared to individual psychotherapy and pharmacotherapy(488).

Combinations of individual, group, and family psychotherapies, that have components of behavioural or cognitive-behavioural orientation, for a range of mental health and behavioural disorders have been effective in reducing mental ill health symptoms in children and adolescents (490). However different factors must be considered in decisions for combination based on the desired treatment outcomes. For example psychosocial treatments are requisite if individuals have functional problems and pharmacotherapies become a priority when individuals have complex or severe comorbid-symptoms for example in the case of major depression (488, 490).

9.4 Building resilience among children and women

Based on the evidence, it is clear that interventions with abused children or women and other trauma exposed persons must go beyond reducing symptoms to build emotional resilience and coping mechanisms. Social interventions and psychotherapies are important to expedite recovery and help build resilience among trauma exposed persons. These must include strengthening school and community-based linkages to care for children with symptoms of common mental disorders or other mechanisms for mental health surveillance among children and youths (491). School-based or community-based programmes administered by lay facilitators aimed to promote mental health and to build children's resilience or emotional coping skills in dealing with stressful circumstances are necessary for violence prevention (371, 490, 492). From our study reducing mental ill health symptoms among adults previously trauma exposed in their childhood holds promise for future violence perpetration by men and women's victimisation.

Mental health interventions can be a key arena for action to reduce IPV perpetration and victimisation. Mental health services and women's NGO providing psychosocial support services can play an important role in addressing mental ill health among women thorough implementing psychosocial interventions among women and girls that present with symptoms of mental ill health (493). Appropriate and continuous training of all service providers within civil society organisations, support services and caregivers to provide care, emotional support and as health promotion services to trauma exposed persons (371, 480, 493, 494). Mental health interventions shown effective in reduce women's revictimisation include cognitive behavioural therapies that aim to reduce PTSD and depressive symptoms (192, 195, 495, 496).

Psycho-social services are mostly provided by women's NGOs who also provide shelters for victims. These services are often under-resourced and this impacts on their ability to effectively intervene and reduce

women's mental health effects and build resilience. Effective secondary prevention of IPV in this setting will only be possible with adequate support, resourcing and capacity building for community-based organisations to be able to deliver quality psychosocial services. Additional funding from the National Department of Social Development and other external funders or donor agencies is required to cover costs of programmes including evaluations of effectiveness and capacity-building of more community-based organisations to effectively intervene.

Combinations of pharmacotherapeutic treatments and psychotherapeutic interventions should be used to treat women victims 'severe mental ill health symptoms in health facilities. Treating women victims' mental and building their psychological resilience will reduce further revictimisation. Brief mental health interventions for victims of abuse have been shown to foster emotional resilience and coping strategies to reduce the impact of past and future trauma. There is need for cultural adaptation of interventions so that they can be administered by lay people and women's NGOs in South African settings and help women to develop coping strategies or resilience.

Public health education and edutainment programmes increase awareness about mental health and illness and promote positive help-seeking behaviours including utilisation of health services, support services and community-based support structures. For example, a consistent association was found between exposure to Soul City, an edutainment programme and support-seeking and support-giving behaviours for victims of violence (497). A strong integrated well-co-ordinated multi-sectoral response for mental health and IPV is essential to ensure effective referrals and working relationships between stakeholders or service providers (371, 487). Addressing structural drivers of violence and crime such as poverty will require the collaboration of different stakeholders at a society level to promote safer communities (45, 498). Effective referral mechanisms should facilitate victims who access health services, criminal justice service providers or civil society run support services receive psycho-social intervention. The availability of effective referral systems to community-based care ensures sustainability of interventions (371, 494).

The collaboration of mental health and IPV researchers or service providers is critical in the development and evaluation of integrated psychosocial treatments that take a holistic approach and emphasize addressing mental health at the individual, family, and societal levels (494). Collaboration between community based non-governmental organisations, stakeholders from the health sector, police, justice and community structures is necessary to strengthen a coordinated response and addressing child abuse, mental ill health and violence against women (494).

9.5 Working with men and boys

Working with boys and men to challenge societal norms that condone violence, transform men's personal inequitable gender beliefs, promote non-violent masculine identities, improve non-violent conflict resolution and reduce risk behaviours including alcohol abuse is critical for IPV prevention (47, 499). To be effective programmes should focus on multiple risk factors and ecological levels (47). For example, Stepping Stones a workshop-based programme aimed to promote sexual health and reduce HIV risky behaviours has been found effective in improving gender equitable attitudes, reducing young men's controlling practices in their relationships and reducing IPV perpetration (500, 501). An adaptation of Stepping Stones, Stepping Stone Creating Futures program was implemented among men in informal settlements and found effective in positively changing men's gender attitudes, their controlling practices in relationships and decreased symptoms of moderate or severe depression and suicidality (485).

There is limited evidence of IPV interventions that have focused on therapeutic approaches to deal with mental ill health and reduce perpetration in our settings. Therapies for PTSD and depressive symptoms that have been shown to reduce IPV perpetration in other settings include cognitive processing therapies, cognitive behavioural therapies and psychosocial treatments have led to reductions in IPV in other settings (457). There is need to adapt and evaluate the effectiveness of programmes that use current treatment therapies for PTSD among male IPV perpetrators to reduce both PTSD symptoms and IPV perpetration in South African settings. These interventions could be designed so that they are brief, transdiagnostic and can be delivered by lay people who are part of the local community (502). An example of interventions employing cognitive behavioural approaches is the Common Elements Treatment Approach (CETA), a transdiagnostic mental health intervention that targets adults presenting with mood or anxiety problems that was developed for administration by lay facilitators with little prior mental health training in low- and middle-income countries (503). The CETA approach which has effectively reduced PTSD symptoms, depressive symptoms, internalising symptoms and substance abuse disorders holds promise for IPV prevention (503, 504). The first ever CETA focused IPV prevention trial that includes a CBT substance use element and recruits couples for group participation and is aimed at reducing violence experiences (among women and men) and perpetration by men is ongoing in Zambia (505). Findings from the trial show it to be highly effective and provide directions for future IPV and modular mental health transdiagnostic interventions that can be adapted for South African and other low to middle income settings (506, 507). Society-level strategies, couple level and individual level interventions that address harmful alcohol use associated with PTSD or trauma exposure are pertinent in reducing the prevalence of IPV in South Africa (191).

9.6 Future research

The limitations and findings from our study point to directions for future research to increase the evidence on the intersections of mental ill health and IPV victimisation and perpetration in these settings. The work showing resilience as a potential pathway to prevention is novel and needs to be explored further in longitudinal larger scale studies, that use more accurate clinical diagnoses of mental ill health symptoms, better measures of social support and explore several resilience domains through validated tools in addition to the lack of psychopathology. Research studies will do well to measure and quantify the impact of protective factors including social support and pathways to resilience so that these are fostered in interventions for reducing women and girls' risk to further victimisation. Given the high trauma exposures reported by men in this study which were associated with violence perpetration, it will also be important to study and understand pathways to men's resilience which may have positive gains for overall violence prevention in the country. Our findings also point to intervention work that may entail the adaptation of transdiagnostic mental health interventions for this context, where we found high prevalence of trauma and mental ill health in the adult population, and the evaluation of their effectiveness in reducing IPV. Our study also found limited utilization of formal services by victims of abuse. Ongoing research is necessary to understand and eliminate barriers to women's access to available services. Further evaluation of the effectiveness of current IPV responses in supporting women is necessary given that from our research there is an indication that women with more recent or severe IPV and mental ill health symptoms were less likely to be resilient despite having accessed services.

10

Conclusion

10 Conclusion

The findings from this work confirmed the central role of mental ill health, particularly PTSD, in mediating the relationship of child abuse, other life traumatic events and IPV perpetration suggesting the need to consider trauma theory in explaining violence perpetration in these settings. The study also confirmed inter-relationships of child abuse, other trauma and PTSD. This implies that reducing risk of trauma exposure due to abuse or witnessing family violence may potentially reduce PTSD and next-generation male-perpetrated IPV. Among women, mental ill health mediated the relationship of child abuse and IPV but was also an effect of IPV. Therapies targeting women's mental disorders and strengthening women's resilience should be prioritised as an essential component of packages of interventions to improve women's health and wellbeing, prevent IPV, along with other gender transformative, parenting, and alcohol reduction programmes. Equally, IPV prevention and violence reduction programmes are critical to reduce the burden of mental ill health in the population. Positive social support from family and perceptions of a supportive community were shown to protect women from the potential mental ill health effects of IPV, therefore women's resilience could be fostered through supportive responses to IPV victims at all the levels of the social ecology. Yet, our meta-analytic work and review of literature showed gaps in studies investigating the contribution of mental ill health and alcohol abuse to male perpetrated IPV. Future large-scale mental health and IPV research studies that employ longitudinal designs and use validated mental health measures are needed to generate more evidence and guide the development of interventions to reduce both mental ill health, IPV and their shared risk factors for example poverty and social inequality. The field would benefit immensely from further research investigating adult psychological resilience and factors associated with it. In addition to strengthened mental health services response to trauma and IPV, there is need for the development or adaptation of multi-component prevention programmes that combine transdiagnostic mental health and gender transformative components in their design which target different age groups and can be implemented by lay facilitators. Pharmacotherapeutic and psychotherapeutic interventions aimed to treat multiple mental ill health symptoms including PTSD, depression and alcohol abuse hold promise to reducing male-perpetrated IPV in these settings.

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APPENDIX 1: ETHICS APPROVAL CERTIFICATE

M140722



HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M140722

NAME: Ms Mercilene T Machisa
(Principal Investigator)

DEPARTMENT: School of Public Health
Medical School

PROJECT TITLE: The Relationship between Poor Mental Health,
Child Abuse, Women's Experiences and Male
Perpetration of Intimate Partner Violence and
Rape in Gauteng Province of South Africa

DATE CONSIDERED: 25/07/2014

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Dr Nicola Christofides

APPROVED BY: 
Professor PE Cleaton-Jones, Chairperson, HREC (Medical)

DATE OF APPROVAL: 25/07/2014

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and ONE COPY returned to the Secretary in Room 10004, 10th floor, Senate House, University.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. I agree to submit a yearly progress report.

Principal Investigator Signature

M140722Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

APPENDIX 2: WOMENS AND MEN’S HOUSEHOLD SURVEY QUESTIONNAIRES

Thank you very much for agreeing to participate in this survey. The interviewer is available to help you if you have any difficulties completing the questionnaire or if there is anything you do not understand. We know some questions are more difficult to answer than others. Please take your time and relax. All the questions are about your life and your ideas. There are no right or wrong answers. **The first questions we will ask you are about yourself, your home and your childhood. If there is a question you do not want to answer please indicate by hitting a Refuse Button and skip to the next question.**

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	How old are you?	18-20.....1 21-24.....2 25-29.....3 30-34.....4 35-39.....5 40-44.....6 45 -49.....7 50 - 548 55 or older 9	
102	What is the highest standard or grade you have completed at school?	No schooling.....1 Primary school incomplete2 Primary school complete (grd7/std5)3 High school incomplete.....4 High school complete.....5 Further degree/Qualification incomplete....6 Further degree/Qualification complete.....7 DON'T KNOW.....8	
103	Are you currently studying?	YES 1 NO..... 0	
104	With which race group do you identify?	Black/ African 1 Coloured 2 Indian 3 White 9 Other: 10	
105a	What is your religion, if you have one?	Christian 1 Islam 2 Hindu 3 Judaism..... 4 Buddhist 5 Other 6 None 7	

105 b	What nationality are you?	South African.....1 Southern African (e.g., Zimbabwean, Zambian, Malawian).....2 African country outside Southern region (Nigerian, Kenyan).....3 Other.....6	
106	Have you worked to earn money in the last 12 months?	YES1 NO.....0	→109
107	How much do you earn per month, before tax, and including benefits?	R1 – R500.....1 R501 – R1000.....2 R1 001 – R2000.....3 R2001 – R5000.....4 R5001 – R10 000.....5 R10 001 – R20 000.....6 R20 000 or more.....7	
108	What kind of work do you mainly do?	Police, security or armed forces.....1 Professional.....2 Domestic worker/cleaner.....3 Driver/transportation industry 4 Other5	
109	Do you usually work ...	Throughout the year.....1 Seasonally.....2 Once in a while.....3 Never worked.....4	
110	Would you say that the people in your home often, sometimes, seldom or never go without food?	OFTEN.....1 SOMETIMES.....2 SELDOM.....3 NEVER.....4	
111	If you have an emergency and R200 was needed immediately, would you say it would be very easy, easy, quite difficult or very difficult to find the money?	VERY DIFFICULT.....1 QUITE DIFFICULT.....2 EASY.....3 VERY EASY.....4	
112	How many people, including all the children, live in your home?	1.....1 2-5.....2 6-10.....3 10 or more.....4	
113	What level of schooling did your mother complete?	No schooling.....1 Primary school incomplete2 Primary school complete (std4)3 High school incomplete.....4 High school complete.....5 Further degree/Qualification incomplete.6 Further degree/Qualification complete....7 DON'T KNOW.....8	
114	What level of schooling did your father complete?	No schooling.....1 Primary school incomplete2 Primary school complete (std4)3 High school incomplete.....4 High school complete.....5 Further degree/Qualification incomplete.6 Further degree/Qualification complete....7 DON'T KNOW.....8	

SECTION 2: CHILDHOOD EXPERIENCES (FROM BIRTH TO 18 YEARS)

I want to ask you some questions about your childhood and teenage years. Can you tell me how often the following things happened to you? I will read out some statements and I want to know if each one was never true, sometimes true, often true or very often true.

		Never 1	Sometimes 2	Often 3	Very Often 4	
140	Before I reached 18 I did not have enough to eat	1	2	3	4	
141	Before I reached 18 I lived in different households at different times	1	2	3	4	
142	Before I reached 18 I saw or heard my mother being beaten by her husband or boyfriend	1	2	3	4	9 No mother
143	Before I reached 18 I was told I was lazy or stupid or weak by someone in my family	1	2	3	4	
144	Before I reached 18 someone touched my buttocks or genitals or made me touch them when I did not want to	1	2	3	4	
145	Before I reached 18 I was insulted or humiliated by someone in my family in front of other people	1	2	3	4	
146	Before I reached 18 I was beaten at home with a belt or stick or whip or something else which was hard	1	2	3	4	
147	M = Before I reached 18 I had sex with a woman who was more than 5 years older than me W = Before I reached 18 I had sex with a man who was more than 5 years older than me	1	2	3	4	
148	Before I reached 18 one or both of my parents were too drunk to take care of me	1	2	3	4	9 No parent
149	Before I reached 18 I was beaten so hard at home that it left a mark or bruise	1	2	3	4	
150	Before I reached 18 I spent time outside the home and none of the adults at home knew where I was	1	2	3	4	9 No adults
151	Before I reached 18 I had sex with someone because I was threatened or frightened or forced	1	2	3	4	
152	Before I reached 18 I was beaten or physically punished at school by a teacher	1	2	3	4	
153	Before I reached 18 I was forced to have sex against my will by a boyfriend	1	2	3	4	

SECTION 3: COMMUNITY IDEAS ABOUT GENDER RELATIONS (Social norms)

Now I would like to ask your opinion on some statements on what the community thinks about relations between men and women, can you tell me if your community strongly agree, agree, disagree or strongly disagree with the following statements:

201	My community thinks that a woman should obey her husband	SA 1	A 2	D 3	SD 4
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202	I think that a woman should obey her husband	1	2	3	4
203	My community thinks that if a woman works she should give her money to her husband.	1	2	3	4
204	I think that if a woman works she should give her money to her husband.	1	2	3	4
205	My community thinks that a man should have the final say in all family matters.	1	2	3	4
206	I think that a man should have the final say in all family matters.	1	2	3	4
207	My community thinks that men should share the work around the house with women such as doing dishes, cleaning and cooking.	1	2	3	4
208	I think that men should share the work around the house with women such as doing dishes, cleaning and cooking.	1	2	3	4
209	My community thinks that a woman needs her husband's permission to do paid work.	1	2	3	4
210	I think that a woman needs her husband's permission to do paid work.	1	2	3	4
211	My community thinks that a woman cannot refuse to have sex with her husband.	1	2	3	4
212	I think that a woman cannot refuse to have sex with her husband.	1	2	3	4
213	My community thinks that children belong to a man and his family.	1	2	3	4
214	I think that children belong to a man and his family.	1	2	3	4
215	My community thinks that there is nothing a woman can do if her husband wants to have girlfriends.	1	2	3	4
216	I think that there is nothing a woman can do if her husband wants to have girlfriends.	1	2	3	4
217	My community thinks that if a wife does something wrong her husband has the right to punish her	1	2	3	4
218	I think that if a wife does something wrong her husband has the right to punish her	1	2	3	4
219	My community thinks that if a man has paid Lobola for his wife, he owns her.	1	2	3	4
220	I think that if a man has paid Lobola for his wife, he owns her.	1	2	3	4
221	My community thinks that if a man has paid Lobola for his wife, she must have sex when he wants it.	1	2	3	4
222	I think that if a man has paid Lobola for his wife, she must have sex when he wants it	1	2	3	4
223	My community thinks that if a man beats you it shows that he loves you.	1	2	3	4
224	I think that if a man beats you it shows that he loves you.	1	2	3	4
225	My community thinks that people should be treated the same whether they are male or female	1	2	3	4
226	I think that people should be treated the same whether they are male or female	1	2	3	4

SECTION 4: COMMUNITY IDEAS ABOUT RAPE:					
Now I would like to ask what the community thinks, can you tell me if your community strongly agrees, agrees, disagrees or strongly disagrees with the following statements:					
227	My community thinks that when a woman is raped, she is usually to blame for putting herself in that situation.	SA 1	A 2	D 3	SD 4
228	I think that when a woman is raped, she is usually to blame for putting herself in that situation.	1	2	3	4
229	My community thinks that in some rape cases women actually want it to happen.	1	2	3	4
230	I think that in some rape cases women actually want it to happen.	1	2	3	4
231	My community thinks that if a woman doesn't physically fight back, it's not rape.	1	2	3	4
232	I think that if a woman doesn't physically fight back, it's not rape.	1	2	3	4
233	My community thinks that it is possible for a woman to be raped by her husband	1	2	3	4
234	I think that it is possible for a woman to be raped by her husband	1	2	3	4
235	My community thinks that in any rape case one would have to question whether the victim is promiscuous.	1	2	3	4
236	I think that in any rape case one would have to question whether the victim is promiscuous	1	2	3	4

SECTION 5: GENDER EQUITABLE WOMEN SCALE		SA 1	A 2	D 3	SD 4
250	You don't talk about sex, you just do it.	1	2	3	4
251	There are times when a woman deserves to be beaten.	1	2	3	4
252	Changing nappies, giving kids a bath, and feeding the kids are the mother's responsibility.	1	2	3	4
253	It is a woman's responsibility to avoid getting pregnant.	1	2	3	4
253 b	M: A man should have the final word about decisions in his home.	1	2	3	4
254	Men are always ready to have sex.	1	2	3	4
255	My husband or boyfriend would be outraged if I asked him to use a condom.	1	2	3	4
254 b	M: If someone insults me, I will defend my reputation, with force if I have to.	1	2	3	4
256 M	To be a man, you need to be tough.	1	2	3	4
256 W	A man needs to be tough.	1	2	3	4
257	Men should be embarrassed if they are unable to get an erection during sex.	1	2	3	4

SECTION 6: WITNESSING DOMESTIC VIOLENCE			
We are going to ask you a few questions about witnessing domestic violence in your community. This is not about your personal experiences of violence.			
350	Do you know of anyone that has been abused by her husband/boyfriend in your community?	YES.....1 NO.....0	

351	Do you know of anyone that has been abused by her husband/boyfriend in your family?	YES.....1 NO.....0	
352	How often have you talked to someone about domestic violence?	Never 1 Once/or twice 2 Sometimes 3 Often 4	
353	Have you ever personally intervened in domestic violence in a relationship?	YES.....1 NO.....0	→300
354	Has this happened in the past 12 months?	YES.....1 NO.....0	
355	What did you do to intervene?	Called the policeYES=1 NO=0 Tried to make the man stop abusing his wife/girlfriendYES=1 NO=0 Tried to make the wife/girlfriend stop doing things to make her husband abuse herYES=1 NO=0 Reported to the familyYES=1 NO=0 Other YES=1 NO=0	

SECTION 7: SEX AND PREGNANCY – WOMEN’S QUESTIONNAIRE

SECTION 7: FATHERING – MEN’S QUESTIONNAIRE

The next set of questions is about different aspects of your health and any children you may have.

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
300	Have you ever had sex?	YES..... 1 NO.....0	→350
301	At what age did you first have sexual intercourse?	12 and younger.....1 13.....2 14.....3 15.....4 16.....5 17.....6 18.....7 19.....8 20 and over.....9	
302	Which of the following statements most closely describes your experiences the first time you had sexual intercourse? I was willing; I was persuaded; I was forced; I was raped.	I was willing.....1 I was persuaded.....2 I was forced3 I was raped4	
303	Who was this with?	BOYFRIEND.....1 HUSBAND.....2 FATHER OR FAMILY MEMBER.....3 TEACHER.....4 BOY FROM SCHOOL/AREA.....5 MAN FROM AREA.....6 STRANGER/UNKNOWN PERSON.....7 FRIEND OF THE FAMILY8 OTHER.....9	

SECTION 8: PARTNER

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
401	Do you currently have a husband or boyfriend?	YES.....1 NO.....0	☐ 405
402	Do you live with him?	YES.....1 NO.....0	
403	Are you in a polygamous relationship?	YES.....1 NO.....0	☐ 405
404	If you are in a polygamous marriage, in addition to you and his other wives, is your husband having sex with someone else? Would you say he definitely is, probably is, probably is not or definitely is not?	DEFINITELY IS1 PROBABLY IS.....2 PROBABLY NOT3 DEFINITELY NOT.....4	☐ 406 ☐ 406 ☐ 406 ☐ 406
405	Are you a widower, separated or divorced or have a same sex partner?	In same sex relationship.....1 Widower.....2 Separated.....3 Divorced.....4 Never been in a relationship.....5	☐ 407 ☐ 407 ☐ 407 ☐ 543
406	How old is your current or most recent boyfriend/husband?	17 or younger.....1 18-20.....2 21-24.....3 25-29.....4 30-34.....5 35-39.....6 40-44.....7 45 or older.....8	
Check if NOT MARRIED, GO TO q407			
407	<i>How old were you when you got married?</i>	17 or younger.....1 18-20.....2 21-24.....3 25-29.....4 30-34.....5 35-39.....6 40-44.....7 45 or older.....8 Never married9	☐ 409
408	<i>What were the circumstances around getting married? Was it an arranged marriage, were you abducted, did you elope or was it for love?</i>	Arranged 1 Abducted 2 Elopement 3 Love 4	
409	Have you ever had a boyfriend or husband?	YES.....1 NO.....0	☐ 543

410	<i>Does your current or most recent boyfriend/husband drink alcohol? How often?</i>	EVERY DAY/NEARLY EVERY DAY.....1 ONLY AT WEEKENDS.....2 A FEW TIMES IN A MONTH.....3 LESS THAN ONCE A MONTH.....4 NEVER5 NOT NOW.....6 DON'T KNOW.....7	
411	<i>Does your current or most recent boyfriend/husband use drugs? How often?</i>	EVERY DAY/NEARLY EVERY DAY.....1 ONLY AT WEEKENDS.....2 A FEW TIMES IN A MONTH.....3 LESS THAN ONCE A MONTH.....4 NEVER 5 NOT NOW.....6 DON'T KNOW.....7	
412	How likely do you think it is that your husband or boyfriend is having sex with someone else? Would you say he definitely is, probably is, probably is not or definitely is not?	DEFINITELY IS1 PROBABLY IS.....2 PROBABLY NOT3 DEFINITELY NOT.....4	
413	Is your husband or boyfriend your ONLY partner?	NO.....0 YES..... 1	

SECTION 9: RELATIONSHIP CONTROL - WOMEN' QUESTIONNAIRE

I would now like to read out some statements and I would like you to think about your relationship with _____ and for each statement to tell me if you strongly agree, agree, disagree or strongly disagree

450	If I ask my partner to use a condom, he would beat or hit me	SA 1	A 2	D 3	SD 4
451	If I ask my partner to use a condom, he would get angry	1	2	3	4
452	My partner won't let me wear certain things	1	2	3	4
453	My partner has more to say than I do about important decisions that affect us.	1	2	3	4
454	My partner tells me who I can spend time with.	1	2	3	4
455	I could leave our relationship any time I wanted to.	1	2	3	4
456	My partner does what he wants, even if I don't want him to.	1	2	3	4
457	If I ask my partner to use a condom, he would think that I'm having sex with other people	1	2	3	4
458	When my partner and I disagree, he gets his way most of the time	1	2	3	4
459	Because my partner buys me things he expects me to please him.	1	2	3	4
460	My partner always wants to know where I am	1	2	3	4

SECTION 9: RELATIONSHIP CONTROL SCALE – MEN’S QUESTIONNAIRE

Thank you for answering those. Now we want to ask you some more about your relationship your wife or girlfriend. We will read some statements and we want to know for each if you Strongly Agree, Agree, Disagree or Strongly Disagree.

		SA	A	D	SD
450	I become jealous when she wears things that make her look too beautiful	1	2	3	4
451	I have more to say than she does about important decisions that affect us.	1	2	3	4
452	I never tell her who she can see or spend time with.	1	2	3	4
453	I like to do what I want, even if she doesn’t want me to.	1	2	3	4
454	When she and I disagree, I get my way most of the time.	1	2	3	4
455	I like to know where she is most of the time	1	2	3	4
456	I expect her to do things for me like my ironing and cooking	1	2	3	4
457	I let her know that she is not the only girlfriend I have or could have	1	2	3	4
458	When I want sex I expect her to agree	1	2	3	4
459	If she asked me to use a condom I would get angry	1	2	3	4
450	If she asked me to use a condom I would think she is having sex with other people	1	2	3	4
451	If she asked me to use a condom I would hit her	1	2	3	4

MEN’S QUESTIONNAIRE**SECTION 10: PERPETRATION OF INTIMATE PARTNER VIOLENCE**

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
	EMOTIONAL ABUSE In any relationship there are good times and bad times. I now want to ask you about some of the bad times we have in relationships and what has happened. Remember there are no right or wrong answers and any thing you say will be kept confidential.		
500	Have you ever insulted your current or a previous girlfriend of wife or made her feel bad about herself? Did this happen many times, a few times, once or did it not happen?	NEVER.....1 ONCE2 FEW.....3 MANY4	
501	Have you ever belittled or humiliated a current or ex-girlfriend or wife in front of other people? Did this happen many times, a few times, once or did it not happen?	NEVER.....1 ONCE2 FEW.....3 MANY4	

502	Have you ever done things to scare or intimidate a current or ex-girlfriend or wife on purpose for example by the way you looked at her, by yelling and smashing things? Did this happen many times, a few times, once or did it not happen?	NEVER.....1 ONCE2 FEW.....3 MANY4	
503	Have you ever threatened to hurt your current or ex-girlfriend or wife? Did this happen many times, a few times, once or did it not happen?	NEVER.....1 ONCE2 FEW.....3 MANY4	
504	Have you ever stopped your current or ex-girlfriend or wife from seeing any of her friends? Did this happen many times, a few times, once or did it not happen?	NEVER.....1 ONCE2 FEW.....3 MANY4	
505	Have you ever boasted about or brought home girlfriends? Did this happen many times, a few times, once or did it not happen?	NEVER.....1 ONCE2 FEW.....3 MANY.....4	
506	Have any of these things happened in the past 12 months?	YES.....1 NO.....2	
506b	Did you seek advice or some kind of help in relation to these events?	YES.....1 NO.....0	→507
506c	Where did you go for the advice or help?	Men's organisation.....1 Another NGO.....2 Doctor.....3 Traditional healer.....4 Other..... 5	

PHYSICAL ABUSE

Men often fight with their girlfriends/wives and often these fights get physical. I am going to ask some questions about this because we want to learn more about what men experience in their lives. I want you to speak freely and remember that everything you say will be confidential.

512	Have you ever slapped or thrown something at your current or ex-girlfriend or wife which could hurt her? Did this happen many times, a few times, once or did it not happen?	NEVER.....1 ONCE2 FEW.....3 MANY4	
513	Have you ever pushed or shoved your current or ex-girlfriend or wife? Did this happen many times, a few times, once or did it not happen?	NEVER.....1 ONCE2 FEW.....3 MANY4	
514	Have you ever hit your current or ex-girlfriend or wife with a fist or with something else which could hurt her? Did this happen many times, a few times, once or did it not happen?	NEVER.....1 ONCE2 FEW.....3 MANY4	
515	Have you ever kicked, dragged, beat, choke or burnt your current or ex-girlfriend or wife? Did this happen many times, a few times, once or did it not happen?	NEVER.....1 ONCE2 FEW.....3 MANY4	
516	Have you ever threatened to use or actually used a gun, knife or other weapon against your current or ex-girlfriend or wife? Did this happen many times, a few times, once or did it not happen?	NEVER.....1 ONCE2 FEW.....3 MANY4	

517	Have any of these things happened in the past 12 months?	YES.....11 NO.....22	
CH K 3	CHECK If he answered yes to any of the abuse questions go to 530 or else go to 539		
530	Has she ever reported any abuse or threats to the police?	YES.....1 NO.....0	→539
531	How did the police respond?	They opened a docket1 They sent her away 2 They tried to make peace between my girlfriend/wife and me 3 Other 4	
531 b	Did you ever have a protection order (an instruction from the court) against you?	YES.....1 NO.....0	
531c	Did you seek advice or some kind of help in relation to these events?	YES.....1 NO.....0	→539
531d	Where did you go for the advice or help?	Men's organisation.....1 Another NGO.....2 Doctor.....3 Traditional healer.....4 Other.....5	
SEXUAL ABUSE			
539	Have you ever physically forced your current or ex-girlfriend or wife to have sex when she did not want to? Did this happen many times, a few times, once or did it not happen?	NEVER..... 1 ONCE 2 FEW..... 3 MANY 4	
540	Have you ever have sex with a current or ex-girlfriend or wife when she did not want to? Did this happen many times, a few times, once or did it not happen?	NEVER..... 1 ONCE 2 FEW..... 3 MANY 4	
541	Have you ever forced your current or ex-girlfriend or wife to do something sexual that you found degrading or humiliating? Did this happen many times, a few times, once or did it not happen?	NEVER..... 1 ONCE 2 FEW..... 3 MANY 4	
542	Have any of these things happened in the past 12 months?	YES.....1 NO.....0	
542b	Did you seek advice or some kind of help in relation to these events?	YES.....1 NO.....0	→543
542c	Where did you go for the advice or help?	Men's organisation.....1 Another NGO.....2 Doctor.....3 Traditional healer.....4 Other.....5	

WOMEN'S QUESTIONNAIRE

SECTION 10: EXPERIENCE OF INTIMATE PARTNER VIOLENCE

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
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	EMOTIONAL ABUSE In any relationship there are good times and bad times. I now want to ask you about some of the bad times we have in relationships and what has happened. Remember there are no right or wrong answers and any thing you say will be kept confidential.		
500	Has a current or previous husband or boyfriend ever insulted you or made you feel bad about yourself? Did this happen many times, a few times, once or did it not happen?	NEVER1 ONCE.....2 FEW3 MANY4	
501	Has a current or previous husband or boyfriend ever belittled or humiliated you in front of other people? Did this happen many times, a few times, once or did it not happen?	NEVER1 ONCE.....2 FEW3 MANY4	
502	Has a current or previous husband or boyfriend ever done things to scare or intimidate you on purpose for example by the way he looked at you, by yelling and smashing things? Did this happen many times, a few times, once or did it not happen?	NEVER1 ONCE.....2 FEW3 MANY4	
503	Has a current or previous husband or boyfriend ever threatened to hurt you? Did this happen many times, a few times, once or did it not happen?	NEVER1 ONCE.....2 FEW3 MANY4	
504	Has a current or previous husband or boyfriend ever stopped you from seeing any of your friends? Did this happen many times, a few times, once or did it not happen?	NEVER1 ONCE.....2 FEW3 MANY4	
505	Has a current or previous husband or any boyfriend ever boasted about or brought home girlfriends? Did this happen many times, a few times, once or did it not happen?	NEVER1 ONCE.....2 FEW3 MANY4	
506	Have any of these things happened in the past 12 months?	YES.....1 NO.....0	
PHYSICAL ABUSE Men often fight with their girlfriends/wives and often these fights get physical. I am going to ask some questions about this because we want to learn more about what women experience in their lives. I want you to speak freely and remember that everything you say will be confidential.			
512	Has a current or previous husband or boyfriend ever slapped you or threw something at you which could hurt you? Did this happen many times, a few times, once or did it not happen?	NEVER1 ONCE.....2 FEW3 MANY4	
513	Has a current or previous husband or boyfriend ever pushed or shoved you? Did this happen many times, a few times, once or did it not happen?	NEVER1 ONCE.....2 FEW3 MANY4	
514	Has a current or previous husband or boyfriend ever hit you with a fist or with something else which could hurt you? Did this happen many times, a few times, once or did it not happen?	NEVER1 ONCE.....2 FEW3 MANY4	
515	Has a current or previous husband or boyfriend ever kicked, dragged, beat, choke or burnt you? Did this happen many times, a few times, once or did it not happen?	NEVER1 ONCE.....2 FEW3 MANY4	

516	Has a current or previous husband or boyfriend ever threatened to use or actually use a gun, knife or other weapon against you? Did this happen many times, a few times, once or did it not happen?	NEVER1 ONCE.....2 FEW3 MANY4	
517	Have any of these things happened in the past 12 months?	YES.....1 NO.....0	
CH K3	IF ANY PHYSICAL VIOLENCE IS REPORTED PROCEED TO THE NEXT QUESTION OTHERWISE SKIP TO Q.254		
518	Have you ever been injured during any of these physical disputes?	YES.....1 NO.....0	→530
519	How many times?	_____ TIMES	
520	Did you ever stay in bed because of these injuries?	YES.....1 NO.....0	→ 522
521	How many days?	_____ DAYS	
522	Did you ever take days off from income generating work because of these injuries?	YES.....1 NO.....0 HAS HAD NO PAID WORK ...4	→ 524 → 524
523	How many days?	_____ DAYS	
524	Did you ever not leave the house because of these injuries	YES.....1 NO.....0	→ 526
525	For how many days did you not leave the house?	_____ DAYS	
526	Did you seek medical attention for these injuries?	YES.....1 NO.....0	→ 528
527	What form of treatment did you receive?	SURGERY.....1 ADMITTED TO HOSPITAL2 BROKEN BONES TREATED.....3 STITCHES.....4 DENTAL CARE.....5 PAINKILLERS.....6 BANDAGING/ OINTMENT.....7 OTHER.....8	
528	Did you tell them about the cause of your injury?	YES.....1 NO.....0	→530
529	What was the main reason why didn't you tell them the cause of your injury?	IT'S A PRIVATE ISSUE.....1 SCARED OF YOUR PARTNER..2 THEY WERE NOT FRIENDLY...3 ASHAMED.....4 DID NOT ASK.....5 OTHER.....6	
530	Have you ever reported any abuse or threats to the police?	YES.....1 NO.....0	→532

531	How did the police respond?	They opened a docket1 They sent me away 2 They tried to make peace between my husband/boyfriend and me 3 Other 4	
531 b	Did you ever get a protection order (an instruction from the court) against your abusive husband/boyfriend?	YES.....1 NO.....0	
531 ba	Did you pay the fees at the court?	YES.....1 NO.....0	
532	Where do these incidents generally occur?	AT HOME.....1 AT HIS HOME.....2 AT WORK.....3 AT SCHOOL.....4 OUTSIDE/NEAR HOUSE.....5 AT FRIENDS /RELATIVES.....6 AT BARS/NIGHTCLUBS.....7 OTHER.....8	
533	Did you tell anyone in your family?	YES.....1 NO.....0	→536
534	Who did you tell?	Female member of your family....Yes=1... No=0 Male member of your family.....Yes=1... No=0 Female member of your in-laws....Yes=1... No=0 Male member of your in-lawsYes=1... No=0 Your child.....Yes=1... No=0	
535	How did they respond?	They blamed me for it.....Yes=1... No=0 They supported me.....Yes=1... No=0 They were indifferent.....Yes=1... No=0 They told me to keep it quietYes=1... No=0 They were hurt by it.....Yes=1... No=0 They advised me to report to police...Yes=1... No=0	
536	Did you ever go to a shelter?	YES.....1 NO.....0	
536 b	Did your stay at the shelter do any of these?	Enable me to get a job.....1 Enable me to look after my children.....2 Enable me to make decision to stay/leave according to what I thought was best for me3 Take control of my relationship and to end the abuse.....4 Did not make a difference to my life.....5 Other.....6	
536 c	Did you pay money out of your own pocket for anything after the abuse?	Yes1 No 2	Skip 537
536 d	How much money would you say that you spent out of your own pocket on medication after experiencing the abuse, if any?	R01 R1-50 2 R51-100 3 R101-200 4 >R2015	
536 e	How much money would you say that you spent out of your own pocket on transport to get to any support services after experiencing the abuse, if any?	R0 1 R1-50 2 R51-100 3 R101-200 4 >R201 5	

536f	How much money did you spend on services e.g. medical, counseling, legal, if any?	R01 R1-1002 R101-2003 R201-3004 R301-4005 >R4016	
537	Did you ever speak out publically about the abuse?	YES.....1 NO.....0	→539
538	Where did you speak out?	To the media (TV, radio, newspaper)... Yes=1... No=0 To the community/community group... Yes=1... No=0 To friendsYes=1... No=0 To work colleagues.....Yes=1... No=0 To my religious communityYes=1... No=0	
538 b	What happened after you spoke out?	I felt empoweredYes=1... No=0 I helped other women.....Yes=1... No=0 I was victimizedYes=1... No=0	
SEXUAL ABUSE There are also other things which women experience that they sometimes do not talk about. I want you to speak freely and remember that everything you say will be confidential.			
539	Has a current or previous husband or boyfriend ever physically forced you to have sex when you did not want to? Did this happen many times, a few times, once or did it not happen?	NEVER1 ONCE.....2 FEW3 MANY4	
540	Have you ever have sex with a current or previous husband or boyfriend when you did not want to because you were afraid of what he might do? Did this happen many times, a few times, once or did it not happen?	NEVER1 ONCE.....2 FEW3 MANY4	
541	Has a current or previous husband or boyfriend ever forced you to do something sexual that you found degrading or humiliating? Did this happen many times, a few times, once or did it not happen?	NEVER1 ONCE.....2 FEW3 MANY4	
542	Have any of these things happened in the past 12 months?	YES.....1 NO.....0	
CHECK if SEXUAL ABUSE is reported GO TO q542a			
542 a	Where did this incident take place?	AT HOME.....1 AT HIS HOME.....2 AT WORK.....3 AT SCHOOL.....4 OUTSIDE/NEAR HOUSE.....5 AT FRIENDS /RELATIVES.....6 AT BARS/NIGHTCLUBS.....7 OTHER.....8	

WOMEN'S QUESTIONNAIRE

SECTION 11: SEXUAL VIOLENCE PERPETRATED BY A PERSON OTHER THAN A BOYFRIEND
ALL WOMEN, EVEN THOSE WHO HAVE NEVER HAD A BOYFRIEND, SHOULD BE ASKED THE FOLLOWING QUESTIONS

IF INTERVIEWEES HERE MENTION BEING FORCED TO HAVE SEX BY A BOYFRIEND/HUSBAND, CHECK THAT THIS WAS REPORTED IN RESPONSE TO QUESTIONS 539, 540, or 541. IF SHE DID NOT MENTION IT THEN, GO BACK TO QUESTIONS 298, 299 AND 300 AND ASK THE QUESTIONS AGAIN AND RECORD THE RESPONSES.

THEN ASK QUESTION 543 AGAIN AND PROBE BY SAYING “DID ANYONE WHO OTHER THEN YOUR BOYFRIEND DO THIS TO YOU”

543	How many times have you been forced or persuaded to have sex against your will by a man who wasn't your husband or boyfriend?	Never.....1 Once.....2 More than 1 time3	→548
544	Can you tell me who did this the first time?	FATHER OR FAMILY MEMBER.....1 TEACHER.....2 BOY FROM NEIGHBOURHOOD.....3 MAN FROM NEIGHBOURHOOD.....4 STRANGER/UNKNOWN PERSON.....5 FRIEND OF THE FAMILY6 EX-BOYFRIEND.....7 OTHER.....8 Specify:	
545	How old were you?	17 or younger.....1 18-20.....2 21-24.....3 25-29.....4 30-34.....5 35-39.....6 40-44.....7 45 OR OVER.....8	
545 a	Where did this incident take place?	AT HOME.....1 AT HIS HOME.....2 AT WORK.....3 AT SCHOOL.....4 OUTSIDE/NEAR HOUSE.....5 AT FRIENDS /RELATIVES.....6 AT BARS/NIGHTCLUBS.....7 OTHER.....8	
546	Did this happen in the last 12 months?	YES.....1 NO.....0	
547	Can you tell me who did this the last time?	FATHER OR FAMILY MEMBER.....1 TEACHER.....2 BOY FROM NEIGHBOURHOOD.....3 MAN FROM NEIGHBOURHOOD.....4 STRANGER/UNKNOWN PERSON.....5 FRIEND OF THE FAMILY6 EX-BOYFRIEND.....7 OTHER.....8 Specify:	

548	How many times has a man who was not your husband or boyfriend tried to force or persuade you to have sex against your will but did not succeed in doing this?		Never.....1 Once.....2 More than 1 time3	→chk2
549	How old were you (the first time)?		17 or younger.....1 18-20.....2 21-24.....3 25-29.....4 30-34.....5 35-39.....6 40-44.....7 45 OR OVER.....8	
550	Can you tell me who did this the first time?		FATHER OR FAMILY MEMBER.....1 TEACHER.....2 BOY FROM NEIGHBOURHOOD.....3 MAN FROM NEIGHBOURHOOD.....4 STRANGER/UNKNOWN PERSON.....5 FRIEND OF THE FAMILY.....6 EX-BOYFRIEND.....7 OTHER.....8 Specify:	
550 a	Where did this incident take place?		AT HOME.....1 AT HIS HOME.....2 AT WORK.....3 AT SCHOOL.....4 OUTSIDE/NEAR HOUSE.....5 AT FRIENDS /RELATIVES.....6 AT BARS/NIGHTCLUBS.....7 OTHER.....8	
551	Did this happen in the last 12 months?		YES.....1 NO.....0	
552	Can you tell me who did this the last time?		FATHER OR FAMILY MEMBER.....1 TEACHER.....2 BOY FROM NEIGHBOURHOOD.....3 MAN FROM NEIGHBOURHOOD.....4 STRANGER/UNKNOWN PERSON.....5 FRIEND OF THE FAMILY.....6 EX-BOYFRIEND.....7 OTHER.....8 Specify:	
553	How many times were you forced to have sex with one man when you were too drunk or drugged?		Never1 Once2 More than 1 time.....3	
554	How many times have you been forced or persuaded to have sex with more than one man at the same time?		Never1 Once2 More than 1 time.....3	
568	Did you tell someone in your family about the incident?		YES 1 NO 0	→601
569	Who did you tell?	Female member of your family....Yes=1... No=0 Male member of your family.....Yes=1... No=0 Female member of your in-laws....Yes=1... No=0		

		Male member of your in-lawsYes=1... No=0 Your child.....Yes=1... No=0	
570	How did they respond?	They blamed me for it.....Yes=1... No=0 They supported me.....Yes=1... No=0 They were indifferent.....Yes=1... No=0 They told me to keep it quietYes=1... No=0 They were hurt by it.....Yes=1... No=0 They advised me to report to police..... Yes=1... No=0	
571	Did you ever speak out publically about the incident?	YES 1 NO 0	
572	Where did you speak out?	To the media (TV, radio, newspaper)...Yes=1... No=0 To the community/community group... Yes=1... No=0 To friendsYes=1... No=0 To work colleagues.....Yes=1... No=0 To my religious communityYes=1... No=0	
573	What happened after you spoke out?	I felt empoweredYes=1... No=0 I helped other women.....Yes=1... No=0 I was victimizedYes=1... No=0	

	SECTION 11: Sexual Violence against a non-partner – MEN'S QUESTIONNAIRE		
543	How many times have you forced or persuaded a woman who was not a wife or girlfriend to have sex against her will?	Never 1 Once 2 More than 1 time..... 3	→548
545	How old were you when this happened?	17 or younger.....1 18-20.....2 21-24.....3 25-29.....4 30-34.....5 35-39.....6 40-44.....7 45 OR OVER.....8	
546	Did this happen in the last 12 months?	YES..... .1 NO..... 0	
548	How many times have you forced or persuaded a woman who was not a wife or girlfriend to have sex against her will but did not succeed in doing this?	Never 1 Once 2 More than 1 time..... 3	→chk2
549	How old were you? (when it first happened)	17 or younger.....1 18-20.....2 21-24.....3 25-29.....4 30-34.....5 35-39.....6 40-44.....7 45 OR OVER.....8	
551	Did this happen in the last 12 months?	YES..... .1 NO..... 0	

553	How many times have you forced a woman to have sex when she was too drunk or drugged to consent?	Never 1 Once 2 More than 1 time 3	
554	How many times have you forced or persuaded a woman to have sex with you and another man at the same time?	Never 1 Once 2 More than 1 time 3	
554b	Did you seek advice or some kind of help in relation to these events?	YES 1 NO 0	→ 365
554c	Where did you go for the advice or help?	Men's organisation 1 Another NGO 2 Doctor 3 Traditional healer 4 Other 5	

SECTION 12: ABUSE IN PREGNANCY
CHECK 3 CHECK QUESTION Q307

Ever pregnant - go to 601. Has never been pregnant - go to 650.

Although pregnancy is highly valued in South African culture, in some cases, a woman's difficulties do not stop whilst she is pregnant. During any of your pregnancies, did anyone ever do any of the following to you?

601	During any of your pregnancies, did your husband/boyfriend ever refuse to buy clothes to prepare for the baby?	YES 1 NO 0	
602	During any of your pregnancies, did your husband/boyfriend ever prevent you from going to the clinic for check-ups?	YES 1 NO 0	
603	During any of your pregnancies, did your husband/boyfriend ever kick, bite, slap, hit you, or throw something at you?	YES 1 NO 0	→ 650
604	In how many pregnancies has this occurred?	_____ PREGNANCIES	
605	Did this happen for the first time after you told your husband/boyfriend that you were pregnant?	YES 1 NO 0	
606	Were you hurt on the stomach?	YES 1 NO 0	
607	Have you ever had a miscarriage which you think was because of being beaten?	YES 1 NO 0	
608	Have you ever gone into premature labour which you think was because of being beaten?	YES 1 NO 0	
609	Have you ever been physically forced to have sex when you did not want to while you were pregnant? Did this happen many times, a few times, once or did it not happen?	NEVER 1 ONCE 2 FEW 3 MANY 4	

SECTION 13: SEXUAL HARASSMENT AND ABUSE – WOMEN’S QUESTIONNAIRE

In many instances, women are treated badly simply because they are girls or women. I would like to ask you about some of the ways in which some men try to make advances and persuade or force women to have sexual relations with them. Although some of the questions are difficult to answer, I would like you to try to answer them openly. Your answers will be kept secret.

650	Has any man ever hinted or threatened that you could lose your job, or that your work might be hurt if you did not have sex with him?	YES.....1 NO.....2 NEVER WORKED.....3	→ 653 → 653
651	What did you do?	I had sex and kept my job1 I had sex and lost my job anyway.....2 I rejected the proposal and kept my job.....3 I rejected the proposal and lost my job4 Something else5	
652	Did you report it to any authority (senior person at work, police)?	YES 1 NO 0	
653	Has any teacher/principal/lecturer ever hinted or threatened that you could fail your exams or get bad marks, or that your schooling would be damaged if you did not have sex with him?	YES.....1 NO.....0 NEVER WENT TO SCHOOL.....3	→ 656 → 658
654	What did you do?	I had sex and passed1 I had sex and failed anyway2 I rejected the proposal and passed3 I rejected the proposal and failed4 Something else5	
655	Did you report it to any authority (another teacher/ lecturer / admin, police)?	YES 1 NO 0	
656	Has any teacher/principal/lecturer ever said something sexually explicit to you?	YES 1 NO 0	
657	Has any teacher/principal/lecturer ever touched you sexually?	YES 1 NO 0	
658	Has any man ever insisted that you have sex with him before he would give you a job?	YES1 NO.....0 NEVER TRIED TO GET WORK.....3	→ 661 → 663
659	What did you do?	I had sex and kept my job1 I had sex and lost my job anyway.....2 I rejected the proposal and kept my job.....3 I rejected the proposal and lost my job4 Something else5	
660	Did you report it to any authority (senior person at work, police)?	YES 1 NO 0	
661	Has any employer/ colleague in the workplace ever said something sexually explicit about you?	YES1 NO.....0 NEVER WORKED.....3	
662	Has any employer/colleague in the workplace ever touched you sexually?	YES1 NO.....0 NEVER WORKED.....3	
663	Has a traditional healer ever said that you should have sex with him to solve your problem?	YES1 NO.....0 Never been to a traditional healer2	→ 665 → 665

664	What did you do?	I had sex1 I rejected the proposal2 I rejected the proposal and reported it to the authorities3	
665	Have you ever been touched sexually by a conductor/taxi driver/taxi rank marshal while taking public transport?	YES 1 NO 0	→365
666	Did you report it to the police?	YES 1 NO 0	
666 b	Did you spend any money out of your own pocket because of this incident? The money could have been for transport to the police, or counselling.	Yes 1 No 0	
666 c	How much money out of your own pocket would you say you spent?	R0 1 R1-50 2 R51-100 3 R101-200 4 >R201 5	

SECTION 14: SEXUAL BEHAVIOUR

The next questions are about your sexual relationships. I know that these questions can be embarrassing. Please remember that everything you say will be kept secret and your name will not appear anywhere on the questionnaire. We are asking over 600 men the same questions, and we know that men have a wide range of experiences. Some start having sex in their early teens; some start a bit later. Most of us have more than one partner. Please remember that everything you say will be kept secret and cannot be linked to you.

365	When was the last time you had sex?	1 week ago.....1 2 weeks ago.....2 1 month ago.....3 3 months ago.....4 6 months ago.....5 1 year ago6 More than a year ago.....7 Never had sex8	→370
366	How often have you used condoms when having sex in the past year?	NO USE.....1 ALWAYS USE A CONDOM.....2 MOSTLY USE A CONDOM.....3 OCCASIONALLY USE A CONDOM4	
367	How many sexual partners have you had sex with in the last year?	00 11 2 -42 5-93 10-144 15-195 20-296 30-507 50 or more 8	
We would like to ask you about the number of sexual partners you have had in your WHOLE LIFE including this year. We want to know about the number of different partners.			

370	How many sexual partners have you had sex with in your whole life?	1 1 2 -4 2 5-9 3 10-14 4 15-19 5 20-29 6 30-49 7 50 to 99 8 100 or more 9	
368	M: Did a man ever persuade or force you to have sex when you did NOT want to?	Yes.....1 No.....0	→ 264
369	M: How many times has this happened?	Once.....1 2-3 times.....2 More than 3 times.....3	

SECTION 15: SEXUALLY TRANSMITTED DISEASES AND HIV TESTING

Thank you for answering these questions. Now we just have a few more questions about your health

382	M: How many times have you ever had an ulcer on your penis or anus? W: How many times have you ever had an ulcer on vagina or genitals	Never..... ...0 Once..... .1 Twice..... ...2 Three or more times.....3	
383	M: How many times have you had a discoloured, smelly or itchy discharge from your penis? W: How many times have you had a discoloured, smelly, itchy or uncomfortable discharge from your vagina?	Never..... 0 Once..... 1 Twice..... 2 Three or more times.....3	
384	Have you ever been told by a health worker that you had a sexually transmitted disease?	YES... 1 NO..... .0	
385	When did you last have an HIV test?	Last 12 months.....1 2-5 years ago.....2 More than 5 years ago.....3 Never tested.....4	→ 389
386	Did you take the result?	Yes..... 1 No..... 0	→ 389
387	Was the HIV test positive?	Yes..... 1 No..... 0	→ 389
388	Have you experienced violence because of your HIV status?	a) Emotional abuse....YES=1 NO=0 b) Physical abuse....YES =1 NO=0 c) Sexual violence ...YES =1 NO=0	

389	One should access treatment to reduce the possibility of being infected with HIV after rape or sexual assault? (PEP)	Yes.....1 No.....0	
390	One should access treatment to reduce the possibility of being infected with HIV after unprotected sex? (PEP)	Yes.....1 No.....0	

Section 16: Experiences of trauma

We would like to ask you about your past experiences. However, you may find some questions upsetting. If so, please feel free not to answer. Have you ever experienced any of the following:

1.	Imprisonment	Yes.....1 No.....0
2.	Civil unrest/war	Yes.....1 No.....0
3.	Serious injury	Yes.....1 No.....0
4.	Being close to death	Yes.....1 No.....0
5.	Murder of family or friend	Yes.....1 No.....0
6.	Unnatural death of family or friend	Yes.....1 No.....0
7.	Murder of stranger or strangers	Yes.....1 No.....0
8.	Torture	Yes.....1 No.....0
9.	Robbed / carjacked at gunpoint or knifepoint	Yes.....1 No.....0
10.	Kidnapping	Yes.....1 No.....0

SECTION 17: MENTAL HEALTH STATUS QUESTION - CES-D Scale

Thank you very much for answering all these questions we are now getting towards the end of the questionnaire and I would like to ask you some questions about how you have been feeling in the past week. I am going to read out some statements and ask you to say how many days you have had particular feelings or ideas or whether you have not had them at all.

		Rarely or none of the time	Some or a little of the time (1-2 days)	Moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
701	During the past week I was bothered by things that usually don't bother me	0	1	2	3
702	During the past week I did not feel like eating, my appetite was poor	0	1	2	3
703	During the past week I felt I could not cheer myself up even with the help of family and friends	0	1	2	3
704	During the past week I felt I was just as good as other people	0	1	2	3

705	During the past week I had trouble keeping my mind on what I was doing	0	1	2	3
706	During the past week I felt depressed	0	1	2	3
707	During the past week I felt that everything I did was an effort	0	1	2	3
708	During the past week I felt hopeful about the future	0	1	2	3
709	During the past week I thought my life had been a failure	0	1	2	3
710	During the past week I felt fearful	0	1	2	3
711	During the past week my sleep was restless	0	1	2	3
712	During the past week I was happy	0	1	2	3
713	During the past week I talked less than usual	0	1	2	3
714	During the past week I felt lonely	0	1	2	3
715	During the past week people were unfriendly	0	1	2	3
716	During the past week I enjoyed life	0	1	2	3
717	During the past week I had crying spells	0	1	2	3
718	During the past week I felt sick	0	1	2	3
719	During the past week I felt that people dislike me	0	1	2	3
720	During the past week I could not get 'going'	0	1	2	3
721	Have you ever attempted suicide because of violence you've experienced in your life?	YES.....1 NO.....0			
722	Now I want to ask you a question about the past four weeks , Has the thought of ending your life been in your mind?	YES.....1 NO.....0			

SECTION 18: SUBSTANCE USE ALCOHOL AND DRUG USE

Please remember that whatever you share in this research will be kept confidential and will only be used for the purpose of understanding men's lives and relationships. Now we have some different questions. We are going to ask you about drinking alcohol and some questions about your health.

WOMEN ARE ASKED SIMILAR QUESTIONS:

Please remember that whatever you share in this research will be kept confidential and will only be used for the purpose of understanding women's lives and relationships.

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
723	Have you drunk alcohol in the past 12 months?	Yes.....1 No.....0	→ 727

724	How often do you have a drink containing alcohol?	Monthly or less1 2-4 times a month2 2-3 times a week3 4 + times a week4	
725	How often do you have 5 or more drinks on one occasion?	Never1 Less than monthly.....2 Monthly.....3 Weekly.....4 Daily or almost daily.....5	
726	When did you first start drinking alcohol? that is having more than a few sips?	Before the age of 2.....1 Between 13 and 16 years old.....2 Between 17 and 20years.....3 At age 21 or hereafter.....4 Never drank alcohol.....5	
727	How many times have you used dagga in the last 12 months? Would you say it was once, twice or three or more times?	Never.....0 Once.....1 Twice.....2 Three or more times.....3	
728	When did you first smoke dagga?	Before the age of 2.....1 Between 13 and 16 years old.....2 Between 17 and 20 years.....3 At age 21 or hereafter.....4 Never smoked dagga.....5	
729	Have you ever been an injecting drug user?	Never.....1 Once.....2 Few Times.....3 Many Times.....4	

SECTION 19: PTSD

The following are symptoms that people sometimes have after experiencing hurtful or terrifying events in their lives. Please read each one carefully and decide how much the symptoms bothered you in the past week.

		(0) Not at all	(1) A little	(2) Quite a bit	(3) Extremely
730	Recurrent thoughts or memories of the most hurtful or terrifying events	0	1	2	3
731	Feeling as though the event is happening again	0	1	2	3
732	Recurrent nightmares	0	1	2	3
733	Feeling detached or withdrawn from people	0	1	2	3
734	Unable to feel emotions	0	1	2	3
735	Feeling jumpy, easily startled	0	1	2	3
736	Difficulty concentrating	0	1	2	3
737	Trouble sleeping	0	1	2	3
738	Feeling on guard	0	1	2	3

739	Feeling irritable or having outbursts of anger	0	1	2	3
740	Avoiding activities that remind you of the traumatic or hurtful event	0	1	2	3
741	Inability to remember parts of the most traumatic or hurtful events	0	1	2	3
742	Less interest in daily activities	0	1	2	3
743	Feeling as if you don't have a future	0	1	2	3
744	Avoiding thoughts or feelings associated with the traumatic or hurtful experience	0	1	2	3
745	Sudden emotional or physical reaction when reminded of the most hurtful or traumatic events	0	1	2	3
746	Feeling that people do not understand what happened to you	0	1	2	3
747	Difficulty performing work or daily tasks	0	1	2	3
748	Blaming yourself for things that have happened	0	1	2	3
749	Feeling guilty for having survived	0	1	2	3
750	Hopelessness	0	1	2	3
751	Feeling ashamed of the hurtful or traumatic events that have happened to you	0	1	2	3
752	Spending time thinking about why these events happened to you	0	1	2	3
753	Feeling as if you are going crazy	0	1	2	3
754	Feeling that you are the only one who suffered these events	0	1	2	3
755	Feeling others are hostile toward you	0	1	2	3
756	Feeling that you have no one to rely on	0	1	2	3
757	Finding out or being told by other people that you have done something that you cannot remember	0	1	2	3
758	Feeling as if you are split into two people and one of you is watching what the other is doing	0	1	2	3
759	Feeling someone you trusted betrayed you	0	1	2	3

SECTION 21: ACCESSING SUPPORT DURING EMOTIONAL DIFFICULTIES

You are now very nearly at the end of the questionnaire. Thanks you very much for your time. The last five questions are about sources of help that you may have at times when you feel sad or frustrated. All men feel sad, disappointed or frustrated sometimes.

441	When feeling sad, disappointed or frustrated have you ever sought help from older relatives?	YES 1 NO 0
442	When feeling sad, disappointed or frustrated have you ever sought professional counselling?	YES 1 NO 0
443	When feeling sad, disappointed or frustrated have you ever sought help through family meetings?	YES 1 NO 0

444	When feeling sad, disappointed or frustrated have you ever sought help from a guidance teacher or a human resource person at work?	YES 1 NO 0
445	When feeling sad, disappointed or frustrated have you ever sought help from a doctor?	YES 1 NO 0

FINISH

I would like to thank you very much for helping us. We have talked about some very difficult things today. I appreciate the time you have taken. I realise that these questions may have been difficult for you to answer, but it is only by hearing about women/men's lives that we can really begin to understand them. We really appreciate your openness with us. Most women/men have difficult times in their lives and it's good to share them and remember we did not bring them on ourselves. We really appreciate your participation in this study. By sharing this personal information with you are helping us with our research and that will ultimately help many other people in the country.

APPENDIX 3: SYSTEMATIC REVIEW TOOLS

Search strategies

Pubmed Search (((((((partner violence) OR partner abuse) OR partner assault) OR spouse abuse) OR wife abuse) OR wife battering) OR wife beating)) AND (((PTSD) OR depress*) OR alcohol*)) AND (((perpetrat*) OR assault) OR aggress*). Applying filter by Journal articles, before 30.04.2018, Human males

Science direct Search (pub-date > 1822 and pub-date < 2019 and ALL (perpetrat* OR aggress* OR abus* OR assault* OR batter* OR beat*)) AND (pub-date > 1822 and pub-date < 2019 and ALL (partner violence OR partner abuse OR partner assault OR spouse abuse OR wife abuse OR wife beat* OR wife batter*)) AND (pub-date > 1822 and pub-date < 2019 and ALL (PTSD OR depress* OR alcohol*)).

Quality appraisal form

	Criteria	Question/Standard	Max
1	Objectives	Does the article state specific objectives, including any prespecified hypotheses Yes=1 No=0	
	Methods		
2	Study design	Does the article present key elements of study design (periods of recruitment, exposure, follow-up, and data collection) Yes=1 No=0	
3.	Setting	Does the article describe the setting, locations, and relevant dates Yes=1 No=0	
4.	Sampling	Are appropriate sampling methods used and explained for example randomisation? Very satisfactory=2 Satisfactory=1 Not satisfactory =0	
5.	Study size	Does the study explain how the study size was arrived at? Yes=1 No=0	
6.		Does the study state sample size? Yes=1 No=0	
7.	Participants	Is the eligibility criteria, and the sources and methods of selection of participants specified? Yes=1 No=0	

	Criteria	Question/Standard	Max	
8.	Variables definition and measurement	Are all the outcomes, exposures, predictors, potential confounders, and effect modifiers clearly defined? Yes=1 No=0		
9.		For each variable of interest, are sources of data and details of methods of assessment (measurement) and diagnostic criteria described?		
		Very satisfactory=2		
		Satisfactory=1		
		Not satisfactory =0		
10.	Bias	Does the article account for sources of potential bias or imprecision and describe any efforts to address potential sources of bias?		
Yes=1 No=0				
11.	Statistical methods	Does the article describe all statistical methods, including those used to control for confounding?		
Yes=1 No=0				
12.		Does the article explain how missing data were addressed? Are the number of participants with missing data for each variable of interest?		
		Yes=1 No=0		
13.		Does the article report other analyses done? eg analyses of subgroups and interactions, and sensitivity analyses?		
		Yes=1 No=0		
	Results			
14.	Descriptive data	Does the article give characteristics of study participants (eg demographic, clinical, and social) and information on exposures and potential confounders?		
		Yes=1 No=0		
15.	Reporting error	Does the article report on confidence intervals or standard errors?		
		Yes=1 No=0		
	Discussion			
16.	Limitations	Does the article discuss limitations of the study? Yes=1 No=0		
17.	Interpretation	Do the authors accurately interpret the findings Yes=1 No=0		
18.	Generalisability	Does the article discuss the generalisability (external validity) of the study results?		
		Yes=1 No=0		
		Total		