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The relationship between violence across the life course, protective factors and mental disorders among adult women living in a slum setting in Ibadan, Nigeria

Original published work submitted to the School of Public Health, Faculty of Health Sciences,
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Johannesburg, June 2023

Declaration

I, Olutoyin Olubunmi Sekoni, student number 1619917, declare that this thesis is my own work conducted under the supervision of Professor Nicola Christofides and Dr. Sumaya Mall. 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 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.

Signature:



June 9th 2023

Dedication

This work is dedicated to the Almighty God who has been my pillar of strength and support. To Him alone I ascribe all honour and adoration.

Also, to the memory of my dear father, Dr. M.A. Adedoyin who would have loved to hold this piece in his hands. You are always in my heart.

Conference presentation arising from this study

Date	Name of Conference/Seminar	Place (city, country)	Title of Presentation	Oral/ Poster
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Publications arising from this study

1. **Sekoni, O.**, Mall, S. & Christofides, N. (2021.) Prevalence and factors associated with PTSD among female urban slum dwellers in Ibadan, Nigeria: a cross-sectional study. *BMC Public Health* 21, 1546. <https://doi.org/10.1186/s12889-021-11508-y>
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3. **Sekoni, O.**, Mall, S. & Christofides, N. The relationship between childhood trauma and experiences of IPV among women in an urban slum setting in South West Nigeria (**Under review** with the journal: *Violence and Victims* - with manuscript ID VV-2021-0231)

Abstract

Background

Research suggests that adult women in Nigeria have experienced traumatic events (TE) across their life course. Violence is a TE that can occur within intimate relationships as well as other spheres of life. TE and adverse life events can increase risk of a mental disorder such as: depression, anxiety and Post Traumatic Stress Disorder (PTSD). Despite experience of TE or adverse life events, some women do not experience the onset of a mental disorder which may be due to protective factors such as resilience and social support. The links between lifecourse TE and the development of common mental disorders have not been well researched on the African continent particularly in slum settings.

This thesis aimed to investigate the relationships between adult women's childhood trauma, experiences of Intimate Partner Violence (IPV) and adverse life events and common mental disorders among adult women living in a slum setting in Ibadan, Nigeria. The thesis also sought to examine the presence of protective factors in these relationships.

Methods

A community-based cross-sectional household survey utilizing multistage sampling was carried out among 550 women. Childhood trauma was measured using the short form of the Childhood Trauma Questionnaire. IPV was measured using the WHO Multi-country Study on Women's Health and Domestic Violence Questionnaire. Common mental disorders were measured using the short version of the Depression, Anxiety and Stress Scale (DASS-21) while the Harvard Trauma Questionnaire was used to measure PTSD. Recent stressors were measured using the Life Events Questionnaire. The protective factors of resilience, social support, social connectedness and self-esteem were measured using the Wagnild and Young resilience scale, the Multidimensional Scale of Perceived Social Support, the Social Connectedness Scale (Revised) and the Rosenberg self-esteem scale respectively.

Bivariate and multivariate analysis were conducted to identify any associations and net effect of the key independent variables on the primary outcomes of interest while controlling for socio demographic characteristics.

Results

The prevalence of lifetime and past year experience of IPV were 31.5% and 14.8% respectively. The prevalence of the TE during childhood ranged from 8.9% (sexual abuse), 50.4% physical abuse and 70.4% emotional abuse, while 30.8%, 41.6% and 5.8% had experienced one, two and three forms of childhood trauma respectively. Women who had experienced all three forms of childhood trauma had five times the odds of reporting a lifetime experience of IPV compared to those who had not had any experience of childhood trauma (OR= 5.21; CI= 2.30-11.76). Common mental disorders were reported by 14.0% of the respondents, with PTSD reported by 4.18%. Resilience and social support were found to be protective against reporting symptoms of common mental disorders. Women who reported higher levels of social support and resilience were less likely to report common mental disorders (OR:0.96, 95% CI 0.93, 0.98) and (OR:0.95, 95% CI 0.91, 0.99) respectively. Women who were 65 years and older were also less likely to report the occurrence of common mental disorders (OR:0.38, 95% CI 0.15, 0.98) compared to those aged 18–34 years.

Conclusion

The findings from this study show that trauma over the life course is prevalent among the women in these slums as a result of childhood trauma, IPV and recent stressors. The findings also show that even though many of the women were exposed to trauma, most of them did not develop mental disorders. Resilience and social support appeared to play an important role in mitigating the effects of adversity among this population of women even in the light of their extant circumstances within the slum setting. Addressing the use of both child protection programs and IPV reduction as well as fostering

resilience and social support among women would be of benefit in reducing the burden of common mental disorders.

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Abbreviations

AUDIT	Alcohol Use Disorders Identification Test
AOR	Adjusted Odds Ratio
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CI	Confidence Interval
COVID	Corona Virus Disease
CTQ	Childhood Trauma Questionnaire
DASS	Depression Anxiety and Stress Scale
DHS	Demographic Health Survey
PTSD	Post-Traumatic Stress Disorder
HTQ	Harvard Trauma Scale
TE	Traumatic Events
EAs	Enumeration Areas
HIV	Human Immunodeficiency Virus
IPV	Intimate Partner Violence
LMIC	Low and Middle Income Countries
NDHS	Nigeria Demographic and Health Survey
ODK	Open Data Kit

OR Odds Ratio

WHO World Health Organization

Operational Definitions of Terms

Post-Traumatic Stress Disorder (PTSD)

A mental disorder that can occur after exposure to a severely traumatic event and is characterized by three core symptoms: avoidance and numbing, re-experiencing and hyperarousal and is present for more than one month and associated with significant distress and or functional impairment (APA, 2013a).

Childhood Trauma

This will be categorized into four subtypes with the occurrence of any of the following before the age of 18 years (Jewkes *et al.*, 2010).

Child physical abuse: being beaten so hard at home that it left a mark or bruise, being punished at home by being beaten, being beaten with a belt or stick or whip or something else which was hard, being beaten or physically punished at school by a teacher

Child sexual abuse: having sex with someone who was not my (girl)boyfriend because I was threatened or frightened or forced; forced to have sex against my will by a boyfriend (for women), sexually touching or being forced to touch someone, forced sex with someone more than 5 years older or forced sex, someone touched my thighs, buttocks, breasts or genitals when I did not want him to or made me touch his private parts when I did not want to, having sex with a (wo)man who was more than 5 years older than me

Child emotional abuse: seeing or hearing my mother beaten by her husband or boyfriend; being told I was lazy or stupid or ugly by someone in my family; being insulted or humiliated by someone in my family in front of other people

Child emotional neglect: living in different households at different times, spending time outside the home and none of the adults at home knew where I was, one or both of my parents were too drunk to take care of me

Child physical neglect: not having enough to eat, someone to take me to the doctor if I needed it, having to wear dirty clothes, knowing there was someone to take care of me and protect me.

Recent life events: Other life events or changes that occurred after the age of 18 years but within the past one year occurrences that were likely to bring about readjustment-requiring changes in people's usual activities. These could be events such as suffering from serious illness, injury or assault to self or close relative, death of a spouse, parent or child, death of close family or friend, separation due to marital difficulties, job loss or financial crises, problem with the law (Brugha *et al.*, 1985; Dohrenwend, 2006).

Protective factors

Social Connectedness: the degree of interpersonal connection and belonging that an individual experiences in his or her social world and among his or her social networks within the preceding week (Van Bel *et al.*, 2009).

Self Esteem: a positive or negative attitude toward the self or the feeling that one is good enough (Rosenberg, 1965). Elicits responses to items such as; on the whole I am satisfied with myself, at times I think I am no good at all, I feel that I have a number of good qualities, I wish I could have more respect for myself, I take a positive attitude toward myself.

Absence of alcohol abuse (this will serve as a proxy for the knowledge and practice of health behaviours which has been identified as a protective factor): this will be defined as hazardous and harmful patterns of alcohol consumption within the preceding year (Babor *et al.*, 2001).

Resilience: healthy, adaptive functioning over the passage of time in the aftermath of adversity (Southwick *et al.*, 2014).

IPV: This will be defined as behaviour by an intimate partner (husband or boyfriend) or ex-partner that causes physical, sexual or psychological harm, including physical aggression, sexual coercion, psychological abuse and controlling behaviours that has occurred within the preceding one year (Breiding *et al.*, 2015).

Women experiences of IPV with the following dimensions:

Physical IPV: Physical acts of violence such as being slapped, had something thrown at them, pushed or shoved, kicked, hit, dragged, choked, beaten, burnt or threatened with a weapon by a current or previous male partner

Sexual IPV or partner rape: Physically forced non-consensual sex or sex with a partner because they were afraid of what he might do or being forced to do something sexual that one found degrading or humiliating.

Psychological or emotional IPV: A series of different acts that were controlling, frightening, intimidating or undermined women's self-esteem

Non partner rape: Forced sex against a woman's will by a man who was not a boyfriend or husband, forced sex with a man when they were too drunk or drugged to stop him, forced sex with more than one man at the same time.

Depression: A mental health disorder that is characterized by persistent sadness and a loss of interest in activities that the individual normally enjoys and accompanied by an inability to carry out daily activities for at least two weeks (Hasin *et al.*, 2005).

Anxiety: A mental health disorder usually associated with fear, nervousness, apprehension, and panic occurring over the past month (Martin, 2003; Ruscio *et al.*, 2007).

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Organization of the thesis

This doctoral thesis is organized into eight chapters. **Chapter 1** introduces the thesis by outlining definitions and epidemiological issues associated with the events of trauma that can occur over the life course as well as mental disorders. The chapter concludes by pointing out the important gaps in knowledge that this study seeks to fill and highlights the rationale and specific objectives through which this will be achieved. **Chapter 2** reviews the extant literature surrounding childhood trauma, recent stressors and IPV as well as common mental disorders such as depression, anxiety and PTSD. It also highlights the role of protective factors such as resilience, social support, self-esteem and social connectedness on mental health outcomes following the experience of trauma. A conceptual framework showing the relationship between the variables that were examined in this study is also presented. **Chapter 3** describes the methodology for the research including a description of tools for the measurements of relevant variables and ethical considerations. **Chapters 4-6** represent two peer-reviewed publications and a final manuscript that is under review that serve as the results section of the thesis. Each of these publications were written with my supervisors as co-authors and their contributions are acknowledged in each of them accordingly. **Chapter 7** synthesizes the key findings of the thesis in the light of existing literature and implications of the findings are reflected on. Limitations to the study are also highlighted. **Chapter 8** is the concluding chapter of the thesis that summarizes key recommendations which stem from the evidence gaps highlighted from the results of the study. These recommendations are presented as applicable for policy, research and clinical practice. An overall conclusion to the thesis is also presented.

01

Introduction

1.0 Introduction

1.1 Chapter Overview

This chapter introduces the thesis by outlining definitions and epidemiological issues associated with the events of trauma that can occur over the life course as well as mental disorders. The chapter concludes by pointing out the important gaps in knowledge that this study seeks to fill and highlights the rationale and specific objectives through which this will be achieved.

1.2 Background

Mental disorders including depression and anxiety are common among women globally. Estimates suggest that mental disorders represent 13% of the global disease burden and major depression is projected to be the largest contributor by 2030 (Hock *et al.*, 2012). Research suggests that women living in informal or slum settings may be more susceptible to mental disorders (Abdi *et al.*, 2021a). Sociodemographic factors that may heighten the risk of the onset of mental disorders include low income, being a housewife, low education, being single, divorced or widowed (Stegenga *et al.*, 2012; Bezerra *et al.*, 2021). Another important factor is the exposure to trauma across the life course. (For the purposes of this discourse, traumatic experiences are used interchangeably with violent experiences). Exposure to childhood trauma including sexual, physical and emotional abuse and neglect has been associated with additional traumatic events (TE) later in life including intimate partner violence (IPV) (Barrios *et al.*, 2015; Zhong *et al.*, 2016; Sanchez, Pineda, Chaves, Q. Zhong, *et al.*, 2017). TE during childhood or adulthood are associated with mental disorders including depression, anxiety and post-traumatic stress disorder (Castro *et al.*, 2017; Devi *et al.*, 2019; Koiralai *et al.*, 2020). Common mental disorders are described in more detail below:

Depression can be described as a mood disorder that causes a persistent feeling of sadness, loss of interest as well as low energy, poor appetite and even suicide (Li *et al.*, 2021; Chand and Arif, 2022).

These feelings occur most of the day nearly every day over at least a two week consecutive period (APA, 2013a). It is a leading cause of disability with global prevalence being estimated at 5% (Penninx *et al.*, 2013; WHO, 2021). Within Low- and Middle-Income Countries (LMIC), prevalence estimates of depression have been varied. However, researchers have reported a prevalence of up to 6.2% (Koenen *et al.*, 2017; Cristóbal-Narváez, Haro and Koyanagi, 2020). In Nigeria, lifetime and 12 month prevalence estimates for depression had been previously documented as 3.1% and 1.1% respectively (Kessler *et al.*, 2007). More recent data from Nigeria has estimated prevalence figures that have ranged between 1.7% to 52% among correctional officers, HIV positive patients, hypertensive patients, bank workers, (Obadeji, Ogunlesi and Adebawale, 2014; Somoye, Babalola and Adebawale, 2015; Badru *et al.*, 2018; Ademola *et al.*, 2019a).

Anxiety is also a very common mental disorder characterized by apprehension, tension and excessive and/or intractable worry concerning issues of daily life and that interferes with daily activities (Locke, Kirst and Shultz, 2015). Estimates from the literature indicate that up to 300 million people suffer from anxiety worldwide with a global prevalence that ranges from 5.3% to 10.4% (Baxter *et al.*, 2013; Smith *et al.*, 2021; Yang *et al.*, 2021). Researchers have also estimated the prevalence of anxiety disorders among various populations in LMIC to range from 8.1% to 29.2% among older adults, youth and pregnant women (Yatham *et al.*, 2018; Smith *et al.*, 2021; Nielsen-Scott *et al.*, 2022). Major risk factors for anxiety include being female, childhood abuse, status of relationship with partner, level of education and presence of chronic diseases (Blanco *et al.*, 2014; Ayaz *et al.*, 2020; Wang *et al.*, 2022). In Nigeria, research estimating the prevalence of generalized anxiety using nationally representative data is sparse with recent focus being mainly with respect to specific population groups or smaller community-based samples. Kessler *et al.* reported on the prevalence of lifetime and 12 month anxiety in Nigeria from the World Mental Health Survey data which was estimated at 5.7% and 4.1% respectively (Kessler *et al.*, 2007). However, estimates have ranged from

2.3% to 50% among prison correctional officers, respondents of a community based survey, bank workers and National Youth Service Corp members (Somoye, Babalola and Adebowale, 2015; Adewuya *et al.*, 2018; Badru *et al.*, 2018; Amoko *et al.*, 2021).

Another mental disorder associated with TE over the life course is Post Traumatic Stress Disorder (PTSD). PTSD is a disabling psychiatric disorder consisting of three core symptoms: avoidance and numbing, re-experiencing and hyperarousal (Scher *et al.*, 2008; Radell *et al.*, 2017). PTSD is preceded by the experience or witnessing of one or several traumatic events during childhood, adolescence or adulthood (Iribarren *et al.*, 2005; Wynn *et al.*, 2017). TE includes events such as physical, sexual or emotional abuse and neglect to the experience of or witnessing of violent personal assault, terrorism, serious illness or death of a loved one (Atwoli *et al.*, 2013).

The prevalence of PTSD in Sub-Saharan Africa is estimated at 22% but is thought to range between 0% to 74% with conflict exposed regions reporting higher rates (Ng *et al.*, 2020). A community-based study in Nigeria found no cases while 50% was reported in the Democratic Republic of Congo and 74% in Uganda (Ng *et al.*, 2020).

In Nigeria, where historically and currently there have been a wide range of TE such as conflict, natural disasters and bombings, the prevalence of PTSD is thought to range between 2.7% and 66.7% (Iteke *et al.*, 2011; Mishara and Gbaden, 2014; Sheikh *et al.*, 2016; Asuquo, Edet, *et al.*, 2017). A lower prevalence of 2.7% was documented among children and adolescents after a post-election conflict following the Presidential elections while a prevalence of 66.7% was observed among students shortly after the experience of a terrorist attack from insurgents in the North-Eastern part of the country (Mishara and Gbaden, 2014). Although reasons for such wide range variation in prevalence figures of PTSD are not known, it is possible that the use of varying study designs, tools and samples under study may have influenced this variation.

Predictors of PTSD in Nigeria have been documented to include a wide spectrum of events e.g. political and ethno-religious violence to road traffic accidents (Iteke *et al.*, 2011; Mishara and Gbaden, 2014; Nwoga, Audu and Obembe, 2016; Sheikh *et al.*, 2016; Asuquo, B. E. Edet, *et al.*, 2017).

1.3 Prevalence of Childhood Trauma

TE in childhood represent any form of harm, threat or the potential of such as a result of commission or omission by the child's caregiver (Sideli *et al.*, 2012). TE that occur in childhood include physical, sexual, and emotional abuse, physical and emotional neglect as well as the witnessing of violence, the experience of bullying and parental death (Sansone, Leung and Wiederman, 2012; Misiak *et al.*, 2017). Up to 50% of children aged 2-17 years worldwide are victims of trauma (Hillis *et al.*, 2016). Similar findings were reported by Gray *et al.* in their review of trauma among children from LMIC with one in two children being victims of childhood trauma (Gray *et al.*, 2015). Most children in Nigeria have experienced one form of trauma or another. Agbaje *et al.* reported that 86.7% of students of higher learning said they had experienced trauma as a child (Agbaje *et al.*, 2021). Salawu and Owoaje also reported a prevalence of 92% however they also included adverse experiences such as household substance use which is a variable that is not measured by all researchers and might have contributed to the prevalence rate observed (Salawu and Owoaje, 2020). With respect to specific domains of childhood trauma there have been variations across and within domains. The prevalence estimates of child sexual abuse among specific populations in Nigeria have ranged from 8.6% to 68.6% (Chinawa *et al.*, 2014a; Manyike *et al.*, 2015; Adeyera, Uchendu and Owoaje, 2018; David *et al.*, 2018; Miller *et al.*, 2018; Amole *et al.*, 2021; Chime *et al.*, 2021). While for physical abuse it has been estimated to range from 32.1% to 50.0% (Chinawa *et al.*, 2014a; Salawu and Owoaje, 2014; Fakunmoju and Bammeke, 2015; Adeyera, Uchendu and Owoaje, 2018; Miller *et al.*, 2018; Annor *et al.*, 2020a) and for emotional abuse from 17.0% to 45.7% (Adeyera, Uchendu and Owoaje, 2018; Miller *et al.*, 2018; Annor *et al.*, 2020a).

The literature suggests that common mental disorders are frequent outcomes of exposure to childhood trauma. Huh and colleagues in Korea found that a history of childhood trauma was associated with depression and anxiety among a clinical sample of adults (Huh *et al.*, 2017). The work of Poole et al. also corroborates this in their work among adults in Canada (Poole, Dobson and Pusch, 2017). Researchers have noted that this is due to the effect that traumatic stress has on the developing brain and can result in life long effects on behavior and physiologic function (De Bellis *et al.*, 2002; Charmandari *et al.*, 2012). In addition, poor treatment outcomes for depression have also been reported for adults with traumatic childhoods (Nanni, Uher and Danese, 2012) Mental health consequences of trauma may even extend into the next generation as researchers have reported greater risk of lifetime psychopathology in children of women who experienced trauma as children (Roberts *et al.*, 2015; Plant *et al.*, 2018).

1.4 Stressful life events

Seemingly common life events have the ability to lead to the development of mental disorders (Nyarko *et al.*, 2020). Experiences such as loss of a loved one, relationship difficulties, financial difficulties, burglary, bullying, violence at work, school or within intimate relationships have also been found to be of significance in the development of mental disorders (Idsoe, Dyregrov and Idsoe, 2012; Hassanzadeh *et al.*, 2017; Nyarko *et al.*, 2020). The potential of chronic illness to be associated with mental disorders has also been suggested by researchers. Voinov et al. highlighted a bidirectional relationship between depression and individual chronic diseases such as cancer, diabetes and cardiovascular disease (Voinov, Richie and Bailey, 2013). Edmondson et al reported that up to one in four survivors of stroke or transient ischaemic attack developed PTSD symptoms (Edmondson *et al.*, 2013).

1.5 IPV

IPV has been defined as “any behavior within an intimate relationship that causes physical, psychological, or sexual harm to those in that relationship” (Patra, Prakash and Khanna, 2018). It occurs worldwide and it has been estimated that globally, the lifetime prevalence of IPV is 27% (Sardinha *et al.*, 2022). However, wide variations in the prevalence occur in sub-Saharan Africa with the highest prevalence being recorded in central sub-Saharan Africa at 44% and the lowest in southern and western sub-Saharan Africa (Sardinha *et al.*, 2022). An estimate of 23.5% was reported for the prevalence of IPV in Nigeria by Benebo *et al.* in their study using nationally representative data (Benebo, Schumann and Vaezghasemi, 2018).

IPV has been found to be a prominent risk factor for the onset of mental disorders among women (Satyanarayana, Chandra and Vaddiparti, 2015). Irrespective of the type of IPV, links have been established between IPV and mental disorders (Satyanarayana, Chandra and Vaddiparti, 2015). Severity and duration of IPV also have been found to be independently associated with mental disorders (Salvador de Mendonça and Ludermir, 2017; Bahati *et al.*, 2022). Research has found that no matter how far back in the past IPV occurs, it still has the potential to cause mental disorders. This highlights the serious mental health implications of IPV (Bahati *et al.*, 2022). Evidence additionally suggests that there is an ‘add on’ effect in the risk of the occurrence of mental disorders when there is a history of both childhood trauma and IPV experience with greater odds of mental disorders existing where both co-exist (Ouellet-Morin *et al.*, 2015; Poole, K. Dobson and Pusch, 2017; Sanchez, Pineda, Chaves, Q.-Y. Zhong, *et al.*, 2017).

1.6 Overview of policy on violence against women and children in Nigeria

The policy landscape for the prevention of violence against women and children in Nigeria has left much to be desired. There is poor political will on the part of the Nigerian government to address violence and discrimination against women. Even though Nigeria is a signatory to the United Nations

Convention on the Elimination of Discrimination Against Women (CEDAW) (United Nations, 2015a) as well as the Protocol to the African Charter on Human and People's Rights on the Rights of Women in Africa (Maputo Protocol) (Gertholtz, Gibbs and Willan, 2011), it is yet to be domesticated into a single comprehensive national law that protects women from violence (Arowolo, 2020). This stems from the patriarchal nature of the Nigerian society coupled with the tripartite legal system passed down from the colonial era (McGovern *et al.*, 2019; Arowolo, 2020). Similarly, with 12 out of 36 States of Nigeria yet to domesticate the Child Rights Act, the protection of children from various forms of violence and trauma including physical, sexual and emotional abuse as well as child marriage still represents major problems (Federal Republic of Nigeria, 2003; Mobolaji, Fatusi and Adedini, 2020).

1.7 The slum environment and health

Slum environments tend to be associated with greater TE such as exposure to violence and crime and by extension, the risk of mental disorders in such settings is higher as has been suggested by researchers (Gapen *et al.*, 2011; Goldmann *et al.*, 2011; Jain *et al.*, 2018; Wado *et al.*, 2022).

Neighborhood characteristics have been found to play a role in health-related behaviour and health outcomes and as such must not be overlooked (Ezeh *et al.*, 2017; Pérez *et al.*, 2020). There is greater risk for physiologic problems such as neuroendocrine and cardiovascular as well as mental disorders in low socioeconomic neighborhoods (Robinette, Charles and Almeida, David M Gruenewald, 2016; Visser *et al.*, 2021). Historically, slums have been viewed as an extension of urban settings and the health of people in slums has been portrayed through the interaction between poverty and health, a concept which is popular in urban health (Ezeh *et al.*, 2017). Most nationally representative data for censuses in developing countries limit data collection to rural - urban divides without further assessment of the urban area into slum and non- slum categories. With the significant increase in slum populations globally due to urbanization and the expectations of even greater numbers particularly in

developing countries, the need to identify slums as structural units is critical (Aliyu and Amadu, 2017). This is because interventions that hope to improve slum health can only do so when such interventions are derived from evidence-based data that is specific to the target population in mind i.e. slum populations.

1.8 Protective Factors

1.8.1 Individual level factors

In spite of the established relationship between TE and mental disorders, it is clear that in every cohort of individuals exposed to a traumatic event, not everyone develops a mental disorder (Wu *et al.*, 2013). The ability of an individual to achieve positive life goals after the experience of adversity with the outcome being better than that of other individuals who suffered the same experiences is called resilience (Levine, 2003; Ungar and Liebenberg, 2011; Kabiru *et al.*, 2012; Rutter, 2013). Resilience which can be seen as the presence of protective factors in spite of risk, on the other hand has been found to consistently interrupt the pathway that links trauma to the development of PTSD and other mental disorders (Yuan *et al.*, 2011; Arnetz *et al.*, 2013; Lee *et al.*, 2016). Resilience is the result of an interplay between protective factors and risk factors which also takes into account individual, familial and community resources (Masten, 2017). Resilience is higher when risk factors are at a minimum and protective factors are accentuated. Risk factors identified to influence the development of resilience as highlighted in the literature include gender, difficult temperament and poor school performance (Rew *et al.*, 2016). Protective factors include competence, coping skills, humor, social connectedness as well as knowledge and practice of healthy behavior (Saeri *et al.*, 2018a; Mushonga and Henneberger, 2020).

1.8.2 Neighbourhood, cultural and religious factors

Social connectedness has been found to play a major role in the development or otherwise of mental disorders following the experience of trauma (Javidi and Yadollahie, 2012; Saeri *et al.*, 2018a).

Similarly, evidence from literature has suggested that living in neighbourhoods that have greater ethnic density is protective against mental disorders (Gruebner *et al.*, 2017; De Vries *et al.*, 2018). This has been linked to how members of various ethnic groups process social stress and the source of support that the groups represent to them (Rapp *et al.*, 2015). Religion has also been identified as a protective factor for mental health. It has been associated with a greater sense of purpose in life and creates hope and meaning in life. This has been shown to be so even among those who have already been diagnosed with mental disorders (Lucchetti, Lamas and Lucchetti, 2021).

1.7 Problem Statement

The cost of common mental disorders to individuals is very high resulting in severe problems in the ability to function socially and emotionally (Davidson, 2000; Sareen, 2014a; Perini *et al.*, 2019).

Evidence also suggests that globally, mental disorders are responsible for the loss of up to US 2.5 trillion annually and this is projected to reach US16 trillion by the year 2030 (Trautmann and Wittchen, 2016; The Lancet Global Health, 2020).

Among women, longitudinal studies have suggested mental disorders are both a risk factor for, as well as a consequence of IPV (Kuijpers, van der Knaap and Winkel, 2012; McCauley *et al.*, 2015; Machisa, Christofides and Jewkes, 2017). Currently there are limited community-based data that exists on mental disorders within the African continent with most research being focused on at risk groups. In addition, literature has suggested that some apparently common life events can be traumatic and have a potential to lead to the occurrence of mental disorders (Low *et al.*, 2012; Tibubos *et al.*, 2021). The differential impact of various types of traumatic experiences has also been highlighted in the literature (Boudoukha, Ouagazzal and Goutaudier, 2017). For instance, the most common long term mental health sequelae of child sexual abuse has been reported to be depression while for IPV both depression and PTSD have been documented as being major consequences (Chmielowska and Fuhr, 2017; Radmanoviü, 2020). In addition, the likelihood of mental disorders increases with an increase in the

number of traumatic events (Tracy *et al.*, 2014). The mental outcomes of the experience of trauma may also be a function of context as what is perceived as stressful to one individual may not necessarily be perceived as so by another. The role that protective factors play in the relationship between the experience of trauma and the subsequent development of mental disorders has also not been clearly established.

1.8 Study Justification

Culturally determined responses to trauma influence the expression of psychological distress and by extension psychological distress may present in other less known ways. There have been strong arguments in literature about the need to contextualize the occurrence of mental disorders as it has been found that traumatic events that may lead to the occurrence of mental disorders in one clime may be different from traumatic events that precipitate such disorders in another (Jayawickreme, Jayawickreme and Foa, 2012; Lewis-fernández *et al.*, 2014). However, research enquiry into the occurrence of mental disorders as well as associated risk and protective factors in the general populations in developing countries has remained sparse. The need to examine mental disorders in the general population is further underscored with the realization that other behavioral health problems including substance use are more difficult to treat if trauma-related disorders aren't detected early and treated effectively (United States Department of Health and Human Services, 2016).

Much research to date on the aetiology of mental disorders and its association with trauma over the life course as well as factors promoting resilience against mental disorders have been conducted in high income countries. (Yehuda *et al.*, 2015; Chmielowska and Fuhr, 2017; Włodarczyk *et al.*, 2017; McKay *et al.*, 2021). In both high and low income countries, mental disorders have been studied among at risk populations e.g. returning war veterans, migrants, rape survivors and school children (Blore *et al.*, 2015; Close *et al.*, 2016; Membride, 2016; Oshodi *et al.*, 2016; Lu, 2017; Mbalo, Zhang

and Ntuli, 2017; Kusi-mensah *et al.*, 2019). However, there have been very few epidemiological studies of mental disorders that have been carried out on the African continent (Atwoli *et al.*, 2016). In Nigeria in particular, community-based data on mental disorders, resilience and other comorbid conditions are few with research being limited to specific at-risk groups e.g. medical students, adolescents, the elderly, road traffic accident victims and internally displaced persons (Sheikh *et al.*, 2014; Asuquo, B. Edet, *et al.*, 2017; Esan *et al.*, 2019; Amoo *et al.*, 2020; Kieselbach *et al.*, 2021). However, in a context like Nigeria where mental disorder measures are widely disparate within these specific at risk groups, it is worth conducting research on mental disorders in the general population in specific settings. This is also particularly important in the context of slums where this study was conducted as it represents a strata of the urban environment that is growing rapidly. This work will contribute the body of knowledge on mental disorders by providing information on the relationship between traumatic events over the life course and the development of mental disorders. It will also examine the role of protective factors in this relationship. This will provide evidence which can be used to influence policy, treatment options and treatment approaches for individuals within the general population in a developing country like Nigeria.

1.9 Study Aim

This study aims to investigate the relationship between violence across the life course, protective factors and mental disorders among adult women living in a slum setting in Ibadan, Nigeria

1.10 Objectives

In this thesis I seek to:

- (1) examine the relationship between childhood trauma and IPV among women in an urban slum setting in Ibadan, South West Nigeria.

- (2) estimate the prevalence and factors associated with PTSD among women in an urban slum setting in Ibadan, Nigeria
- (3) describe the relationship between common mental disorders and protective factors among female urban slum dwellers in Ibadan, Nigeria.
- (4) estimate the prevalence and factors associated with resilience among female urban slum dwellers in Ibadan, Nigeria.

02

Literature Review

2.0 Literature Review

2.1 Chapter Overview

This chapter reviews the extant literature surrounding childhood trauma, recent stressors and IPV as well as common mental disorders such as depression, anxiety and PTSD. It also highlights the role of protective factors such as resilience, social support, self-esteem and social connectedness on mental health outcomes following the experience of trauma. A conceptual framework showing the relationship between the variables that were examined in this study is also presented.

2.2 Trauma across the life course

Several types of traumas can occur at any stage over the life course. There are several traumatic events (TE) which can occur in childhood including sexual abuse, physical abuse and emotional abuse. IPV (IPV) may occur during adolescence or adulthood. In addition to TE, there are also adverse life events such as loss of a loved one, job loss, the experience of a burglary, bullying or chronic illness that can also occur (Lövestad *et al.*, 2017; Fang *et al.*, 2018; Li *et al.*, 2019).

These TE are associated with the onset of deleterious physical and mental health conditions later in life (Nelson *et al.*, 2020; Krause-utz *et al.*, 2021). The implications of this extend even beyond the direct health consequences but also account for significant disability adjusted life years as well as heavy financial costs. Hughes *et al.* report that the greatest adverse childhood events attributable costs in England and Wales were for mental illness and were estimated at £11.2 billion while Bellis *et al.* put the annual costs of care for ill health attributable to adverse childhood experiences across Europe and North America at \$581 billion in Europe and \$748 billion in North America (Bellis *et al.*, 2019; Hughes *et al.*, 2020). TE are elaborated on below:

2.3 Definition and Types of Childhood Trauma

Childhood trauma has been recognised as a public health problem of global concern which affects children of all ages, races and genders (Cui *et al.*, 2016; Hillis *et al.*, 2016). Childhood trauma is a TE

that have been experienced by an individual who is less than 18 years of age (Jackson, Kissoon and Greene, 2015). Globally, more than 25% of adults have reported being physically abused during childhood while 20% of women and at least 5% of men have reported being sexually abused as children (WHO, 2020). More than half of all children worldwide ages 2-17 years have experienced trauma (Hillis *et al.*, 2016).

Generally, in the research community, the use of the terminology ‘childhood trauma’ within the context of harm that is inflicted on children by another in a relationship of responsibility, trust or power has been used interchangeably with ‘child abuse’, ‘adverse childhood experiences’, ‘childhood adversity’ and ‘child maltreatment’. For instance, Schneider *et al* operationalized trauma as adverse childhood experiences that include physical, sexual, and verbal abuse and neglect and growing up in a dysfunctional household and Walton *et al.* also used the term adverse childhood experiences to represent childhood trauma while Humphreys *et al* used the term child maltreatment to describe childhood trauma (Schneider *et al.*, 2017; Humphreys *et al.*, 2020; Walton *et al.*, 2021). This is also evident by synonyms employed during systematic reviews undertaken to examine childhood trauma (Hughes *et al.*, 2017; Oh *et al.*, 2018; Baldwin *et al.*, 2019; Porter *et al.*, 2020; Setién-Suero *et al.*, 2020). However, at a very granular level, child abuse connotes a scenario that reflects an infliction of harm while childhood neglect implies an act of omission that subsequently also results in deleterious consequences to a child with both scenarios being found to be detrimental to the growth and development of an individual (Gonzalez, Mirabal and McCall, 2021).

There are several consequences associated with the experience of childhood trauma and can range from severe injury, impaired brain and nervous system development to increased risk of non-communicable diseases and mental health problems (Schilling and Christian, 2014; Vachon, Krueger and Rogosch, 2015; Fu *et al.*, 2018; Mathews *et al.*, 2020). Possible pathways that link childhood

trauma to mental disorders in adulthood have been described in the literature with toxic stress which occurs as a result of childhood adversity, socioeconomic status and social support being highlighted (Jones *et al.*, 2018). The experience of childhood trauma creates stress in a child and longer durations of the experience of such trauma leads to toxic stress and with toxic stress comes greater risk for the development of mental disorders (Nurius *et al.*, 2015). This is because chronic exposure to early life stress alters the internal homeostatic state and affects the ability of the hypothalamic-pituitary-adrenal axis to respond optimally to stress in adulthood, increasing the risk of development of mental disorders (Jurueña *et al.*, 2021).

Socioeconomic status is a critical element of social disadvantage and plays a role in the link between childhood trauma and subsequent poor mental health outcomes in adulthood. The literature suggests that poor socioeconomic status in the family in the presence of childhood trauma is more likely to be associated with mental disorders compared to higher socioeconomic status (Lindström, Hansen and Rosvall, 2012; Mehri *et al.*, 2021). Mehri *et al.* found that poor socioeconomic status during childhood in individuals that had suffered childhood trauma was associated with greater risk for depression, stress and anxiety in adulthood (Mehri *et al.*, 2021). Socioeconomic status may perhaps buffer the effects of childhood trauma possibly by greater financial access to mental health services (Mock and Arai, 2011). Schneider *et al.* also found that adults with greater levels of social support were less likely to report mental disorders compared to those without social support networks (Schneider *et al.*, 2017).

2.3.1 Types of childhood trauma

The major types of childhood trauma documented in the literature are physical, sexual and emotional trauma as well as physical and emotional neglect (Jackson, Kissoon and Greene, 2015; Gonzalez, Mirabal and McCall, 2021). Child physical abuse involves any form of trauma inflicted on a child through physical acts that harm or have the capacity to harm a child. These can include can include punching, beating, hitting, kicking, stabbing, biting, pushing, dragging, dropping, shaking, shoving,

throwing or pulling (Jackson, Kissoon and Greene, 2015). Child physical abuse can result in both minor and major injuries and can range from bruises to abusive head trauma and cerebral edema and at times to the death of the child (Schilling and Christian, 2014).

2.3.1.1 Child Sexual abuse

Child sexual abuse involves the engagement of a minor (less than 18 years) in any sexual activity including pornography in which the child is unable to understand nor give consent to or is unprepared for and which violates legal laws and social norms within the context of a relationship of responsibility, trust or power (WHO, 2003). More often than not, perpetrators are not brought to book and victims suffer the effects of sexual abuse well into adulthood. Disclosure has been identified to facilitate the administration of justice against perpetrators as well as prevention of further perpetration while also providing catharsis to victims (Easton, 2020). Child sexual abuse often goes unreported due to several reasons such as fear and shame by the victims as well as the age and gender of the victim or a need to excuse the abuse as a way of dealing with the hurt since many times it is perpetrated by a trusted family member (London *et al.*, 2005; Wallis and Woodworth, 2020). The reluctance towards disclosure is also fueled by parents of victims who when they discover are traumatized by the situation and experience denial and self-blame (Mcelvaney and Nixon, 2019). Limited disclosure results in prevalence rates that are largely underestimated (Hillis *et al.*, 2016).

2.3.1.2 Child emotional abuse

Butchart et al described emotional abuse as acts that involve restriction of movement, belittling, blaming, threatening, frightening, ridiculing, and any other nonphysical forms of hostile treatment (Butchart, Alexander Harvey, Mian and Furniss, 2006). Child emotional abuse is not as commonly examined in the literature as other types of childhood trauma. The seemingly unseen nature of this type of trauma has been highlighted as a possible cause (Kumari, 2020). However, it is almost impossible for a child to experience any other type of trauma without experiencing some degree of

emotional abuse, it is also associated with far reaching consequences through out the life course (Rees, 2010).

2.3.1.3 Child neglect

Child neglect is one of the types of child trauma and is a situation in which the caregiver of a child which could be the child's parent or legal guardian fails to provide basic necessities of life in order for the child to develop physically, emotionally and psychologically (Kairys, 2020). Such necessities include food, clothing, shelter, security, schooling, medical care and supervision. Child neglect implies a failure to act as opposed to child abuse in which a harmful act is being carried out (Leeb *et al.*, 2008). Child neglect is the commonest type of childhood trauma globally (78.5%), and is pervasive worldwide with the prevalence being found to range from 16% to 76% (Schilling and Christian, 2014; Avdibegović and Brkić, 2020; Tingberg and Nilsson, 2020). Evidence from the literature suggest that certain characteristics of a child can make a child more likely to experience neglect. Difficult temperament, developmental deficiencies and non-compliant behaviour are some of such issues (Schilling and Christian, 2014).

2.3.2 Risk factors for childhood trauma

The literature describes various factors that can serve as risk factors for the experience of childhood trauma however, it must be noted that children are victims and should never be blamed or adjudged responsible for maltreatment (WHO, 2020). Risk factors for childhood trauma could be at the level of the child, parent or the family (Doidge *et al.*, 2017). At the level of the child, behavioural problems, child disability and low birth weight have been implicated. At the parental level, parental stress, abusive parenting, HIV/AIDS, IPV, low level of parent education, depression, drug use and poverty have been shown to be risk factors (Herman *et al.*, 2009; Allen *et al.*, 2014; Lachman *et al.*, 2014; Meinck *et al.*, 2015; Meinck, Cluver and Boyes, 2015; Pels, van Rooij and Distelbrink, 2015; Meinck, Cluver, *et al.*, 2017; Chiesa *et al.*, 2018) while large family size and family conflict have been

highlighted at the level of the family (Schilling and Christian, 2014; Clement, Berube and Chamberland, 2016; Liel *et al.*, 2020).

Children in high income countries have been found to experience less trauma than those in low-income countries particularly low income countries on the African continent (Meinck *et al.*, 2015; Charak *et al.*, 2017). For instance, Hauser *et al* reported a prevalence of 1.9% for sexual abuse among children in Germany while Gweru *et al* reported a prevalence of 56.3% for child sexual abuse in Zimbabwe (Häuser *et al.*, 2011; Gwirayi, 2013). Similarly, Averdijk *et al* in Switzerland reported a prevalence of sexual abuse of 22% for girls and 8% for boys while the same survey conducted in South Africa by Ward *et al* revealed a prevalence of 33.9% for girls and 36.8% for boys (Averdijk, Muller-Johnson and Eisner, 2011; Ward *et al.*, 2018).

2.4 Stressful life events

It has become evident in the literature that seemingly common or low impact life events may be associated with the onset of mental disorders. Experiences such as chronic illness, burglary, bullying, violence at work or within intimate relationships have been found to be of significance in this regard (Lövestad *et al.*, 2017; Fang *et al.*, 2018; Li *et al.*, 2019). For instance, Ahumada *et al* reported a prevalence of depression of 10.2% among victims of workplace bullying in Chile (Ahumada, Ansoleaga and Castillo-Carniglia, 2021) while Dailey *et al* found experiences such as home burglaries to be associated with depression, anxiety and stress (Dailey *et al.*, 2011). The experience of trauma from life events affects not only physical and mental health but has been found to be associated with involvement in negative health behaviours such as drug and alcohol use (Dailey *et al.*, 2011).

2.5 IPV

IPV is a phenomenon that occurs globally involving individuals across every age group, cadre and socioeconomic status of life (Garcia-Moreno *et al.*, 2005; Devries *et al.*, 2013). IPV includes acts of

physical, sexual or emotional assault such as slapping, hitting, kicking, forced intercourse and controlling behaviour (WHO, 2018). Researchers have had divergent views with respect to how IPV should be defined and hence measured (Kilpatrick, 2004). Some maintain a narrow approach based on the criminal justice ideology which is limited to specific acts of violence i.e. physical and sexual violence, while others embrace a broader public health approach to violence that captures activities that might not necessarily be recognized as violent such as emotional abuse with additional variations of these approaches in between (Mchugh and Hanson, 2006; Burelomova, Gulina and Tikhomandritskaya, 2018). For instance, Lysova et al as well as Isaac and Fanslow et al in their population based studies, focused on the prevalence of IPV as a result of only physical and/or sexual IPV whereas, a more comprehensive assessment of IPV has been carried out by researchers such as Benebo et al, Herrero et al as well as Chernet and Cherie (Fanslow and Gulliver, 2015; Isaac, 2017; Benebo, Schumann and Vaezghasemi, 2018; Herrero, Torres and Rodríguez, 2018; Lysova and Dutton, 2019; Chernet and Cherie, 2020).

There are pros and cons to each of the approaches in measuring IPV which at the very least would influence estimates for incidence and prevalence of IPV but perhaps more importantly, limit the understanding of the scope and impact of IPV as a whole (Kilpatrick, 2004; Ford-gilboe *et al.*, 2016). However irrespective of how IPV is measured, researchers are in agreement of the several mental health consequences that can result from IPV (Dillon *et al.*, 2013; Holmes, 2015; Chmielowska and Fuhr, 2017; Winter, Obara and McMahon, 2020).

The term domestic violence is sometimes used interchangeably with IPV and involves violence between individuals who interact closely usually within a household setting. Such violence can be between spouses/partners, parent to child or siblings. However, it differs from IPV with a romantic sexual relationship between the parties at any point (either current or former partner) being a major

distinguishing factor between the two and as such IPV could be seen as a subset of domestic violence (Burelomova, Gulina and Tikhomandritskaya, 2018; Patra *et al.*, 2018; Garg *et al.*, 2021). The literature has also described a dose response relationship that commonly occurs between the experience of different types of childhood trauma and the experience of IPV in adulthood where the likelihood of the experience of IPV increases with an increase in the number of types of childhood trauma experienced (Barnett *et al.*, 2018; Shields *et al.*, 2020).

On average, 27% of women aged 15-49 years old world - wide will experience IPV during their lifetime (WHO, 2018). However, there are regional differences in the prevalence, with the highest rates of 33-42% recorded in Oceania. The second highest rates have been recorded in Southern Asia with 35% followed by sub-Saharan Africa with 33%. The lowest rates by region have been recorded in Europe (16%-23%) (WHO, 2018). A population based survey has documented the prevalence of lifetime experience of IPV in Nigeria to be 36% with the highest occurrences in the South East, South South, North East and North Central parts of the country (NDHS, 2018). Being generated from a nationally representative demographic and health survey, the data is readily comparable regionally and internationally since the same study instruments are used across multiple countries and so is very robust. However due to the nature of data collected, recall bias and reporting bias are limitations of the demographic and health survey methodology (Boerma and Sommerfelt, 1993)

IPV is driven by control and power that is wielded in this case by a man against a woman (however it could be vice versa) and usually stems from the attitudes within patriarchy that perceive women as inferior to men (Sikweyiya *et al.*, 2020). Men's use of violence against women may further be exacerbated by women's dependency on men due to their relative lower socioeconomic status particularly in LMIC (LMIC) (Abramsky *et al.*, 2011, 2019; Stöckl *et al.*, 2014).

2.5.1 Risk factors for the experience of IPV

Risk factors for IPV can be identified at four levels in an ecological framework as has been described by the WHO (WHO/LSHTM, 2010). These are at the individual level, relationship level, community level and societal level. The individual level encompasses a wide range of risk factors from sociodemographic characteristics and exposure to childhood trauma to mental health status, substance use and attitudes accepting of violence (WHO/LSHTM, 2010; Nouri *et al.*, 2012; Reichel, 2017). At the relationship level, the major risk factor highlighted i.e. infidelity is with respect to perpetration rather than for victimisation while at the community and societal levels, issues such as poverty, weak community sanctions and social norms supportive of violence have been documented (WHO/LSHTM, 2010).

However, of particular note in sub-Saharan Africa are community and societal level factors which appear to be major drivers of men's use of violence against women with socio-cultural beliefs of male supremacy and patriarchal traditions being at the core of this (McCloskey *et al.*, 2016). Jabbi *et al.* highlighted the role that social norms and patriarchy play in perpetuating IPV in Gambia (Jabbi *et al.*, 2020). Sikweyiya *et al.* and Alangea *et al.* also report a similar situation in Ghana (Alangea *et al.*, 2018; Sikweyiya *et al.*, 2020). Other parts of sub-Saharan Africa are not left out with researchers in Zimbabwe, South Africa, Togo, Tanzania also suggesting this (Vyas and Jansen, 2018; Mpondo *et al.*, 2019; Mshweshwe, 2020; Ragetlie *et al.*, 2020; Bengesai and Khan, 2021). Gender inequitable masculinities are prevalent in Africa and even though many times men down play their acceptance of men's use of violence against women, the prevalence of IPV on the African continent in the context of these social norms tells a different story (Alangea *et al.*, 2018)

2.5.2 IPV in slums

Slums are densely populated residential areas characterised by inadequate social infrastructure such as poor water supply and sanitation facilities as well as poor housing and lack of secure tenure (UN-

Habitat, 2003). Poverty is rife in slums and slum characteristics in addition to poverty can potentially promote violence (Maclin *et al.*, 2020). With specific reference to IPV, the literature suggests that the prevalence of IPV is higher in slums when compared to non-slum areas (Sambisa *et al.*, 2011; Sinha *et al.*, 2012a). Researchers have highlighted that the living conditions of the slum environment may play a role in the higher prevalence of IPV in slums due to the pressures of daily living in an environment of general lack (McIlwaine, 2013; Chaplin and Kalita, 2017). Chowdhury *et al.* reported a past year prevalence of 57.5% in the slums of Bangladesh, El-nimr *et al.* reported 59% in Egyptian slums with Das *et al.* reporting 23% in India (Chowdhury *et al.*, 2018; Das and Roy, 2020; El-nimr, Gouda and Wahdan, 2020).

2.5.3 IPV in Nigeria

The prevalence of IPV in Nigeria is a common occurrence with at least one in three women reporting a lifetime experience of IPV (NDHS, 2018). Within the country there are also disparities in the prevalence of IPV. Oche and colleagues reported a prevalence of 33% among pregnant women in the north-western part of the country while a lifetime experience of IPV of 73% was reported among women in an urban community in Lagos which is in the south west, 79.4% was reported in the rural area of the south-south and 73.6% among female partners of naval personnel in Lagos (Oche *et al.*, 2020; Oluwole, Onwumelu and Okafor, 2020; Igwe, Yusuf and Fawole, 2021; Ikekwuibe and Okoror, 2021). However, Amoran *et al.* Nigeria and Ezeudu *et al.* reported a past year experience of IPV of 16%, 42% and 43.7% in South-West, North and South-East Nigeria respectively (Tanimu, Yohanna and Omeiza, 2016; Amoran, Oni and Salako, 2017; Ezeudu *et al.*, 2019).

2.6 Common mental disorders

These are a group of mental disorders that present across the domains of mood, anxiety and substance use disorders and represent the most common causes of mental health disability worldwide (Steel *et al.*, 2014). Globally, it is estimated that 4.4% and 3.6% of the adult population suffers from depressive

and anxiety disorders respectively while 16% of the global adult population suffer from both mental and substance use disorders combined (WHO, 2017; Rehm and Shield, 2019). Across the African continent, the prevalence of common mental disorders varies widely. For instance, researchers in Ethiopia have reported prevalence's ranging from 14.9% to 58.4% while those in South Africa have reported a range of 5%-38.5%. Different contexts with respect to study populations, study designs and sample sizes may be responsible for this (Hunduma *et al.*, 2017; Kagee *et al.*, 2017; Kerebih, Ajaeb and Hailesilassie, 2017; Bantjes *et al.*, 2019; Makhubele *et al.*, 2019; Solomon, Mihretie and Tesfaw, 2019).

Data for large scale community studies on the prevalence of common mental disorders in Nigeria has been sparse. The most comprehensive survey has been that of Gureje et al who found a lifetime prevalence of 12.1% and a 12 month prevalence of 5.8% (Gureje *et al.*, 2006). However, more recent research has been conducted among various study populations across the country with prevalence ranging from 23.1% to 80.6% among the elderly, mothers of malnourished children, the blind as well as prison inmates (Uwakwe, 2000; Tunde-Ayinmode, Akande and Ademola-Popoola, 2011; Abdulmalik, Adedokun and Baiyewu, 2014; Osasona and Koleoso, 2015; Abdullahi, Farouk and Imam, 2021).

2.7 Depression

Depression is a frequently occurring mental health disorder that occurs worldwide (Kessler and Bromet, 2013; Friedrich, 2017). Global prevalence data estimates indicate that 4.4% of the world's population are living with depression (WHO, 2017). In LMIC countries, the prevalence of depression has been found to range from 6.2% to 38.6% in population based surveys, among pregnant women and among youth (Gelaye *et al.*, 2016; Guerra *et al.*, 2016; Yatham *et al.*, 2018; Akhtar *et al.*, 2020; Cristóbal-Narváez, Haro and Koyanagi, 2020). The prevalence of depression in Nigeria also varies widely with respect to study population and has been found to range between 7.1% and 48.6% among

medical students, pregnant adolescents, patients with tuberculosis and patients with stroke (Amole *et al.*, 2020; Suraj *et al.*, 2021; Oladeji *et al.*, 2022). However, Adewuya *et al.* in their community based survey reported a prevalence of 5.5% (Adewuya *et al.*, 2018).

By way of comparison between genders, several researchers have highlighted the greater prevalence of depression among women compared to men with women being almost twice as likely to be depressed than men (Faravelli *et al.*, 2013; Albert, 2015; Sassarini, 2016; Salk, Hyde and Abramson, 2017; Kiely, Brady and Byles, 2019). However, researchers are not in full agreement as to the pathway through which this gender disparity exists with some supporting a hormonal hypothesis, others the gonadic theory while yet others are in favour of a biopsychosocial model that seeks to incorporate the multifactorial underpinning's for the development of depression (Harris, 2003; Oldehinkel and Bouma, 2011; Faravelli *et al.*, 2013; Neitzke, 2016; Papadimitriou, 2017).

The slum environment is characterized with conditions of adversity and has been identified by researchers as an environmental factor that can contribute to the development of common mental disorders such as depression (Gruebner *et al.*, 2012, 2017; Subbaraman, Nolan, Shitole, Sawant, Shitole, Sood, Nanarkar, Ghannam, Betancourt, *et al.*, 2014; Greif and Dodoo, 2015). For instance, Ashe and Routray in their study of a geriatric population in the slums of India found a prevalence rate of 80% for depression as compared to a prevalence rate range of 6-50% in community based studies from other parts of India (Ashe and Routray, 2019).

Depression can occur at any age and major risk factors for depression have been highlighted several times in the literature as being associated with poverty, unemployment, negative life events and illness (Chen *et al.*, 2012; Mitchell and Harvey, 2014; Girz *et al.*, 2017; WHO, 2017; X. jun Sun *et al.*, 2017; Cohen-Cline *et al.*, 2018; Zuelke *et al.*, 2018; Hastings and Snowden, 2019; Stanton *et al.*, 2019;

Starnes *et al.*, 2021). The literature suggests that there is a bidirectional relationship between poverty and unemployment and depression (Starnes *et al.*, 2021).

The number of people in the world living with depression has increased by almost 20% over the past two decades, and depressive disorders were the single largest contributor to nonfatal health loss globally in 2015. This number has further increased with the recent global COVID pandemic which took a big toll on mental health as well as its associated economic and social consequences (COVID-19 Mental Disorders Collaborators, 2021).

One of the largest community-based mental health surveys conducted in Nigeria by Gureje *et al* in 2006 revealed a prevalence of 3.3% for depression. However, over the years, prevalence rates as highlighted by research in Nigeria have varied with respect to different population groups. This has ranged from 15.1% to 58.2% among medical students, people living with HIV/AIDS, postpartum women, general outpatients and university students (Obadeji, Ogunlesi and Adebowale, 2014; Dabana and Gobir, 2018; Suraj *et al.*, 2021). The gender tilt in favor of women with respect to the prevalence of depression as suggested by researchers in many countries has also been reported in Nigeria. Adewuya *et al* in their community based research reported a prevalence of 6.3% among women 4.4% among men (A. Adewuya *et al.*, 2018).

2.8 Anxiety

Generalized Anxiety Disorder (GAD) is a mental health disorder characterised by fear, nervousness, apprehension, and panic concerning everyday events which has occurred for at least six months and is difficult to control. It is also associated with three or more of the following symptoms: sleep disturbances, difficulty in concentrating, restlessness, fatigue, muscle tension and irritability (Showraki, Showraki and Brown, 2020). Anxiety is the most common mental health disorder worldwide with a global prevalence of 7.3% however, exact estimates differ from country to country

(Steel *et al.*, 2014; Stein *et al.*, 2017). Gureje et al reported a prevalence of 0.1% in Nigeria in a large community based study, 17% was reported by Redinger et al among pregnant women in South Africa while 6.68% was reported among adult Americans (Gureje *et al.*, 2006; Goodwin *et al.*, 2020; Redinger *et al.*, 2020)

2.9 Stress

Anything that threatens a steady state of internal equilibrium and subsequently evokes a biological response is regarded to as stress (Schneiderman, Ironson and Siegel, 2005; Yaribeygi *et al.*, 2017). Stress can be physical or psychological and even though it can be beneficial in the short term (acute stress), it is associated with the development of disease and mental disorders when stress persists over the long term (chronic stress) (Godoy *et al.*, 2018). Life events that are perceived as stressful can serve as a trigger for stress responses. Death of a spouse or close family, retirement, chronic illness and job loss are examples of life events known to lead to stress (Cohen, Murphy and Prather, 2019)

2.10 Post traumatic stress disorder (PTSD)

This is a mental disorder that can occur after exposure to a traumatic event. There is a consensus among researchers that trauma severity and type play a role in the clinical presentation and course of PTSD (Koenen *et al.*, 2003; O'Donnell *et al.*, 2008; Zatzick *et al.*, 2008; Kelley *et al.*, 2009; Kessler *et al.*, 2014). Sexual assault/abuse has been found to be one of the most likely traumatic events to be associated with PTSD (Elklit and Christiansen, 2013; Kline *et al.*, 2021). This is because it is almost always associated with a perceived threat to life (Ullman and Filipas, 2001). Literature has also shown that other stressful life events such as motor vehicle accidents, sudden loss of a loved one or childhood trauma are events that are associated with the development of PTSD (Irish *et al.*, 2008; Kelley *et al.*, 2009; Powers *et al.*, 2016). The propensity for traumatic events to cause PTSD is not limited to the experience of trauma alone but also occurs when trauma is witnessed (Compton *et al.*, 2009; Atwoli *et al.*, 2013; Skogstad, Skorstad, Lie, Conradi, Heir and Weisaeth, 2013). Researchers found that

refugees in war torn countries that witnessed violence were even more likely to develop PTSD than those that had experienced violent attacks (Karunakara *et al.*, 2004). The state of constant fear and psychological insecurity was adjudged to play a role in this finding (Karunakara *et al.*, 2004).

Literature has also highlighted the effects of witnessing of traumatic events within the community being associated with up to half of the PTSD burden (Atwoli *et al.*, 2013).

2.11 The relationship between childhood trauma and mental disorders

Childhood experiences play a critical role in mental health in adulthood. Experiences of trauma during childhood have been shown to have strong links with poor mental health such as depression, anxiety and post-traumatic stress disorder in adulthood (Hughes *et al.*, 2016; Gallo *et al.*, 2018). Researchers have noted that this is due to the effect that traumatic stress has on the developing brain and can result in life long effects on behavior and physiologic function (De Bellis *et al.*, 2002; Charmandari *et al.*, 2012). Traumatic experiences such as physical, sexual and emotional abuse and neglect have all been found to be associated with poorer mental health status in adulthood (Gama *et al.*, 2021). For instance, Fergusson et al in their thirty year longitudinal study found that child sexual abuse was associated with increasing rates of depression, anxiety and suicidal ideation in adulthood (Fergusson, McLeod and Horwood, 2013) and Christ et al highlighted the association between emotional abuse in childhood and adult depression (Christ *et al.*, 2019) while Norman et al in their systematic review and meta-analysis demonstrated a robust evidence linking the experience of physical and emotional abuse in childhood with adult depression, anxiety and suicidal attempts (Norman *et al.*, 2012a).

Various characteristics of childhood trauma such as the type, duration, timing and number as well as specific circumstantial factors influence the relationship between childhood trauma and the mental health status in adulthood (Nelson *et al.*, 2020). Some types of trauma such as sexual and physical abuse have been associated with a greater risk of mental disorders than others (Norman *et al.*, 2012b).

In support of this, McLaughlin and Sheridan argue that to presuppose that different types of trauma

would operate in the same way to produce mental health outcomes would be nebulous (McLaughlin and Sheridan, 2016). The duration and timing of a specific type trauma can be difficult to ascertain as usually children are exposed to more than one type of trauma at the same time and for overlapping periods (Adams, Mrug and Knight, 2018; Nelson *et al.*, 2020). The context within which a child experiences trauma is also important in determining future mental health outcomes. Pre-existing genetic vulnerabilities, other types of adversity such as poverty, culture, resilience, family and social support may serve to amplify or blunt the effects of trauma and subsequent development or mental disorders adulthood (Domhardt *et al.*, 2015; Sanjeevi *et al.*, 2018; Crandall *et al.*, 2019; Hatcher *et al.*, 2019; Nelson *et al.*, 2020; Warrier *et al.*, 2021)

2.12 The relationship between IPV and mental disorders

IPV just like childhood trauma represents another source of trauma that could occur over the life course. Several researchers have highlighted the fact that mental disorders such as depression, anxiety, stress and post-traumatic stress disorder are commonly found among women who have experienced IPV and this remains consistent for both past year and lifetime experience of IPV (Chmielowska and Fuhr, 2017; Salvador de Mendonça and Ludermit, 2017; Yuan, 2019; Winter, Obara and McMahon, 2020; Wong *et al.*, 2021).

Mental disorders have been found to be associated with all IPV types (Lacey *et al.*, 2013; Salvador de Mendonça and Ludermit, 2017; Panyayong, Tantirangsee and Bogoian, 2018). Salvador de Mendonça and Ludermit in their prospective cohort study, found that mental disorders were associated with the occurrence of emotional violence (Salvador de Mendonça and Ludermit, 2017). Lacey et al also found an association between emotional violence and depression among a nationally representative sample of women (Lacey *et al.*, 2013). Panyayong et al found that more than a quarter of women who had experienced physical violence from their intimate partners also reported mental disorders (Panyayong, Tantirangsee and Bogoian, 2018). Coker et al also found an association between physical IPV and

mental disorders (Coker *et al.*, 2021). Similar accounts have been given by researchers for the relationship between sexual IPV and mental disorders (Tarzia *et al.*, 2018; Wong *et al.*, 2021).

In addition, the literature also highlights that women usually experience more than one type of violence at any point in time and those who experience more than one type of violence are at much greater risk of the development of mental disorders (Dillon *et al.*, 2013; Hegarty *et al.*, 2013; Salvador de Mendonça and Ludermit, 2017).

2.13 Protective factors against developing common mental disorders (depression, anxiety, stress)

Experience of trauma at any point over the life course can be associated with negative mental health consequences. However, there are individuals who do not suffer from such consequences (Fuller *et al.*, 2019; Mc Gee *et al.*, 2020). Several authors are in agreement with the fact that certain factors confer some form of protection against the development of common mental disorders where there is a co-existing history of trauma (Cheong *et al.*, 2017; Brockie, Elm and Walls, 2018; Meng *et al.*, 2018; Fuller *et al.*, 2019; Mc Gee *et al.*, 2020; Racine *et al.*, 2020). Factors such as resilience, social support, self-esteem and social connectedness have been highlighted as being relevant in this case. All these factors buffer life stress and situations of adversity resulting in a more positive outcome and the ability to bounce back to the pre-trauma state (Zimmerman *et al.*, 2013). Systematic literature examined by Mesman *et al.* revealed that resilience was inversely related to mental disorders and this has been highlighted by several other researchers (Gartland *et al.*, 2019; Hamby *et al.*, 2020; Ross *et al.*, 2020; Hall *et al.*, 2021; Mesman, Vreeker and Hillegers, 2021; Wei *et al.*, 2021). The influence of support at the social level has also been described by researchers as being protective against mental health disorders. Badaso *et al.* in their systematic review identified that social support was associated with lower risk of mental disorders (Bedaso *et al.*, 2021). Similar results were observed by Travasso *et al.* in their study among slum dwelling women in India (Travasso, Rajaraman and Heymann, 2014). Liu *et al.*

found a negative correlation between self-esteem and common mental disorders among adolescents in China and Small et al reported similar findings among youth in South Africa (Liu *et al.*, 2021; Small, Huynh and Parchment, 2021).

2.14 Resilience

This ability of an individual to achieve positive life goals after the experience of adversity with the outcome being better than that of other individuals who suffered the same experiences is called resilience (Levine, 2003; Ungar and Liebenberg, 2011; Kabiru *et al.*, 2012; Rutter, 2013). Resilience as a concept has its origins in research in the 1980s that sought to determine what factors protected children who had experienced trauma from maladjustment and was initially thought of solely as a personality trait (Theron and Theron, 2010). There is no universally accepted definition of resilience however, several researchers view the construct of resilience as a dynamic process, which lends itself to exploration of resilience at various ecological levels at which health behaviour can be influenced. Factors at individual and population levels can influence health behaviour and these can be factors that can be identified at the level of individuals, families, organisations and health systems (Fletcher and Sarkar, 2013; Gao *et al.*, 2017; Florescu *et al.*, 2018; Thompson *et al.*, 2018). For resilience to be in place, risk factors are at a minimum while protective factors are accentuated. Risk factors which have been found to negatively influence the development of resilience include gender, difficult temperament and poor school performance (Rew *et al.*, 2016). The literature suggests that women possess less resilience when compared to men and this has been found to be so over a wide range of contexts such as among burns victims, infertile women, internally displaced persons and veterans (Masood, Masud and Mazahir, 2016; Portnoy *et al.*, 2018; Sambu and Mhongo, 2019; Hosseini *et al.*, 2021). The temperament of an individual has been found to play a role in his/her ability to be resilient. Individuals with difficult, inflexible temperaments are less likely to be resilient compared to those who are more flexible in their outlook to life (Eley *et al.*, 2013; Skala and Bruckner, 2014; de Maat *et al.*,

2022). In examining the relationship between academic achievement and resilience the literature suggests that individuals with poor academic performance are more likely to have lower levels of resilience when compared to those with better academic performance (Johnson *et al.*, 2015; Frazier *et al.*, 2019; Montas *et al.*, 2021; Tanji *et al.*, 2021).

On the other hand, protective factors that enhance resilience include competence, coping skills as well as humor (Rew, 2003; Javidi and Yadollahie, 2012; Brockie, Elm and Walls, 2018). Social competence which is the way in which individuals positively navigate social relationships serves as a mechanism through which resilience is enhanced through the life course (Shiner and Masten, 2012). Good coping skills also enhance resilience during circumstances of adversity and help to sustain the ability to adapt to such circumstances (O'Dowd *et al.*, 2018; Macía *et al.*, 2021). Humor has also been suggested by researchers as a means to cope with challenging circumstances as it has been associated with greater resilience (Freitas *et al.*, 2022).

2.15 Social support

Evidence from research has highlighted the fact that social support is protective against the development of mental disorders (Meng *et al.*, 2018; Easton *et al.*, 2019). Social support can be provided by either family or friends and serves as leverage through which the individual is able to attain positive adaption while dealing with adversity or change and creates feelings of security (Fasihi Harandi, Mohammad Taghinasab and Dehghan Nayeri, 2017). A distinction has been made in the literature between received and perceived social support with the former being assessed in terms of quantity of support received while the latter is assessed with respect to appropriateness and availability of support received (Haber *et al.*, 2007). In this discourse however, all references to social support are with respect to perceived social support. Perceived social support has been found to be a strong predictor of wellbeing and psychological adjustment and hence could be considered of greater value

than received support when identifying mental health interventions as has been highlighted by Eagle et al (Chu, Saucier and Hafner, 2010).

Wang et al in their systemic review of longitudinal studies found that lower levels of perceived social support was associated with mental disorders as well as poorer prognosis for recovery (Wang *et al.*, 2018). Bedaso et al also found low social support to be associated with greater risk of mental disorders among pregnant women and higher levels of social support were linked to better mental health among patients with multiple sclerosis as reported by (Bedaso *et al.*, 2021; Kever *et al.*, 2021).

2.16 Self-esteem

Self-esteem is the perceived value or worth an individual places on themselves particularly in situations that they feel that they might be assessed by others (Henriksen *et al.*, 2017). Self-esteem has been described as a key protective factor in both physical and mental health and is a fundamental component of mental health promotion programs (Mann *et al.*, 2004). In addition, it can also be considered as a gauge for mental health status as it reflects self-acceptance and self-confidence (Sowislo and Orth, 2013; Henriksen *et al.*, 2017). It has been described as a relatively stable trait, with those with high levels of self-esteem being less vulnerable to mental disorders while those with lower levels of self-esteem are more predisposed to mental disorders (Orth and Robins, 2013; Sowislo and Orth, 2013; Henriksen *et al.*, 2017). For instance, a study of athletes by Lukanović et al showed that higher self-esteem was associated with low risk of mental disorders (Lukanovic *et al.*, 2020). Similar results were found by Hasani et al. in their study among women with ectopic pregnancy and Henriksen et al. in their study among adolescents in Norway (Henriksen *et al.*, 2017; Hasani, Aung and Mirghafourvand, 2021). The relationship between self-esteem and trauma has been described by researchers. For instance, Guler et al posit that a woman's perception of herself determines how she would respond to the experience of violence from the hand of an intimate partner with low self-esteem being associated with poorer mental health (Güler, Bankston and Smith, 2022). Similarly, the

experience of abuse as a child has a negative effect on self-esteem as an adult (Berber Çelik and Odacı, 2020).

2.17 Social connectedness

Human beings are social animals and social connectedness has been described as a ‘fundamental human need’ and a key role of one’s social networks (O’Rourke and Sidani, 2017). Van Bel and colleagues further went on to describe social connectedness as the degree of interpersonal connection and belonging that an individual experiences in his or her social world and among his or her social networks (Van Bel *et al.*, 2009). Other authors have highlighted that social connectedness is beneficial to both mental and physical health and may be instrumental in the development of resilience (McDermott, Berry and Cobham, 2012). Several researchers have suggested that high levels of social connectedness are associated with less likelihood of the development of mental disorders (Chan *et al.*, 2011; Sonnenberg and Deeg, 2012; Liu *et al.*, 2016; Brockie, Elm and Walls, 2018; Diendorfer *et al.*, 2021). In the face of a history of trauma over the life course, social connectedness is one of the key factors that can be promoted to prevent the development of mental health disorders.

The connectedness experienced by virtue of interactions between individuals of the same ethnic origin has also been found to be supportive of mental health. This has been described as the ethnic density effect (Bécares, Dewey and Das-Munshi, 2018). Ethnic density creates an environment of ‘sameness’ and a sense of community belonging that has been associated with lower odds of mental disorders. Bécares *et al.* in their systematic review and meta-analysis observed this (Bécares, Dewey and Das-Munshi, 2018). Several other researchers have also presented results that corroborate this phenomenon (Veling, 2013; Bosqui and Hoy, 2014; Schofield *et al.*, 2016).

2.18 Conceptual framework for the study

The relationship between the variables that guided the enquiry of our research question are presented in the conceptual framework below in Figure 1. It was hypothesized that traumatic events that occur

over the life course such as childhood trauma, IPV and stressful life events all have the potential to be associated with mental disorders (depression, anxiety and PTSD). Some associations have been noted in the literature review and these are indicated with solid lines while hypothesized relationships are indicated with a dotted line. IPV in particular has a bi-directional relationship with mental disorders with the presence of mental disorders also being associated with an increased risk of experiencing IPV (Beydoun *et al.*, 2017). In addition, traumatic experiences that occur in childhood increase the risk of the experience of IPV in adult women (Chiang *et al.*, 2018). Poor socioeconomic status which occurs from high levels of poverty and low levels of education are also associated with mental disorders (Reiss *et al.*, 2019; Kim and Cho, 2020). The presence of protective factors (resilience, social support, self-esteem and social connectedness) serves to moderate these relationships and essentially to buffer the effects of these traumatic events (Liu *et al.*, 2021).

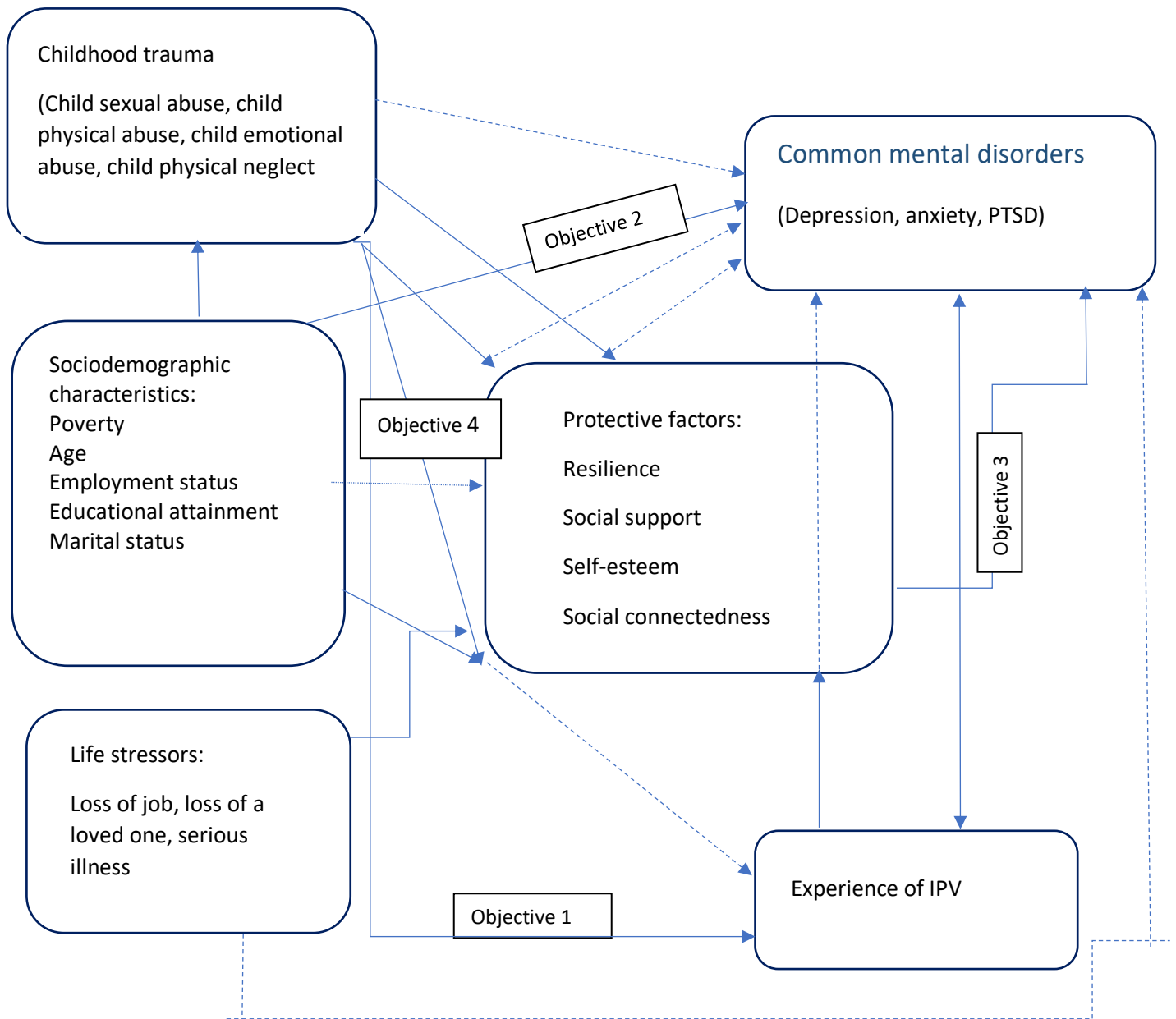


Figure 1: Conceptual framework of inter-relationships of trauma variables and mental disorders among women in Ibadan slums.

03

Methods

3.0 Methodology

3.1 Study site

The study was conducted in the slum areas of Ibadan in Oyo State, Southwest Nigeria. Ibadan, the capital of Oyo State, is the largest city by land mass in West Africa with a population of about 6 million people (Oyo State Government, 2020). Ibadan has 13 identified slum areas based on the UN Habitat classification of slums (UN-Habitat, 2012) and a slum population estimated at 5,500 (Fayehun *et al.*, 2023). These slum areas are known as Beere, Oje, Oritamerin, Ojaba, Mapo, Oranyan, Ayeye, Molete, Idi-Arere, Labo, Ile-Tuntun, Opoyeosa, Orita-aperin.

The slums are located within the central core of the city occupied by the indigenous people of Ibadan and are all similar with respect to the mostly poor and illiterate residents, unplanned layout, overcrowding and inadequate social infrastructure (Fourchard, 2003). The houses are made typically of mud but majority are now plastered with cement and have corrugated iron sheet for roofing and almost no sanitation facilities (Mabogunje, 1962; Makinde, 2012a). As highlighted by Mabogunje in his seminal paper on the growth of residential districts in Ibadan, the slums developed in the wake of the colonial era (Mabogunje, 1962). In order to fully understand the development of these slums, it is important to also understand the basic characteristics and social dynamics within the traditional Yoruba family system which is the tribe of the indigenous people of Ibadan. Typically, the living arrangement of the Yoruba's consists of a 'compound' where the head of the compound lives with his wife or wives and children and their own children as well as his brothers and their wives and children in addition to close cousins (Mabogunje, 1962). This type of overcrowded living arrangement still occurs in these slums today (Adewale *et al.*, 2018). Compounds would usually be a large square, with an open central space with the perimeter structure divided up into rooms for individuals. In an attempt to remain within the extended family setting, such houses could only be built within the open space of the family compound (Adewale *et al.*, 2018). A replication of this several times over has created a

scenario of overcrowding, poor ventilation as well as very difficult access for water and sanitation services and other social infrastructure (Adewale *et al.*, 2018). By extension, the potential for the rapid spread of communicable diseases is also very high.

With colonialism came a growth in economic activities which made it possible for individuals to attain economic independence at earlier ages and as a result the desire to acquire personal property.

However, unlike what occurs in the global North economic activities that once burgeoned within the city centres, which now represents the present day slums, has waned due to rapid urbanization and the need to meet greater demand for housing rather than business activity (Adewale *et al.*, 2018). This spatial growth of economic activity away from the city centre was further driven by greater socioeconomic development with Ibadan being selected as the capital of the defunct Western region of Nigeria and currently as the capital of Oyo State (Adewale *et al.*, 2018).

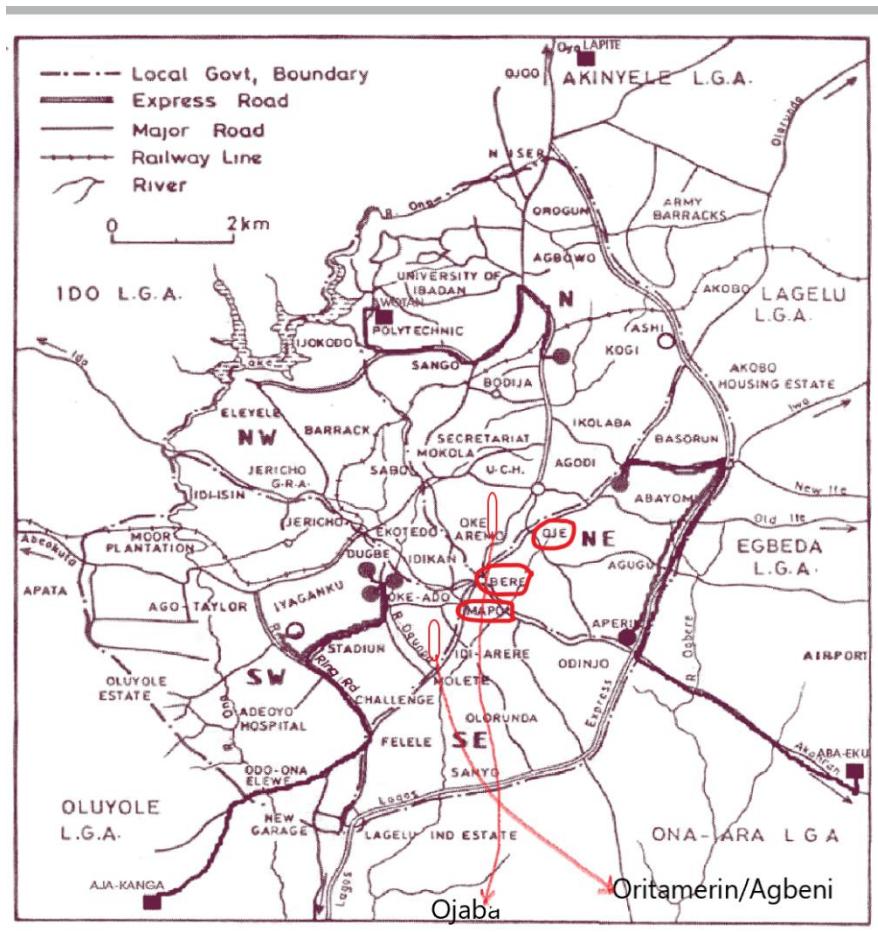


Figure 2: Map of Ibadan metropolis showing urban slums sampled in the study (Coker, 2008).

3.2 Study design

This was a community-based cross-sectional household survey. The utility of this design rests in the fact that the outcomes and moderating factors can be assessed with relative ease (Levin, 2006).

Despite the limitations of causal inference which are associated with cross-sectional studies, the design of this study also provides valuable baseline data with respect to the prevalence of mental disorders and trauma in the slum environment being an underserved research setting in Nigeria.

3.3 Study Population

The study population consisted of all adult women above the age of 18 years who were resident members of the selected households during the period April to June 2018. For a respondent to be

eligible to participate in the study she had to be 18 years or older and a regular resident of the household. Regular residence was defined as spending at least four nights a week in the household for at least one year (Machisa *et al.*, 2011). (For this study, being partnered was not regarded as an eligibility criteria since violence could have occurred in past relationships. Any woman 18 years and older were included since the experience of violence from an intimate partner can occur at any age)

3.4 Sample size calculation

The sample size was calculated to achieve adequate statistical power to estimate a) the prevalence of traumatic events (childhood trauma, IPV, and adverse life events) b) the prevalence of common mental disorders (depression, anxiety and PTSD) c) the role of protective factors in the relationship between traumatic events and common mental disorders and d) an identification of the relationship between childhood trauma and the subsequent experience of IPV.

The maximum estimated sample size yield of the four objectives was utilised and calculated based on an estimated prevalence of any form of IPV, including emotional, physical or sexual, of 60% (NDHS, 2018). A 10% non-response rate as well as cluster sampling (through use of enumeration areas as the primary sampling unit) was assumed and the design effect of 1.25 incorporated leading to an effective sample size of 550. This gave over 80% power to detect a difference as being statistically significant at 5%. This would allow us to estimate the lifetime prevalence of experience of IPV with an absolute precision of $\pm 3\%$.

3.5 Approach to sampling

A multistage sampling technique was employed.

Stage 1: A simple random sampling of five of 13 slum settlements in Ibadan was generated through the use of a table of random numbers. The slums selected were: Beere, Oje, Oritamerin/Agbeni, Ojaba, Mapo.

Stage 2: From the five selected slum settlements, about half of the Enumeration Areas (EAs) from each slum were selected by balloting giving a total of 68 EAs. (See Table 3.1).

Stage 3: A random selection by balloting was done to select one household per house where there were at least two households. I assumed an average of 60 households per EA (four households per house in 15 houses per EA). The NDHS 2013 report which is a nationally representative survey indicated 48 households per EA (NDHS, 2013). However, this figure was not specified for a slum area where a higher number of households would be expected.

Stage 4: A random selection by balloting was done to select one eligible person from the selected household where there were at least two eligible persons. If there was no eligible person in the household, or the person was unwilling to participate in the study, the next house was approached for an eligible respondent as described.

Table 3.1: Sampling of Slums and EAs

S/N	Name of slum area	Total number of EAs	Total number of EAs and corresponding number of maps required
1.	Beere	19	10
2.	Oje	31	16
3.	Oritamerin/Agbeni	31	16
4.	Ojaba	31	16
5.	Mapo	19	10
			68

3.6 Data collection

Collection of data was done through the use of face-to-face interviews by trained research assistants using standardized questionnaires (see Appendix II) that specifically addressed the exposures and outcomes of interest. Six female research assistants who had attained tertiary level education were

recruited for this. Over the course of six days, I facilitated the training of the research assistants in key areas of data collection relevant for the study. These included method of administration of questionnaires, review of questions for completeness and maintenance of ethical standards with particular emphasis on the sensitive nature of the questions and WHO requirements for collecting data for trauma research (Garcia-Moreno *et al.*, 2005). Research assistants were also trained to identify respondents in distress in order to activate the trauma protocol if required. Role play was carried out by the research assistants in order to enhance and evaluate the training. Research assistants were paired with one research assistant standing in as a respondent while the other administered the questionnaire and others gave feedback about the process of questionnaire administration.

In order to familiarise the research assistants with the questions on the survey instruments, the questions were reviewed both on the English and Yoruba versions (the local language of the study area). The questionnaires were translated to the local language (Yoruba) and back translated to ensure that original meanings are preserved. Back translation has been identified as a viable method to ensure concept equivalence when using data collection instruments cross culturally (Kuliś *et al.*, 2017).

Both English and Yoruba questionnaires were available for the participant to choose from, depending which she was most comfortable responding to. No additional language translation was required as the population in the study area was almost homogenous and with the few not being of the Yoruba tribe being able to speak English. English is the official language of communication in Nigeria. The questions on the survey instrument were installed on handheld devices.

Maps prepared by the National Population Commission were used to identify EAs. EAs had been previously demarcated by the Commission. Each EA was represented visually by a separate map. The last day of the training involved training the research assistants on the use of the Open Data Kit (ODK) software using handheld devices. ODK is a digital data collection tool that facilitates data collection and management by providing real time data entry through the use of the internet. It was developed at

the University of Washington and has been found to be an effective data collection tool (Steiner *et al.*, 2016; Maduka, Akpan and Maleghemi, 2017). The training on the use of the ODK for this study was facilitated by a data analyst who was highly experienced in the use of ODK. The training covered training to take GPS coordinates of the selected houses, entering of data onto the device, saving, uploading and then finally synchronizing the data to provide real time assess.

In order to identify households and subsequently eligible women for interview, a central point was identified within the first enumeration area within each slum and a random direction from that point was selected (i.e. by tossing a coin; with heads taken as a direction to the right and tails to the left).

The first house in that direction was approached and every third house was selected.

The research assistant would greet the occupants of the house, introduce herself and provide information about the study and the study objectives. Thereafter she asked for the number of women older than 18 years that lived in the house and asked to interview one of them (where there was more than one eligible woman, selection of one was carried out by balloting).

Interviews took place in a private area that was identified by the respondent within the home and privacy was guaranteed by ensuring that no other individual was within earshot during the period of the interview. In an instance where another person approached the private area, the topic of discussion was changed to address womens's general health issues. This had been discussed and agreed upon with the respondent before the start of the interview.

3.7 Pilot study

The questionnaires were piloted in an enumeration area different from those selected for the study to identify any areas of ambiguity and those were modified accordingly. For instance, under the section regarding IPV, the term 'partner' was included side by side with 'husband' as it was identified that even though many women were formally married, based on cultural beliefs in this setting, a woman

co-habiting with a man was regarded as being his 'wife' in many instances, particularly if she has borne children.

3.8 Community Entry

Before the commencement of data collection, the research team lead and I met with community leaders in each selected slum to explain the purpose of the study and share documentation of approval to conduct the study from the Oyo State Ministry of Health. Research assistants also took copies of the approval letters to the field and had identity cards which were worn whenever they were on the field to access the selected households.

3.9 Measures and Data Recoding

3.9.1 Sociodemographic characteristics (Paper 1, 2 and 3 exposure measure)

These included age, marital status, educational status, employment status, occupation and wealth index. Age was grouped into three as follows: 18-29 years, 30-44 years and age 45 years or older. Marital status was grouped as “married”- for those in a formal marriage union, “single”- for those not in any formal marriage union and “others” for those that did not fall into the category of married or single such as the widowed, separated or divorced. Educational status was grouped as: none- for those who had not undergone any form of formal education, primary - for the first six years of schooling and secondary - for the subsequent six years of schooling. Employment status was determined by whether or not the respondent had been employed within the last 3 months or not with responses being identified as “yes” or “no”. Respondents were grouped into three major occupations: trader, artisans and professionals. Wealth was assessed with the 11 item Simplified Asset Index, a previously published tool which assesses the relative wealth profile of urban dwellers in comparison to other urban dwellers. This is more discriminant in assessing the wealth of the urban poor (Chakraborty *et al.*, 2016). The Simplified Asset Index is based on Demographic and Health Survey (DHS) data. Since 1984, the DHS has been implemented in more than 90 countries (Rutstein and Johnson, 2004) and

allows for reliable sub-group analyses in urban areas. The index is a shorter country specific alternative to the original DHS wealth index variables but has been found to be simple to administer and equally valid (Chakraborty *et al.*, 2016). The original Simplified Asset Index is divided into 5 quintiles but due to small cell numbers we had to merge these into three. The three urban wealth index categories were assigned as follows: the lowest category 1 being “poorest”, the middle category 2 being “poor” and the highest category 3 being “slightly wealthier”.

3.9.2 Childhood trauma (Paper 1 exposure measure and Paper 3 exposure measure)

Childhood trauma was assessed using a modified version of the Childhood Trauma Questionnaire (CTQ). Domains assessed were physical abuse, sexual abuse and emotional abuse/neglect, (Bernstein and Fink, 1998; Bernstein *et al.*, 2003). The CTQ has been used previously on the African continent (Ritacco and Suffla, 2012; Mall *et al.*, 2019). Good internal consistency was found in our sample with a Cronbach’s alpha of 0.82. Each domain of physical abuse, sexual abuse and emotional abuse/neglect was recoded as a dichotomous variable and categorized as ‘none’ or ‘any’. We then created a categorical variable with four categories: no childhood trauma, one type of trauma, two types and three types. This variable allowed us to assess the severity of childhood trauma which was assessed through the use of multivariable logistic regression.

3.9.3 Recent stressors (stressful life events) (Paper 1 exposure measure)

Recent stressors were assessed using the Life Events Questionnaire (Brugha and Cragg, 1990). The scale considers recent life events that tend to be stressful and threatening and have occurred within the preceding six months. The questionnaire is a 12 item self-report tool which assesses the quality of life of an individual before, during and after the occurrence of a stressful life event. Four items of the twelve item questionnaire were used as these four items were the only ones that fit the PTSD criteria for a traumatic experience (Van Veldhoven *et al.*, 2011; Sareen, 2014b). The items are as follows:

“*Did you suffer serious illness, injury or assault?*”, “*Did your parent, child or spouse die?*”, “*Did a*

serious illness, injury or assault happen to a close relative? ” and “*Did a close family friend or another relative (aunt, cousin, grandparent) die?* ” For each item a “yes” (with a score of 1) or “no” (with a score of 0) response was given which has been identified as a valid method of assessment (Motrico *et al.*, 2013). These four items had an acceptable internal consistency with a Cronbach’s alpha of 0.83. This was important as the potential for life events to be of significant impact as to cause a mental health outcome such as PTSD was part of what our research questions set out to answer. For each item a “yes” (which was assigned a score of 1) or “no” (which was assigned a score of 0) response was given which has been identified as a valid method of assessment (Motrico *et al.*, 2013). In addition to this, a dichotomous score was computed from the total sum of all the items and was categorized into “no stressors” or “any stressors”.

3.9.4 PTSD (Paper 1 outcome measure)

PTSD was assessed using the Harvard Trauma Questionnaire (HTQ) which is based on DSM-IV PTSD criteria (Mollica *et al.*, 1992). The HTQ is a reliable screening instrument that has been widely used and is acceptable across cultures including in Africa (Mollica *et al.*, 1992; Shoeb, Weinstein and Mollica, 2007; Silove *et al.*, 2007; De Fouchier *et al.*, 2012). The trauma symptom items of the HTQ were used in this study. Items included an individual’s perception of their ability for daily functioning. The HTQ utilizes a 4 point Likert scale of 16 items with responses of “not at all”, “a little bit”, “quite a bit” or “extremely” to determine the occurrence of post-traumatic symptoms within the previous week (Mollica *et al.*, 1992; Rasmussen *et al.*, 2015). A score of 1 was assigned to the responses of “not at all”, a score of 2 was assigned to the responses of “a little bit”, a score of 3 was assigned to the responses of “quite a bit” and 4 was assigned to responses of “extremely” The minimum score was 1 and the maximum possible score was 64. The sum of the items were then divided by the total number of items.

When doing community based research a cut off point of 2.0 is recommended rather than the cut off point of 2.5 which is recommended for use when doing research among clinic based population samples. In line with this we used a cut off point of 2.0 to interpret the score (Mollica *et al.*, 1992; Silove *et al.*, 2007; Housen *et al.*, 2017). We also adopted this lower cut point because population characteristics have been suggested to influence the performance of the HTQ with differences seen among highly traumatized populations as opposed to those that are not as highly traumatized (Silove *et al.*, 2007). Based on this, PTSD was categorized as either ‘No PTSD symptoms’ or as having ‘PTSD symptoms. Good internal consistency was found with a Cronbach’s alpha of 0.88.

3.9.5 IPV (Paper 1 exposure measure and Paper 3 outcome measure)

IPV was assessed using the WHO Multi-country Study on Women's Health and Domestic Violence Core Questionnaire (Garcia-Moreno *et al.*, 2005). Experiences of IPV were asked for within the domains of physical and or sexual violence. We identified lifetime experiences of IPV as well as past year experiences. The sub scales for both ever experiencing IPV and past year experience of IPV had good internal consistency with 0.84 for the former and 0.86 for the latter.

The IPV outcomes (lifetime and past year physical and / or sexual abuse) were recoded into dichotomous variables. The recoded dichotomous variables indicated any experience or never having experienced any physical and / or sexual IPV in their lifetime or during the past year.

3.9.6 Resilience (Paper 2 exposure measure)

Resilience was measured using the resilience scale developed by Wagnild and Young and which is a summated reporting scale that utilizes a 7 point Likert format (Wagnild and Young, 1993). It has been previously used in Nigeria (Abiola and Udofia, 2011). The total resilience score ranges between 25 and 175 points and in our study, the resilience scale had good internal consistency with a Cronbach’s alpha of 0.88.

3.9.7 Depression and anxiety (Paper 2 outcome measure)

The DASS-21 was used to measure depression, anxiety and stress. This is a short version of the original 42 item depression, anxiety and stress scale. It consists of three subscales of 7 items each that measure the constructs of depression, anxiety and stress. It uses a 4 point Likert scale which ranges from 'did not apply to me at all' which was scored 0, 'applied to me to some degree, or some of the time' which was scored 1, 'applied to me to a considerable degree or a good part of time' which was scored 2 and 'applied to me very much or most of the time' which was scored 3 (Parkitny and McAuley, 2010). The items in each subscale were added together and multiplied by 2 in order to achieve the normative DASS scores. The total obtainable score per subscale thus ranged from 0 to 42. Cut-off scores for each subscale as described by Lovibond and Lovibond were utilised as follows for depression: normal (0-9), mild (10-13), moderate (14-20), severe (21-27) and extremely severe (≥ 28). For anxiety; normal (0-7), mild (8-9), moderate (10-14), severe (15-19) and extremely severe (≥ 20). For stress; normal (0-14), mild (15-18), moderate (19-25), severe (26-33) and extremely severe (≥ 34) (S. H. Lovibond and Lovibond, 1995). Internal consistency was found to be fair with a Cronbach's alpha of 0.78.

3.9.8 Social connectedness (Paper 2 exposure measure)

Social connectedness was measured using the Social Connectedness Scale (Revised). This is a revision of the original 8 item scale to a more robust and encompassing version (Lee and Robbins, 2005). The revised version is a 20 item scale rated on a 6 point Likert type scale ranging from 1 = strongly disagree to 6 = strongly agree with ten positive and ten negative questions and a total score range of 20 to 120 (Lee, Draper and Lee, 2001). Respondents were asked statements that reflect various ways in which they had viewed themselves within the preceding week. Higher scores indicated higher levels of social connectedness. Our examination of the internal consistency of this scale revealed it to be good with a Cronbach's Alpha of 0.81.

3.9.9 Self Esteem (Paper 2 exposure measure)

Self-esteem was measured using the Rosenberg self-esteem scale. It is a 10 item scale that identifies global self-worth by measuring both positive and negative feelings about the self with responses provided on a 4 point Likert scale of 'strongly agree' to 'strongly disagree (Rosenberg, 1965). Higher scores indicate higher levels of self-esteem. The scale has been favoured for use by several researchers and is noted to have undergone several rounds of psychometric analysis and validation lending further credence to its utility (Robins and Trzesniewski, 2001; Schmitt and Allik, 2005; Park and Yang, 2017). Several researchers also tend to favour treating self-esteem as a continuous variable from the scores obtained from the self -esteem scale which is what we also adopted (Newark, Elsässer and Stieglitz, 2016; Andreassen, Pallesen and Griffiths, 2017; B. Sun *et al.*, 2017). In this study, we found the internal consistency to be fair with a Cronbach's Alpha of 0.73.

3.9.10 Social support (Paper 2 exposure measure)

Social support was assessed using the Multidimensional Scale of Perceived Social Support developed by Zimet and colleagues in 1988 (Zimet *et al.*, 1988). This is a 12-item instrument that measures perceptions of support from family, friends and a significant other on a 7 point Likert scale. Total scores range from 12 to 84. Higher scores indicate higher levels of perceived social support. It has also been noted to have good reliability and validity and has been used by other researchers in various settings (Miloseva *et al.*, 2017; Tambag *et al.*, 2018; Alsubaie *et al.*, 2019; Ioannou, Kassianos and Symeou, 2019). In order to enhance precision, we treated social support as a continuous rather than a categorical variable. We found good internal consistency with a Cronbach's alpha of 0.89.

3.9.11 Alcohol abuse (Paper 2 exposure measure)

This was measured using the Alcohol Use Disorders Identification Test (AUDIT) scale. Scores obtained were summed with total scores of 8 or more identified as indicators of hazardous and harmful alcohol use, as well as possible alcohol dependence (Babor *et al.*, 2001). Given that alcohol use among women in the study area is not prevalent we decided to limit our inquiry to the use of alcohol rather

than go further to examine hazardous use or alcohol dependence. In the light of this we dichotomized the variable into those who has used alcohol in the past 12 months as “Yes” and those who had not as “No”. This scale also had a good internal consistency with a Cronbach’s alpha of 0.90.

3.10 Data Analysis

Data from the questionnaires were captured using ODK and exported into STATA version 14 for statistical analysis. The survey set command in STATA “*svyset*” was used to adjust for cluster sampling. Representativeness of the data was also accounted for by weighting the data using the STATA command “*pweight*”. Bivariate and multivariate analysis were conducted to identify any associations and net effect of the key independent variables on the primary outcome of interest when selected background characteristics were controlled.

Table 3.2a: Research objectives, outcome variables and corresponding data analysis and output articles

	Objective	Variable	Analysis	Output articles
1	To examine the prevalence and factors associated with PTSD among female urban slum dwellers in Ibadan, Nigeria	Outcome variable : PTSD- binary variable Explanatory variables Childhood trauma –binary variables for each subscale of childhood trauma Recent trauma-categorical variables IPV Sociodemographic variables	Descriptive statistics- frequencies and proportions. Bivariate analysis with t tests and Chi squared tests for continuous or categorical variables respectively was carried out as appropriate. Multivariable modelling was also carried out to investigate the association between PTSD and the different categories of trauma (childhood trauma, IPV and recent trauma) while including other relevant control variables such as sociodemographic variables	Prevalence and factors associated with PTSD among female urban slum dwellers in Ibadan, Nigeria: a cross-sectional study
2	To describe the relationship between common mental disorders and protective factors among female urban slum dwellers in Ibadan, Nigeria.	Outcome variables: The occurrence of common mental disorders which for the purposes of this study we regarded as symptoms of depression, anxiety or stress Explanatory variables Protective factors Social connectedness	Descriptive statistics- frequencies and proportions. We calculated medians and the interquartile range for all protective factors. Multivariable logistic regression methods were employed to examine the relationship between protective factors (social support, resilience, self-esteem and social connectedness) and the occurrence of common mental disorders while	The relationship between protective factors and common mental disorders among female urban slum dwellers in Ibadan, Nigeria

		Social support Self-Esteem Resilience Sociodemographic variables	controlling for relevant socio-demographic factors such as age and marital status.	
3	To examine the relationship between a history of childhood trauma and the experience of IPV among female urban slum dwellers in Ibadan, Nigeria.	Outcome variable: Lifetime and past year experience of IPV (physical and/sexual IPV) Explanatory variables: Childhood trauma Sociodemographic variables	The IPV outcomes (lifetime and past year physical and / or sexual abuse) were recoded into dichotomous variables. Each domain of physical abuse, sexual abuse and emotional abuse/neglect was recoded as a dichotomous variable and categorized as ‘none’ or ‘any’. We then created a categorical variable with four categories: no childhood trauma, one type of trauma, two types and three types. Multivariable logistic regression was used to examine whether multiple forms of trauma were associated with both lifetime experiences of physical and or sexual IPV as well as past year experiences while controlling for potential confounders.	The relationship between childhood trauma and experiences of IPV among women in an urban slum setting in South West Nigeria

Table 3.2b: Research objectives, outcome variables and corresponding data analysis and output articles

	Objective	Variable	Analysis	Output articles
4	To determine the prevalence and factors associated with social support and resilience among female urban slum dwellers in Ibadan, Nigeria.	Outcome variable: Resilience Social support Explanatory variables: Childhood trauma – binary variables for each subscale of childhood trauma Recent trauma-categorical variables IPV Sociodemographic variables	Descriptive statistics-frequencies and proportions. Bivariate analysis with t tests and Chi squared tests for continuous or categorical variables respectively will be carried out as appropriate. Multivariable modelling will also be carried out to investigate the association between resilience and social support with the different	Factors associated with social support and resilience among women living in urban slums in Ibadan, Nigeria

			categories of trauma (childhood trauma, IPV and recent trauma) while including other relevant control variables such as sociodemographic variables	
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Table 3.3: Study measures and corresponding Cronbach’s alpha of relevant scale

S/N	Measure	Scale	Cronbach’s alpha
1	Childhood trauma	Childhood Trauma Questionnaire	0.82
2	Post-Traumatic Stress Disorder	Harvard Trauma Questionnaire (HTQ)	0.88
3.	IPV	WHO Multi-country Study on Women's Health and Domestic Violence Core Questionnaire	0.84 (Ever) 0.86 (past year)
4	Recent stressors	Life Events Questionnaire	0.83
5	Depression and anxiety	Depression Anxiety and Stress Scale 21 (DASS-21)	0.78
6	Resilience	Resilience scale	0.88
7	Social connectedness	Social Connectedness Scale (Revised)	0.81
8	Self-esteem	Rosenberg self-esteem scale.	0.73
9	Social support	Multidimensional Scale of Perceived Social Support	0.89
10	Alcohol use	Alcohol Use Disorders Identification Test (AUDIT) scale	0.90

3.11 Ethical Considerations

Ethical approval for this study was obtained from the University of the Witwatersrand Faculty of Health Sciences Human Research Ethics Committee (Approval number : M180249) as well as the Ethics Review Board of the Oyo State Ministry of Health (Approval number : AD/13/479/762) (see Appendix II and III). Appropriate local community authorities provided permission to conduct the study. Informed consent was obtained from all participants. Participants were informed of their right to decline or withdraw from the study at any time without any adverse consequences. Names were not

included in the questionnaire so as to prevent linking the data to any particular individual. The principles of beneficence, justice & non-maleficence were observed.

The Ethical and Safety Recommendations for Research on Domestic Violence against Women was also adopted in order to ensure the safety of the participants and the research team (WHO, 2001). In keeping with the requirements of a trauma protocol, respondents as well as the researcher team had the option to be referred to a psychiatrist if needed and necessary contact information was made available to the research assistants to give to participants should they wish to seek help at a later date.

On the account that any respondent expressed emotional distress during the interview, the trauma protocol will be activated going through the following steps:

Step 1: the interview would be stopped and immediate containment of the participant implemented including asking the participant if they wanted to tell the interviewer about what was distressing them and whether there was anyone who the interviewer could call.

Step 2: the participant would be offered a glass of water

Step 3: if after 15 minutes they were willing and able to continue, the interview would re-commence

Step 4: if the respondent was no longer willing to continue, the interview would be stopped and a referral made to a psychiatrist who was available to conduct trauma counselling.

In addition, in the event that a respondent answered in the affirmative to the questions on suicidal thoughts, (questions 731 and 732 of the questionnaire), a call would be placed immediately to the psychiatrist who had been placed on stand by for this study and a referral to provide mental health support made. Throughout the data collection procedure, none of the respondents required an activation of the trauma protocol.

04

Paper One

4.0 The relationship between childhood trauma and experiences of IPV among women in an urban slum setting in South West Nigeria.

Citation: **Sekoni, O.**, Mall, S. & Christofides, N. The relationship between childhood trauma and experiences of IPV among women in an urban slum setting in South West Nigeria. *Violence and Victims* (Under Review).

4.1 Abstract

Background

A history of childhood trauma may play a role in the experience of Intimate Partner Violence (IPV). This study aimed to examine the relationship between forms and severity of childhood trauma and the experience of IPV among 550 female urban slum dwellers in Ibadan, Nigeria.

Methods

A community-based cross-sectional household survey involving 550 women aged 18 years and older was conducted between October and November 2018 employing a multi-stage sampling technique. Five out of 13 identified slums within Ibadan were selected by simple random sampling via balloting. Enumeration areas and then houses were selected by simple random sampling at each stage respectively. One household was selected randomly by balloting per house where there were two or more households living in the same dwelling. One woman who met the eligibility criteria in the selected household was selected by simple random sampling

Results

Prevalence of lifetime and past year experience of IPV was 31.5% and 14.8% respectively, while 30.8%, 41.6% and 5.8% had experienced one, two and three forms of childhood trauma respectively. Women who had experienced two or three forms of childhood trauma were more likely to have experienced IPV in the past year. (OR= 5.59; CI= 2.00-15.57, OR= 6.18; CI=1.15-33.09 respectively).

Conclusion

Multiple traumas during childhood were associated with both lifetime and recent experiences of IPV. Interventions for women who have experienced childhood trauma are advocated as a possible prevention strategy against future experiences of IPV.

Keywords: Domestic Violence, Female, Informal Setting, Polyvictimisation

4.2 Introduction

IPV is a major public health problem both globally and on the African continent. Global estimates suggest that 30% of women aged 15 years and older have experienced IPV in their lifetime (World Health Organization, 2013). In West Africa, the prevalence of IPV among ever-partnered women is estimated to be even higher at 41.7% (Devries *et al.*, 2013; World Health Organization, 2013).

Population based studies have estimated that 50 % or more of women in several sub-Saharan African countries including Tanzania, Cameroon, Malawi and Mali have ever experienced IPV (Stöckl *et al.*, 2012; Kapiga *et al.*, 2017; Ahinkorah, Dickson and Seidu, 2018).

Globally, the prevalence of childhood trauma is also high with at least 50% of children having experienced trauma across the continents of Africa, Asia and North America (Hillis *et al.*, 2016).

Childhood trauma includes experiences of sexual, physical and emotional abuse and / or neglect (Butchart, Alexander Harvey, Mian and Furniss, 2006). The prevalence of childhood trauma was found to be 80% in Africa (Hillis *et al.*, 2016). In Nigeria, sexual abuse among adolescents has been found to be 25.9% and 44.8% for physical abuse (Chinawa *et al.*, 2014a; Manyike *et al.*, 2015; David *et al.*, 2018). About 20% of Nigerian children reported an experience of emotional abuse in nationally representative data (Annor *et al.*, 2020a).

Evidence suggests that victims of childhood trauma are more likely to select potentially violent partners as adults and become victims of IPV (Herrero, Torres and Rodríguez, 2018). Haahr-Pedersen

et al and Hughes et al in their systematic reviews found evidence to suggest that polyvictimization in childhood was a stronger risk factor for psychopathology and other health outcomes than single type victimization (Hughes *et al.*, 2017; Haahr-Pedersen *et al.*, 2020).

On the African continent little is known about whether different types of childhood trauma or whether multiple forms of trauma experienced as a child increases the risk of IPV in adulthood particularly among women in more disadvantaged settings. Given the pervasiveness of IPV globally with about one in three women ever experiencing IPV in their lifetime (World Health Organization, 2013), this underscores the importance of exploring the relationship between multiple forms of childhood trauma and the experience of IPV particularly among women that live in deprived circumstances such as urban slums where access to health and social services is very limited.

Urban slums are characteristically known for wide spread poverty and lower educational attainment, especially for women. Both lower socioeconomic status and lower educational attainment have been identified as risk factors for IPV (Alangea *et al.*, 2018; De Castro Bhone *et al.*, 2019). More than half (55.3%) of the population in sub-Saharan Africa resides in slums (UN, 2015a) with Nigeria reporting similar patterns (UN, 2015a). The proportion of the sub-Saharan populations living in slums are expected to increase as urbanization continues to occur worldwide (Aliyu and Amadu, 2017).

Experiences of IPV have been reported to be more prevalent among poor women in urban slums in the global south compared to women in developed countries with higher socioeconomic status (Chant, 2013; McIlwaine, 2013). This is thought to be due to poverty as well as poor living standards and inadequate access to social infrastructure which have all been found to be associated with increased risk for the experience and perpetration of violence (Chant, 2013; McIlwaine, 2013; Ahinkorah, Dickson and Seidu, 2018; Adhena *et al.*, 2020; Chernet and Cherie, 2020). In addition, alcohol and

substance use by male intimate partners are common in slum settings and can be associated with perpetration of IPV (Das *et al.*, 2013; Gupta *et al.*, 2015).

The relationship between different forms and severity of childhood trauma (as a result of the experience of multiple forms of trauma) and IPV in slum settings in Nigeria is not well-understood. The role that the unique local context might play could shape the experiences of both childhood trauma and IPV. In order to address these gaps in knowledge this study was conducted to examine the relationship between sexual, physical, and emotional trauma as well as the severity of the traumas in childhood and IPV among women in an urban slum setting in Ibadan, South West Nigeria.

4.3 Methods

4.3.1 Study Setting

There are 13 slum areas within Ibadan city where our study was conducted. We randomly sampled five for our study and all were inner city “traditional slums”. The selected slums were: Beere, Oje, Oritamerin/Agbeni, Ojaba and Mapo located within the city centre and occupied by the indigenous people of Ibadan (Fourchard, 2003).

4.3.2 Participants

Our community-based cross-sectional household survey was conducted between October and November 2018 employing a multi-stage sampling technique. Enumeration areas were utilised. A third of the enumeration areas from each of the five selected slums were initially selected yielding 42 enumeration areas. However, due to the dense population of the slum environment, a total of 68 enumeration areas were finally selected. A central point was identified within the first enumeration area within each slum and a random direction from that point was selected (i.e. by tossing a coin; with heads indicating direction to the right and tails to the left). The first house in that direction was approached and subsequently every third house was selected. One household was selected randomly by balloting per house where there were two or more households living in the same dwelling. One

woman who met the eligibility criteria in the selected household was selected by simple random sampling. Five-hundred and fifty women aged 18 years and older participated in the study. Women who were regular residents in the identified slum areas in Ibadan. Regular residence was defined as spending at least four nights a week in the household for at least one year (Machisa *et al.*, 2011).

4.3.3 Procedure

Trained female research assistants conducted face-to-face interviews using a standardized questionnaire. The questionnaire was uploaded on handheld tablets using the Open Data Kit (ODK) software.

4.3.4 Measures

Outcome variable

IPV was assessed using the WHO Multi-country Study on Women's Health and Domestic Violence Core Questionnaire (Garcia-Moreno *et al.*, 2005). Experiences of IPV were asked for within the domains of physical and or sexual violence. We identified lifetime experiences of IPV as well as past year experiences.

Exposure variable of interest

Childhood trauma was assessed using a modified version of the Childhood Trauma Questionnaire (CTQ). Domains assessed were physical abuse, sexual abuse and emotional abuse/neglect, (Bernstein and Fink, 1998; Bernstein *et al.*, 2003). Internal consistency was good with a Cronbach's alpha of 0.82.

Socio-demographic and potential confounding variables were also measured. The following sociodemographic characteristics were measured: age, educational status, marital status, employment status, occupation, alcohol use and wealth index. Our assessment of wealth utilised the 11 item Simplified Asset Index developed by the EquityTool© which is able to assess the relative wealth profile of urban dwellers in comparison to other urban dwellers which is a more accurate assessment

of wealth for the urban poor. The original Simplified Asset Index is divided into 5 quintiles but due to small cell numbers we had to merge these into only two categories. The two urban wealth index categories were assigned as follows: the lowest category 1 being “poorest” while the other category was regarded as being “relatively wealthier”.

In addition, acceptability of physical IPV was assessed through 7 items which enquired whether the respondent felt wife beating was justifiable under certain situations. A binary variable was created to reflect whether or not the respondent justified IPV.

4.3.5 Ethical approval

Ethical approval was obtained from the University of the Witwatersrand Faculty of Health Science Human Ethics Committee as well as the Ethics Review Board of the Oyo State Ministry of Health, Nigeria. Permission to conduct the study was also obtained from appropriate local community authorities. Informed consent was obtained from all participants. No identifiable personal information (e.g. name, phone number, address) was collected to ensure participants’ anonymity.

4.3.6 Data Analysis

Data from the questionnaires were captured using ODK and exported into STATA version 14 for statistical analysis. The survey set command in STATA “*svyset*” was used to adjust for cluster sampling. Representativeness of the data was also accounted for by weighting the data using the STATA command “*pweight*”. Internal consistency of scales were confirmed using a Cronbach’s alpha. No participants had missing data for either IPV or childhood trauma and thus no case dropping was implemented.

The IPV outcomes (lifetime and past year physical and / or sexual abuse) were recoded into dichotomous variables. The recoded dichotomous variables indicated any experience or never having experienced any physical and / or sexual IPV in their lifetime or during the past year. The exposure variable was the experience of childhood trauma (sexual, physical and/or emotional abuse and

neglect). Each domain of physical abuse, sexual abuse and emotional abuse/neglect was recoded as a dichotomous variable and categorized as ‘none’ or ‘any’. We then created a categorical variable with four categories: no childhood trauma, one type of trauma, two types and three types. This variable allowed us to assess the severity of childhood trauma.

Multivariable logistic regression was used to examine whether multiple forms of trauma were associated with both lifetime experiences of physical and or sexual IPV as well as past year experiences while controlling for potential confounders including age, marital status, educational attainment and socioeconomic status (measured through the wealth index). Statistical significance was set at $p < 0.05$.

4.4 Results

Description of the sample

The socio demographic details of participants are presented in Table 4.1. All 550 women in the selected households agreed to participate in the study giving a 100% response rate. The median age of women was 40 years with an interquartile range of 30-55 years. Almost a quarter of the women had not received any formal education (23.4%) while a third (35.7%) had completed at least secondary level education. The majority were married (65.5%) and only 5.3% of the women had consumed alcohol within the previous year. The majority (76.0%) had been employed in the three months prior to the survey, and 72.9% fell within the poorest wealth index category. Employment in this context was largely informal such as selling or trading goods.

Table 4.1: Sociodemographic characteristics

Variable	Frequency	Unweighted percentage (%)	Weighted percentage(%)
Age at last birthday (n=550)			
18-34	198	36.00	37.21
35-49	169	30.73	29.99
50-64	92	16.73	16.98

≥65	91	16.55	15.83
Median age(median, IQR ^a)	40(IQR:30-55)		
Educational status (n=550)			
None	123	22.36	23.36
Any primary	165	30.00	28.38
Some secondary	67	12.18	12.58
Completed secondary/tertiary	195	35.45	35.69
Marital status			
Married/cohabiting	373	67.82	65.52
Single/never married	43	7.82	9.39
Separated/divorced/widowed	134	24.36	25.09
Employed in the last 3 months (n=550)			
Yes	425	77.27	76.02
No	125	22.73	23.98
Alcohol use in the past 12 months (n=550)			
Yes	35	6.36	5.33
No	515	93.64	94.67
Urban Wealth index quintiles (based on assessment of household assets) (n=550)			
Poorest	394	71.64	72.86
Relatively wealthier	156	28.36	27.14

^aIQR: Inter-quartile range

IPV

Table 4.2 presents the experiences and acceptance of sexual and / or physical IPV among respondents.

Nearly one-third of the women (31.5%) reported a lifetime history of physical and / or sexual IPV while 14.8% of women reported past year experience of IPV. Fewer than one in ten women (7.9%) believed that IPV was acceptable under some circumstances.

Table 4.2: Experience of IPV among respondents (N=550)

Variable	Frequency	Unweighted percentage (%)	Weighted percentage(%)
Ever experienced physical and / or sexual IPV			
Never experienced physical and / or sexual IPV	367	66.73	68.46
Has had an experience of physical and / or sexual IPV	183	33.27	31.54
Physical and / or sexual IPV in the past 12 months			

No physical and / or sexual IPV in the past 12 months	459	83.45	85.25
Had physical and / or sexual IPV in the past 12 months	91	16.55	14.75
Acceptance that IPV is justified under some circumstances			
IPV is sometimes justified	45	8.18	7.87
IPV is never justified	505	91.82	92.13

Childhood Trauma

Table 4.3 presents prevalence estimates of forms and severity of childhood trauma. Almost a third of the women reported at least one form of childhood trauma (30.8%) while 41.6% and 5.8% reported two and three forms of trauma respectively. Child sexual abuse was reported by 8.8% , physical abuse by 50.9% and emotional abuse/neglect by 70.8%.

Table 4.3: Prevalence of different types of childhood trauma and severity

Variable	Frequency	Unweighted percentage (%)	Weighted percentage(%)
Childhood trauma			
Sexual abuse			
None	499	91.39	91.23
Any sexual abuse	47	8.61	8.77
Emotional abuse/neglect			
None	158	29.26	27.18
Any emotional abuse	382	70.74	72.82
Physical abuse			
None	273	49.82	49.12
Any physical abuse	275	50.18	50.88
Severity of abuse			
None	125	23.23	21.70
One form	165	30.67	30.80
Two forms	217	40.33	41.62
Three forms	31	5.76	5.82

The results of the logistic regression analysis of both lifetime and past year experiences of physical and or sexual IPV and childhood trauma while controlling for sociodemographic characteristics are presented in Table 4.4. Women who had experienced all three forms of childhood trauma had five

times the odds of reporting a lifetime experience of IPV compared to those who had not had any experience of childhood trauma (OR= 5.21; CI= 2.30-11.76).

For past year experience of IPV, women who had experienced two forms of childhood trauma had five times the odds of reporting past year experience of IPV compared to those who had not had any experience of childhood trauma (OR=5.59; CI= 2.00-15.57). While those who had experienced all three forms of childhood trauma had six times the odds of reporting past year experience of IPV compared to those who had not had any experience of childhood trauma (OR=6.18 ; CI= 1.15-33.09).

Table 4.4: Adjusted model of respondents characteristics and IPV (past year and lifetime)

Variable	Ever Experienced IPV		Experienced IPV in the past 12 months	
	OR(95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)
Childhood trauma				
Severity of abuse: None				
One form	1.07(0.63-1.80)	1.03(0.58-1.83)	2.43(0.76-7.79)	2.78(0.85-9.08)
Two forms	1.68(0.77-3.66)	1.76(0.90-3.44)	6.10(2.37-15.68)	5.59(2.00-15.57)*
Three forms	2.99(1.23-7.28)*	5.21(2.30-11.76)*	4.44(0.98-20.16)	6.18(1.15-33.09)*
Agegroup: 18-34 years				
35-49	1.51(1.02- 2.23)*	1.37(0.86-2.18)	0.97(0.58-1.63)	1.08(0.58-2.00)
≥50	0.67(0.39-1.16)	0.72(0.33-1.55)	0.09(0.03-0.25)*	0.32(0.12-0.86)*
Marital status:				
Married/cohabiting				
Single/never married	0.37(0.14-0.98)*	0.21(0.06-0.73)*	0.64(0.19-2.10)	0.31(0.06-1.51)
Separated/divorced/widowed	0.82(0.51-1.31)	2.02(0.90-4.53)	0.06(0.01-0.26)*	0.22(0.04-1.10)
Education: None				
Any primary	2.23(1.17-4.21)*	2.20(0.78- 6.22)	11.77(2.90-47.64)*	3.34(0.62-17.94)
Some secondary	3.62(2.05-6.36)*	4.36(1.66-11.43)*	16.50(3.66-74.35)*	5.29(0.99-28.25)
Completed secondary/tertiary	2.08(1.39-3.10)*	2.67(1.15-6.18)*	15.40(3.44-68.85)*	4.27(0.75-24.26)
Urban Wealth index: Poorest				
Relatively wealthier	1.06 (0.79-1.41)	0.94(0.70-1.25)	1.91(1.17-3.09)*	1.25(0.82-1.91)

Worked in the last 3 months:				
Yes				
No	0.67(0.44-1.04)	0.82(0.44-1.51)	0.66(0.43-1.00)	0.87(0.42-1.80)

*p< 0.05

4.5 Discussion

Our study set out to examine the relationship between different types and severity of childhood trauma and the experiences of IPV among women in an urban slum setting in South West Nigeria. We found that 31.5% of women reported lifetime experiences of IPV and 14.8% reported an experience of any physical and or sexual IPV within the 12 months preceding the study. Women who had experienced all three forms of childhood trauma were five times more likely to report a lifetime experience of IPV. A dose-response relationship between childhood trauma and IPV was observed for past year experience of IPV. IPV was higher among women who reported experiencing all three forms of childhood trauma compared to two forms or only one form.

Our findings with respect to the lifetime experience of IPV is largely consistent with the prevalence of 30% reported in a nationally representative household survey conducted recently in Nigeria (NDHS, 2018). This suggests that the prevalence of IPV in an urban slum is not higher than prevalence estimates for the country overall. This finding was surprising as researchers have generally highlighted a higher prevalence of IPV in informal settings as compared to the general population (Sambisa *et al.*, 2011; Winter, Obara and McMahon, 2020). For instance, Swart in his study of gender based violence in a Kenyan slum, found more than twice the rate of violence in the slum compared to the general population (Swart, 2012). Similar findings were reported by Corburn and Hildebrand also in Kenya (Corburn and Hildebrand, 2015). Even greater disparity in the prevalence of violence in slum settings compared to the general population has been described in South Africa with a prevalence of 65% in the slum and 13% in the general population (Machisa *et al.*, 2011; Gibbs, Jewkes, *et al.*, 2018)

However, it may be that the predominance of patriarchal systems which exist in Nigeria and the resultant normative gender based inequalities may contribute to this finding particularly, as a general acceptance of IPV in Nigeria is common (Meinhart *et al.*, 2020; Mejía-Guevara *et al.*, 2020; Alabi and Ramsden, 2021). Perhaps the women in our sample were more tolerant to acts of violence by their intimate partners and as such did not view such acts as out of the ordinary. In connection with this, individual and community tolerance of IPV have been found to be associated with greater odds of the experience and perpetration of IPV (Uthman, Moradi and Lawoko, 2011).

The prevalence of IPV experienced in the previous year (14.8%) was similar to the prevalence reported in a South African community based survey (18.0%) (Machisa, Christofides and Jewkes, 2017). This finding is in contrast to past year experience of IPV among specific clinical populations have revealed much higher rates both within and outside Nigeria. Black and colleagues found a prevalence of 55.7% among women attending health clinics in Uganda and 36.7 among women attending antenatal clinics in Nigeria (Mapayi *et al.*, 2013; Black *et al.*, 2019). However, the disparity observed between the results of this study and studies among clinical populations is not surprising as many cases of IPV presenting in a clinical setting would likely be the most severe end of the spectrum with the need for medical intervention which would not be the case for a community based study such as this.

Estimates of sexual abuse during childhood in Nigeria have been thought to range between 10.2% - 69.9% (Ikechebelu *et al.*, 2008; Chinawa *et al.*, 2014a; David *et al.*, 2018). In our study, we found a prevalence of 8.8% which was lower than observations by other researchers. The particularly sensitive nature of sexual abuse may play a role in whether information concerning sexual abuse is volunteered during data collection and might have been the case among the women in our study (Fontes and

Plummer, 2010). Underreporting the experience of childhood trauma has been identified as the commonest form of misreporting in child trauma research (McKinney, Harris and Caetano, 2009)

Personal evaluation and perception of events that occurred in childhood as well as the ability to remember events accurately would also play a role in the information obtained (Susser and Widom, 2012). In addition, there are also cultural underpinings that influence whether or if sexual abuse will be disclosed (David *et al.*, 2018). For instance, the need to defer to the wishes of elders and protect the image of the family particularly where the perpetrator of abuse is a family member which is common in African settings may serve as a cultural barrier to disclosure (Ogunjimi *et al.*, 2020).

Childhood emotional abuse/neglect were found to be quite common among our respondents with majority of the women reporting a history of emotional abuse/neglect in childhood (72.8%). The prevalence of emotional abuse during childhood has been found to higher in sub-Saharan Africa compared to higher income countries due to poverty, poorer family functioning and poorer parenting skills. Inadequate family care arrangements that arise due to poverty and orphanhood result in children being fostered by extended family members and have been shown to contribute to child emotional abuse (Christoffersen *et al.*, 2013; Meinck, Fry, *et al.*, 2017).

The prevalence of emotional abuse/neglect found in this study was also much higher than the 17% observed in nationally representative data (Annor *et al.*, 2020a). There have been suggestions in the literature of links between childhood trauma such as emotional abuse and low socio-economic status. The inability of parents of low socioeconomic status to provide adequately for their children can create stress and frustration which could lead them to abuse their children. (Pelton, 2015; Fung, Chung and Ross, 2020). Even though we did not enquire whether respondents had grown up in the slums, the likelihood that our respondents grew up in deprived settings are high and thus the high levels of emotional abuse are not surprising.

About one in two of our respondents reported an experience of physical abuse in childhood. This is similar to the findings of nationally representative data where a prevalence of 50% was observed (National Population Commission of Nigeria, 2016). Corporal punishment involves physical violence and is generally regarded in Nigeria as an acceptable means to instill discipline into children, while ensuring that they grow up to be responsible adults (Ofoha, Ogidan and Saidu, 2018). This widespread acceptance of such violent acts against children may have contributed to the high levels of physical abuse reported in this study. Such high levels have also been reported in other parts of the African continent (Meinck *et al.*, 2015).

It would be important to note that the even though we interrogated a history of childhood trauma among this sample of women, we might not have captured every range of traumatic event (such as peer assault or witnessing domestic violence) that could occur in childhood as the CTQ is limited to just five domains of childhood trauma.

The relationship between IPV and childhood trauma has been reported by researchers with the consensus being that women with a history of childhood trauma have greater odds of experiencing IPV (Barrios *et al.*, 2015; Fulu *et al.*, 2017). The possible additive effect of the subtypes of childhood trauma and its effect on the experience of IPV has been highlighted in the literature with a dose response relationship between the number of types of childhood trauma and the experience of IPV being reported. Whitfield *et al.* in their study among adults in the USA found a relationship between the childhood experience of trauma and the subsequent experience of IPV among women (Whitfield *et al.*, 2003). A study among young South African women suggests that a history of multiple forms of childhood trauma is associated with the experience of IPV (Gibbs, Dunkle, *et al.*, 2018). Similar results were also reported by Brassard and colleagues in Canada (Brassard *et al.*, 2020). In our study, those who had experienced multiple forms of childhood trauma were more likely to have experienced

both lifetime and past year IPV and this was significant after controlling for other factors. Those who had experienced three forms of childhood trauma had higher odds of the experience of IPV compared to those who had experienced two forms of childhood trauma. The pathway through which polyvictimisation in childhood and the occurrence of adult revictimization are linked has been shown to be through the social learning theory where individuals embrace each type of trauma experienced as normative and expected within intimate relationships (Schuster and Tomaszewska, 2020).

We acknowledge several limitations in our study. The sensitivity of issues surrounding IPV and child sexual abuse could have resulted in under-reporting. Recall bias is a major limitation to be considered in this study particularly with respect to the accounts of lifetime experiences of IPV and abuse that occurred in childhood as such events might have occurred as far back as three decades earlier among the older women.

In addition, our models only controlled for socio-demographic variables but other known drivers of IPV exist at the macro level such as community gender norms. Finally, the cross-sectional nature of our study limits the ability to determine the temporal sequence between variables.

4.6 Conclusion

Our findings suggest that for women in these slums, the experience of childhood trauma plays a role in the experience of IPV during adulthood particularly when women have experienced multiple forms of trauma during their childhood. The severity of trauma as a result of the cumulative effect of multiple forms of trauma over the lifecourse can result in serious consequences to mental and physical health and wellbeing. Screening for a history of childhood trauma and for polyvictimisation particularly in settings where women experience high levels of adversity may be an important component of IPV prevention programs that have been overlooked and should be prioritized. This will facilitate a holistic approach to intervention.

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05

Paper Two

5.0 Prevalence and factors associated with PTSD among female urban slum dwellers in Ibadan, Nigeria: a cross-sectional study

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5.1 Abstract

Background

Little is known about the prevalence of and factors associated with PTSD among adult females in Nigeria, particularly those who live in slums. PTSD is a mental health condition that develops among some individuals who experience or witness a traumatic event. Several other factors could place individuals at heightened risk of PTSD including stress and comorbid mental disorders. Therefore, this study aimed to examine the prevalence and factors associated with PTSD among female urban slum dwellers in Ibadan, Nigeria.

Methods

We conducted a cross sectional survey using multistage sampling of 550 women aged 18 and above from selected slums. Interviewer administered questionnaires were used to elicit information on experience of childhood trauma, recent stressors, IPV, other mental disorders, sociodemographic characteristics and PTSD. PTSD was measured using the Harvard Trauma Questionnaire (HTQ) which is based on DSM IV. A multivariable linear regression model was built to test associations between PTSD and independent variables.

Results

The prevalence for PTSD was found to be 4.18% and the mean PTSD score was 5.80 ± 7.11 . Sexual abuse in childhood, past year IPV and anxiety were significantly associated with higher PTSD scores. PTSD was not significantly associated with a history of recent stressors. Education, employment and marital status were not associated with PTSD however, age and wealth index showed marginal association with PTSD.

Conclusion

The prevalence of PTSD among women living in Ibadan slums was relatively low. Both child sexual abuse and IPV can be prevented. We also recommend longitudinal studies to better understand risk and protective factors

Keywords: Post-Traumatic Stress Disorder, Urban Slum, Traumatic Events, Nigeria

5.2 Background

Post-Traumatic Stress Disorder (PTSD) is a disabling mental disorder consisting of three core symptoms: avoidance and numbing, re-experiencing and hyperarousal (Scher *et al.*, 2008; Radell *et al.*, 2017). PTSD can occur after the experience or witnessing of one or more Traumatic Events (TE) during childhood or adulthood (Iribarren *et al.*, 2005; Stein *et al.*, 2016). Traumatic events can include physical, sexual or emotional abuse during childhood (Chemtob *et al.*, 2016; Sheriff *et al.*, 2019). In adulthood these events include the experience or witnessing, of violent personal assault such as physical or sexual violence perpetrated by a partner, terrorism, serious illness or death of a loved one (Atwoli *et al.*, 2013; Kleber, 2019). The Diagnostic and Statistical Manual of mental disorders V (DSM V) highlights specific traumatic events at least one of which must be experienced prior to a diagnosis of PTSD (APA, 2013b)

Traumatic and stressful life events, can lead to the development of PTSD (Gold *et al.*, 2005; Leserman *et al.*, 2005; Schock *et al.*, 2016; Van Den Berg *et al.*, 2017). Traumatic stressors can include serious injury, illness or assault happening to a close relative or the death of a parent, child or spouse. The experience of several negative life events occurring during an individual's lifespan is not unusual in the general population and this has been associated with negative mental health outcomes (Schock *et al.*, 2016). Even when the occurrence of negative life events are not strictly characterised as being of sufficient impact as to be traumatic, the degree to which an individual perceives such an event as

traumatic can precipitate the development of mental health concerns such as PTSD (Willard, Long and Phipps, 2016)

PTSD has been found to be associated with mental disorders such as depression and anxiety (Flory and Yehuda, 2015). This could be the result of co-morbidity or due to overlapping symptoms (Carmassi *et al.*, 2020). PTSD experienced together with other mental disorders, as well as PTSD on its own may contribute to a significant reduction in quality of life (Lohr *et al.*, 2015; McMillan, Asmundson and Sareen, 2017; Danielsson *et al.*, 2018).

Research examining the prevalence and risk factors associated with PTSD suggests that it is associated with a range of socio-demographic characteristics (Ryb *et al.*, 2009; Frankenberg *et al.*, 2013; Olf, 2017). Studies have found PTSD is more commonly reported among women (Birkeland *et al.*, 2017; Haag *et al.*, 2019; Shalev *et al.*, 2019). Individuals with higher education levels are less likely to experience PTSD (Tang *et al.*, 2017; Lin *et al.*, 2018). However, there is inconsistent evidence with regards to marital status. Some studies suggest that marital status is protective against developing PTSD while others suggest that it increases the risk for PTSD. (Grieger *et al.*, 2006; Smith *et al.*, 2008; Dekel and Monson, 2010; Freedman *et al.*, 2015). Age has been found to play a role in the development of PTSD, with middle-aged women being at greatest risk (Ditlevsen and Elklit, 2010; Kobayashi, Sledjeski and Delahanty, 2019). Unemployment after the experience of trauma has also been found to be significantly associated with PTSD (Harris *et al.*, 2008).

Most studies examining PTSD have been conducted in the US and Europe (with earlier research focusing on service members and veterans) (Richardson, Frueh and Acierno, 2010; Dursa *et al.*, 2014; Magruder *et al.*, 2015). A few studies have been conducted on the African continent. In South Africa PTSD has been measured in a population-based mental health epidemiological survey, the South African Stress and Health Study (SASH). The SASH suggested a lifetime and 12 month PTSD

prevalence of 2.3% and 0.7% respectively while the risk of PTSD was found to be greatest among those who had lost a loved one (Atwoli *et al.*, 2013). Another population-based survey of adult women in one province in South Africa reported a prevalence of 11.6% (Machisa, Christofides and Jewkes, 2017). High rates of PTSD (87%) were reported among female rape survivors surveyed from health facilities in South Africa (Mbalo, Zhang and Ntuli, 2017). The prevalence of PTSD among adolescents from low socioeconomic communities also in South Africa was about 6% (Mbalo, Zhang and Ntuli, 2017; Swain, Pillay and Kliewer, 2017). PTSD was reported among Eritrean refugees in Ethiopia and Rwanda among children of rape survivors (Kagoyire and Richters, 2018; Getnet, Medhin and Alem, 2019).

In Nigeria, where historically and currently there have been a wide range of TE, the prevalence of PTSD is thought to range widely between 2.7% and 66.7% (Iteke *et al.*, 2011; Mishara and Gbaden, 2014; Sheikh *et al.*, 2016; Asuquo, B. E. Edet, *et al.*, 2017). Though reasons for such wide range variation in prevalence of PTSD are not known, it is possible that the use of varying study designs, tools and samples studied may have influenced this variation (Wisco, Marx and Keane, 2012). For example the cross-sectional study reported by Sheikh *et al* reported a PTSD prevalence of 6.8%, while the case control study of Asuquo *et al* reported a prevalence of 41.3% (Sheikh *et al.*, 2016; Asuquo, B. E. Edet, *et al.*, 2017). Predictors of PTSD in Nigeria include a wide spectrum of events e.g. political and ethno-religious violence to road traffic accidents (Iteke *et al.*, 2011; Mishara and Gbaden, 2014; Nwoga, Audu and Obembe, 2016; Sheikh *et al.*, 2016; Asuquo, B. E. Edet, *et al.*, 2017). However, slum environments tend to be associated with a greater number of TE, therefore the risk of developing PTSD in such settings may be higher (Gapen *et al.*, 2011; Goldmann *et al.*, 2011; Jain *et al.*, 2018). To our knowledge, there are limited prevalence data for PTSD from community-based samples and poor urban slum settings in Nigeria.

Slum areas in Ibadan, which is the setting of this study, are located in the central and oldest parts of the city and represent areas of little or no identifiable sanitation facilities or social infrastructure, physical deterioration, and very high population density (Fourchard, 2003; Coker, 2008). The slums developed in the wake of the colonial era which was followed by an increase in economic activities making it possible for individuals to attain economic independence at earlier ages and as a result the desire to build personal property (Mabogunje, 1962). In a bid to remain within the extended family setting, such houses could only be built within the open space of the family compound. This ultimately has led to wide spread overcrowding and poor access to infrastructure such as water, electricity and sewerage due to the un-planned nature of the neighbourhoods and almost non-existent road networks (Neiderud, 2015; Adiga *et al.*, 2018).

The purpose of this study was to estimate the prevalence of PTSD, and to describe associated factors including socio demographic characteristics, experience of childhood trauma, IPV, recent stressors, as well as comorbid mental disorders among women in a slum setting in South West Nigeria. Our study addresses gaps in the literature on PTSD with particular reference to trauma across the life course and mental health in community samples as well as among women in deprived circumstances such as a slum setting in Ibadan, Nigeria.

The results potentially contribute to the body of literature on PTSD among women in low income urban neighbourhoods and the role that neighbourhood context plays in the development of PTSD which are research gaps that have been highlighted by other researchers (Lilford *et al.*, 2017). It will also contribute to our understanding of the prevalence of comorbid mental disorders in such contexts (Parto, Evans and Zonderman, 2011; Golin *et al.*, 2016).

5.3 Methods

5.3.1 Participants

A community based cross-sectional household survey was conducted in slum areas of Ibadan in Oyo State. Participants were adult women above the age of 18 years who were resident members of the selected households during the period October to November 2018. Regular residence was defined as spending at least four nights a week in the household for at least one year (Machisa *et al.*, 2011).

5.3.2 Procedure

Six female research assistants with tertiary education were recruited and trained. Training of research assistants took place over five days and covered data collection and ethical considerations relevant for the study. These included method of administration of questionnaires, review of questions for completeness and maintenance of ethical standards with particular emphasis on the sensitive nature of the questions. The training also included the World Health Organization requirements for collecting data for trauma research (Garcia-Moreno *et al.*, 2005). Training on the use of the Open Data Kit (ODK) was also carried out to teach research assistants how to use the software and upload the data once obtained. ODK is a mobile technology that enhances the data collection and data management process by ensuring real time data entry through the use of the internet. It was developed at the University of Washington and has been found to be an effective data collection tool (Steiner *et al.*, 2016; Maduka, Akpan and Maleghemi, 2017). Role plays were utilised in order to enhance skills and evaluate the training.

A sample of 550 eligible women were selected based on a multistage sampling technique. Simple random sampling was used to select five of thirteen slum settlements in Ibadan through the use of a table of random numbers. The selected slums were: Beere, Oje, Oritamerin/Agbeni, Ojaba and Mapo located within the central core of the city occupied by the indigenous people of Ibadan and are also known as “traditional slums”(Fourchard, 2003). Enumeration Areas (EAs) as demarcated by the

National Population Commission (NDHS, 2013) were identified by using already existing maps prepared by the Commission. One third of the EAs were selected from each of the five slums using a table of random numbers. This yielded a total of 42 EAs. However this number was later increased to 68. This ensured that there were sufficient households available per EA to select one eligible respondent per household while adhering to the required sample size. This approach has been utilised in the conduct of other population based surveys on violence research in order to ensure safety of both the respondent and the interviewer (Garcia-Moreno *et al.*, 2005). The Nigerian Demographic and Health Survey (NDHS) indicates 48 households per EA [60]. However this figure was not specified for a slum area where higher number of households would be expected. We assumed an average of 60 households per EA (four households per dwelling in 15 dwellings per EA). One household was selected randomly by balloting per house where there were at least two households. One person in the selected household was selected randomly by balloting. Data collection was carried out through the use of face to face interviews by the research assistants using standardized questionnaires uploaded on mobile devices with ODK software.

5.3.3 Measures

Outcome variable

The outcome variable for this study was PTSD assessed using the Harvard Trauma Questionnaire (HTQ) which is based on DSM-IV PTSD criteria (Mollica *et al.*, 1992). The HTQ is a reliable screening instrument that has been widely used and is acceptable across cultures (Shoeb, Weinstein and Mollica, 2007; Silove *et al.*, 2007). The trauma symptom items of the HTQ were used in this study. Items included an individual's perception of their ability for daily functioning. For example, "*feeling detached or withdrawn from people*" and "*feeling as though the event is happening again*".

The HTQ utilizes a 4 point Likert scale of 16 items with responses of "not at all", "a little bit", "quite a bit" or "extremely" to determine the occurrence of post-traumatic symptoms within the

previous week (Mollica *et al.*, 1992; Rasmussen *et al.*, 2015). A score of 1 was assigned to the responses of “not at all”, a score of 2 was assigned to the responses of “a little bit”, a score of 3 was assigned to the responses of “quite a bit” and 4 was assigned to responses of “extremely” The minimum score was 1 and the maximum possible score was 64. The sum of the items were then divided by the total number of items. A cut point of 2.0 was used in interpreting the score which has been recommended for use when doing community based research as opposed to the cut point of 2.5 recommended for use among clinic based population samples (Mollica *et al.*, 1992; Silove *et al.*, 2007; Housen *et al.*, 2017). We adopted this lower cut point as population characteristics have been suggested to influence the performance of the HTQ with differences seen among highly traumatised populations as opposed to those that are not as highly traumatised (Silove *et al.*, 2007). Based on this, the outcome variable was dichotomized as either ‘No PTSD symptoms’ or as having ‘PTSD symptoms’. We found good internal consistency with a Cronbach’s alpha of 0.88.

Explanatory variables

Experiences of childhood trauma were assessed using the Childhood Trauma Questionnaire (CTQ). The CTQ is an instrument consisting of 28 items covering a range of childhood experiences (Bernstein *et al.*, 2003). Domains include emotional abuse and neglect, physical abuse and neglect and sexual abuse (Bernstein and Fink, 1998; Bernstein *et al.*, 2003). For the purposes of the analyses presented in this paper we used only the sexual, physical and emotional abuse sub-scales as they are more likely to be associated with PTSD (Nöthling *et al.*, 2019; Kisely, Strathearn and Najman, 2020). The CTQ has been used previously on the African continent (Ritacco and Suffla, 2012; Mall *et al.*, 2019). We found good internal consistency with a Cronbach’s alpha of 0.82. Examples of items on the CTQ include: “*People in my family called me things like ‘stupid’, ‘lazy’ or ‘ugly’*”, “*I got hit so hard by someone in my family that I had to see a doctor or go to the hospital*”, “*Someone tried to touch me*”

in a sexual way or tried to make me touch them ” . Each subscale was assessed as a dichotomous variable with any affirmative answer to an item as an experience.

IPV was assessed using the WHO Multi-country Study on Women's Health and Domestic Violence Core Questionnaire (Garcia-Moreno *et al.*, 2005). Experiences of IPV were asked for within the various domains of physical and sexual abuse. The internal consistency of the scale was good at a Cronbach's alpha of 0.84. In our analysis, we identified past year experience of IPV with variable responses being having had an experience of IPV in the year prior to the study or not having had an experience of IPV in the year prior to the study.

Recent stressors were assessed using the Life Events Questionnaire (Brugha and Cragg, 1990). The scale considers recent life events that tend to be stressful and threatening and have occurred within the preceding six months. It is a 12 item self-report questionnaire which assesses the quality of life of an individual before, during and after the occurrence of a stressful life event. We utilised four items of the twelve item questionnaire as these four items were the only ones that fit the PTSD criteria for a traumatic experience (Van Veldhoven *et al.*, 2011; Sareen, 2014b). The items are as follows: “*Did you suffer serious illness, injury or assault?* ”, “*Did your parent, child or spouse die?* ”, “*Did a serious illness, injury or assault happen to a close relative?* ” and “*Did a close family friend or another relative (aunt, cousin, grandparent) die?* ” For each item a “yes” (with a score of 1) or “no” (with a score of 0) response was given which has been identified as a valid method of assessment (Motrico *et al.*, 2013). The frequency of each of the items has been presented. In addition to this, a dichotomous score was computed from the total sum of all the items and was categorized into “no stressors” or “any stressors”.

Depression and anxiety was assessed using the DASS-21 (Depression, Anxiety and Stress Scale-21) which has been used previously in Africa (Lovibond and Lovibond, 1995). It contains three subscales:

one subscale for depression, one for anxiety and one for stress. Each subscale is composed of 7 separate items using a 4 point Likert scale with the respondent identifying the extent to which each of the statements on the instrument applied over the past one week (Parkitny and McAuley, 2010).

Examples of items on the depression scale include; “*I found it difficult to work up the initiative to do things*” and “*I felt that I had nothing to look forward to*”.

Examples of items on the anxiety scale include;” I experienced trembling (e.g in the the hands)” and “I was worried about situations in which I might panic and make a fool of myself”.

Scores for each scale are calculated by summing the scores for the items on each scale. The cutoff values serve as a means of interpretation with respect to the dimensions of severity. Responses for each of the scales are indicated as 0 (did not apply to me at all), 1(applied to me to some degree, or some of the time), 2 (applied to me to a considerable degree or a good part of time), 3 (applied to me very much or most of the time). Scores on the DASS 21 are multiplied by 2 to give the final score which is categorized accordingly into “normal”, “mild”, “moderate”, “severe”, and “extremely severe”.

Due to very small numbers of participants with DASS scores in the moderate and severe categories and none in the extremely severe category, we collapsed categories for the depression and anxiety scales. We generated a dichotomous variable for depression and anxiety with categories of “no anxiety” representing the initial “normal” and “mild” and “anxiety” represented by collapsing the initial categories of “moderate”, “severe” and “extremely severe”. No participants had stress scores that were in the “moderate”, “severe” or “extremely severe” category so we did not include the assessment of stress in this study.

Validity, reliability and internal consistency of the DASS has been found to be satisfactory across various populations of both clinical and non - clinical samples (Henry and Crawford, 2005; Ng *et al.*, 2007; Chan *et al.*, 2012). We found satisfactory internal consistency with a Cronbach’s alpha of 0.73.

Sociodemographic characteristics: included age, educational status, marital status, employment status, occupation and wealth index. Age was categorized into three age groups as follows: 18-29 years, 30-44 years and age 45 years or older. Educational status was categorized as none- for those who had not undergone any form of formal education, primary- which represents the first six years of schooling and secondary- which represents the subsequent six years of schooling. In our study, marital status was categorized as “married”- for those in a formal marriage union, “single”- for those not in any formal marriage union and “others”- for those that did not fall into the category of married or single such as those who were widowed, separated or divorced. Employment status was determined by whether or not the respondent had been employed within the last 3 months or not with responses being “yes” or “no”. Respondents were categorized into three major occupations: trader, artisans and professionals. Our assessment of wealth was done utilizing the 11 item Simplified Asset Index, a previously published tool which assesses the relative wealth profile of urban dwellers in comparison to other urban dwellers making it a more accurate assessment of wealth for the urban poor (Chakraborty *et al.*, 2016). The Simplified Asset Index is based on Demographic and Health Survey (DHS) data. The DHS has been implemented in more than 90 countries since 1984 (Rutstein and Johnson, 2004) and allows for reliable sub-group analyses in urban areas. The index is a shorter country specific alternative to the original DHS wealth index variables but has been found to equally effective and easier to administer (Chakraborty *et al.*, 2016). Examples of items from the Simplified Asset Index include; “*What type of fuel does your household mainly use for cooking?*” and “*Does any member of this household have a bank account?*”

The original Simplified Asset Index is divided into 5 quintiles but due to small cell numbers we had to merge these into three. The three urban wealth index categories were assigned as follows: the lowest category 1 being “poorest”, the middle category 2 being “poor” and the highest category 3 being “slightly wealthier”.

The instrument was translated to the local language [Yoruba] and back translated to ensure that original meanings were preserved and was pre-tested in an enumeration area within a slum area that had not been selected for the study. Such a process of translation has been described by other researchers (Menon *et al.*, 2012). Based on the feedback received, we made corrections to the questionnaire.

Ethical approval for this study was sought from the University Of Witwatersrand Faculty Of Health Science Human Ethics Committee as well as the Ethics Review Board of the Oyo State Ministry of Health, Oyo State, Nigeria.

5.3.4 Data analysis

Data were analyzed using STATA Version 14.0 software (Stata Corp., College Station, TX, USA). There were no missing data on the outcome measure of interest and hence no case dropping was implemented. We adjusted for the cluster sampling during analysis using the *svyset* command in STATA. We also weighted the data to ensure that it was representative of the Ibadan slums using the command *pweight*. The outcome variable under consideration was the mean PTSD score while the explanatory variables included the experience of childhood trauma (sexual, physical and / or emotional abuse), sexual and /or physical IPV, recent stressors, depression, anxiety and sociodemographic characteristics. T-tests were used to compare mean PTSD symptomatology scores with explanatory variables such as child sexual abuse, IPV, depression and anxiety which were dichotomous variables. Oneway ANOVA was used for categorical variables such as educational attainment, marital status and wealth index. Subsequently, a multivariable linear regression analysis was built to examine associations between PTSD score and explanatory variables which were associated in the univariate analyses or considered theoretically important based on the literature. Statistical significance was set at $p < 0.05$.

5.4 Results

All 550 women in selected households agreed to participate in the study giving a 100% response rate.

This high response rate is not uncommon in the Ibadan context. The median age of respondents was 40 years with an interquartile range of 30-55 years. About a fifth had never attended school (22.4%).

Almost two thirds were married or cohabiting with a partner (67.8%). The majority of the sample had been employed three months prior to the interview (77.3%) and came from a household that was in the poor and poorest urban wealth categories (71.6%). Twenty three participants from our sampled population reported PTSD symptoms and this yielded a PTSD prevalence of 4.18%.

With respect to the univariate association with PTSD, being a woman from a household in the poorest category was associated with the occurrence of PTSD even though the association was not strong. No other sociodemographic characteristics were associated with PTSD (Table 5.1).

Table 5.1: Associations between sociodemographic characteristics and PTSD

	PTSD symptoms n (%)	No PTSD symptoms n (%)	P value
Age at last birthday			
18-29	5 (21.74)	132 (25.05)	0.63
30-44	10 (43.48)	178 (33.78)	
≥ 45	8 (34.78)	217 (41.18)	
Educational status			
None	6 (26.09)	117 (22.20)	0.74
Any Primary	7 (30.43)	158 (29.98)	
Some Secondary	1 (4.35)	66 (12.52)	
Completed secondary/Tertiary	9 (39.13)	186 (35.29)	
Marital status			
Married/Cohabiting	15 (65.22)	358(67.93)	0.59
Single/Never married	3 (13.04)	40 (7.59)	
Separated/widowed/divorced	5 (21.74)	129 (24.48)	
Employed in the last 3 months			
No	8 (34.78)	117 (22.20)	0.15
Yes	15 (65.22)	410 (77.80)	
Wealth index			
Poorest	13 (56.52)	171 (32.45)	0.05≠
Poor	5 (21.74)	205 (38.90)	
Slightly wealthier	5 (21.74)	151 (28.65)	

≠Marginal finding

The prevalence of the trauma experiences during childhood ranged from 8.9% (sexual abuse), 50.4% physical abuse and 70.4% emotional abuse. Women without a history of child sexual abuse were less likely to report PTSD symptoms and this was statistically significant. The experience of recent stressors was not associated with reports of PTSD symptoms among the women. Women who were not depressed and not anxious were also significantly less likely to report PTSD symptoms. (Table 5.2).

Table 5.2: Association between traumatic events, mental disorders and PTSD

Childhood trauma	PTSD symptoms n (%)	No PTSD symptoms n (%)	P value
Sexual abuse			
None	15(65.22)	486(92.22)	0.000*
Any sexual abuse	8(34.78)	41(7.78)	
Emotional abuse			
None	4(17.39)	159(30.17)	0.246^
Any emotional abuse	19(82.61)	368(69.83)	
Physical abuse			
None	8(34.78)	265(50.28)	0.146
Any physical abuse	15(65.22)	262(49.72)	
Recent Stressors (Items)			
Suffered serious illness, injury or assault			
No	18 (78.26)	450 (85.39)	0.34
Yes	5 (21.74)	77 (14.61)	
Serious illness, injury or assault happened to a close relative			
No	21 (91.30)	492 (93.36)	0.66^
Yes	2 (8.70)	35 (6.64)	
Parent, child or spouse died			
No	20 (86.96)	469 (88.99)	0.73^
Yes	3 (13.04)	58 (11.01)	
A close family friend or another relative (aunt, cousin, grandparent) died			
No	22(95.65)	454 (86.15)	0.19^
Yes	1 (4.35)	73 (13.85)	
Recent stressors (Total)			
No stressors	14 (60.87)	375 (71.16)	0.28
Any stressors	9(39.13)	152 (28.84)	
Past year IPV			
No	18 (78.26)	441 (83.68)	0.49
Yes	5 (21.74)	86 (16.32)	
Depression			

No depression	22(95.65)	524(99.43)	0.15 [^]
Depression	1(4.35)	3(0.57)	
Anxiety			
No anxiety	16(69.57)	496(94.12)	0.00*
Anxiety	7(30.43)	31(5.88)	

[^]Fishers exact *p<0.05

We conducted a regression analysis to examine the relationship between PTSD symptoms, traumatic events and mental disorders while controlling for sociodemographic characteristics. Child sexual abuse, recent IPV and symptoms of anxiety were all associated with a higher PTSD score. For age and wealth status, there were marginal associations with a higher PTSD score. The age of women who were 30-44 compared to those who were in the 18-29 year age group were marginally more likely to have higher PTSD scores. Women in the slightly wealthier category were less likely to report PTSD symptoms compared to the poorest women. PTSD was not significantly associated with a history of other recent stressors among the sample (Table 5.3).

Table 5.3: Multivariable linear regression model of PTSD symptoms and traumatic events and mental disorders adjusting for socio demographic characteristics (N=550)

Variable	Beta	95% CI	P value
Childhood trauma			
Sexual abuse			
None	Ref		
Any sexual abuse	3.82	1.75-5.88	0.00
Emotional abuse			
None	Ref		
Any emotional abuse	0.81	-0.56- 2.19	0.24
Physical abuse			
None	Ref		
Any physical abuse	0.55	-0.70-1.82	0.38
Recent Stressors (Total)			
No stressors	Ref		
Any stressors	1.08	-0.17-2.34	0.09
Past year IPV			
No	Ref		
Yes	1.83	0.20-3.46	0.02
Depression			
No Depression	Ref		
Depression	2.08	-4.71-8.88	0.54
Anxiety			

No Anxiety	Ref		
Anxiety	6.38	4.09- 8.67	0.00
Age at last birthday			
18-29	Ref		
30-44	1.68	-0.04- 3.41	0.05*
≥ 45	0.95	-0.99-2.90	0.33
Educational status			
None	Ref		
Any Primary	-0.05	-1.94-1.83	0.95
Some Secondary	-0.41	-2.77-1.94	0.73
Completed secondary/Tertiary	0.24	-1.78-2.27	0.81
Marital status			
Married/Cohabiting	Ref		
Single/Never married	1.65	-0.92-4.22	0.20
Separated/widowed/divorced	0.87	-0.88-2.63	0.32
Employed in the last 3 months			
No	Ref		
Yes	0.46	-1.96-1.03	0.54
Wealth index			
Poorest	Ref		
Poor	-0.73	-2.17-0.70	0.31
Slightly wealthier	-1.53	-3.15-0.07	0.06*

*Marginal findings CI Confidence Interval

5.5 Discussion

Our study set out to estimate the prevalence of PTSD and associated factors among women in a slum setting in South West Nigeria. We found a prevalence of 4.18% for PTSD with only 23 women among our sample of 550 women reporting symptoms of PTSD. Sexual abuse during childhood, recent experience of IPV as well as anxiety were significantly associated with PTSD. A history of recent stressful life events was not associated with PTSD. None of the sociodemographic characteristics considered (age, education, marital status or wealth index) were associated with PTSD. However, in the multivariable linear regression analysis there were marginal associations with age and wealth index only.

We observed low prevalence of PTSD among our respondents despite their precarious circumstances in the slum environment, which included high levels of adverse life events, very limited resources and services. In urban slums elsewhere, researchers have described greater prevalence of PTSD among residents of as a result of the adversity experienced within such settings. Mbwayo et al reported a

PSTD prevalence of 15.4% among respondents in urban slums in Kenya (Mbwayo *et al.*, 2013) while Ndugu et al reported 21% among women in informal settings in South Africa (Ndungu *et al.*, 2020). A high prevalence of 29% and 20% was also reported among women in low income neighbourhoods in the United States (Golin *et al.*, 2016; Jain *et al.*, 2018). There is evidence in literature to suggest that resilience may play a role in moderating the effect of trauma and subsequent PTSD experienced. This has been seen among populations that are at particular risk for PTSD such as police officers and fire-fighters (Yuan *et al.*, 2011; Lee *et al.*, 2014), as well as among undergraduate women (Ferguson and Brausch, 2020). Resilience may explain the low prevalence we observed.

We found that a history of sexual abuse in childhood was associated with PTSD in adults, a finding which has been reported previously (Powers *et al.*, 2015; Simonelli *et al.*, 2015; Sanchez, Pineda, Chaves, Q. Zhong, *et al.*, 2017). Child sexual abuse has also been reported widely on the African continent (Haileye, 2013; Ombok *et al.*, 2013; Choi *et al.*, 2015; Charak *et al.*, 2017; Mutavi, Mathai and Obondo, 2017). We did not find an association between physical and emotional abuse during childhood and PTSD although other studies have reported an association. McLaughlin and colleagues who analysed data from the World Mental Health Surveys suggest that 4 childhood adversities out of a potential of 12 were associated with the onset of PTSD. Childhood physical abuse and sexual abuse were amongst these (McLaughlin *et al.*, 2017). In another analysis from the WMHS led by Koenen and colleagues, the odds of lifetime PTSD among trauma exposed adults was 2.5 (Koenen *et al.*, 2017).

The experience of sexual and / or physical IPV represents a trauma in adulthood. We found that recent IPV was significantly associated with higher PTSD symptoms among our sample. Research from other sub-Saharan African countries has reported an association (Machisa, Christofides and Jewkes, 2017). Mahenge and colleagues in Tanzania also found higher levels of PTSD among

pregnant women who had experienced IPV (Mahenge *et al.*, 2013). A multi-country study among university students from 25 countries (7 countries from sub-Saharan Africa) also suggested that PTSD was associated with IPV in all of the sub-Saharan African countries (Pengpid and Peltzer, 2020).

We found an association between PTSD and anxiety. This association has been reported by other authors (Ginzburg, Ein-Dor and Solomon, 2010; Spinhoven and Penninx, 2014). There are two possible explanations for this finding: it is possible that women with anxiety may be more susceptible to developing PTSD (or vice versa) or it could be that they share common symptoms (Carmassi *et al.*, 2020). There may be an overlap of symptoms of PTSD and the spectrum of both anxiety and depressive disorders which may mask anxiety and mood symptoms and as such must be borne in mind when assessing for PTSD (Carmassi *et al.*, 2020). A bidirectional association between anxiety and PTSD has been suggested in the literature with some researchers reporting that anxiety predisposes to PTSD in the face of trauma while others indicate that PTSD is a risk factor for anxiety (Gros *et al.*, 2012; Spinhoven *et al.*, 2014). It is clear that anxiety occurs very commonly with PTSD and as such treatment measures for PTSD should factor in the need to screen for as well as treat this comorbidity.

We did not find any association between the experience of stressful life events such as serious illness, injury or assault or death of a relative within the preceding six months and symptoms of PTSD.

However, other studies conducted in different settings have shown that stressful life events can contribute to the development of PTSD (McLaughlin *et al.*, 2010; Kempainen *et al.*, 2017; Van Den Berg *et al.*, 2017). The findings with respect to the association between sociodemographic characteristics and PTSD have been mixed in the literature. Age has generally not been associated with PTSD as has been reported by authors in Africa (Atwoli *et al.*, 2013; Mahenge *et al.*, 2015; Nothling *et al.*, 2015; Nwoga, Audu and Obembe, 2016). However, Kobayashi in the United States reported an association between the middle aged subgroup of women and PTSD, with middle aged

women being more likely to have PTSD compared to younger and older women after controlling for potential confounders (Kobayashi, Sledjeski and Delahanty, 2019). Our results are similar to those of Kobayashi, with women aged 30 to 44 having statistically significant higher PTSD scores than women aged 18- to 29. Middle aged women are thought to carry the greater burden and stress of care- giving for both the younger and older individuals within the community and a disruption of that role due to trauma can be distressing to them and make them more likely to suffer from anxiety and depression (Softys and Tyburski, 2020). Some authors have reported that educational level is associated with PTSD with individuals with higher levels of education less likely to develop PTSD (Xue *et al.*, 2015; Birkeland *et al.*, 2017; Olf, 2017; Taru *et al.*, 2018; Asnakew *et al.*, 2019). We did not find an association between education and PTSD in our sample. Other researchers in Africa have reported that education level, employment status, religious affiliation and marital status were not associated with PTSD (Mugisha *et al.*, 2015).

The aetiology of PTSD is multifactorial and differs depending on context (McLaughlin and Lambert, 2017). The context of our study may have protected participants from exposure to trauma and the development of PTSD. The particular slum environment in urban Ibadan where the study took place is stable and homogenous. Most participants belonged to one ethnic group and had lived in the area for most or all of their lives. Literature has suggested that living in neighbourhoods that have greater ethnic density is protective against mental disorders (Gruebner *et al.*, 2017; De Vries *et al.*, 2018). This has been described as a function of the perception of being in similar socioeconomic circumstances to everyone else in the environment and with it the a higher acceptance of income inequality and less mental stress (De Vries *et al.*, 2018). With a majority of our slum sample falling within the same lower wealth categories, this explanation may not be out of place.

It is evident in that not everyone exposed to trauma develops PTSD. The results of our study among this sample has highlighted this clearly with unexpectedly low levels of PTSD in spite of a substantial history of childhood trauma as well as less than optimal living conditions of a slum setting. This suggests the need for further research to explore resilience to PTSD and individual and community-based factors that may provide protection from developing symptoms of PTSD in the slum setting in Ibadan, Nigeria. Factors such as social connectedness, self – esteem and social support have been found to be protective against the development and severity of PTSD (Adams and Boscarino, 2006; Skogstad, Skorstad, Lie, Conradi, Heir and Weisæth, 2013; Kintzle *et al.*, 2018; Schwartz and Shrira, 2018).

The results of the study need to be interpreted in the light of several limitations. From a study design standpoint, the cross-sectional nature of our study precludes conclusions about the temporal relationship between IPV, anxiety and PTSD. The HTQ was developed in the United States and it is possible that cultural differences between our study population and the original population for which it was designed could have resulted in underreporting of PTSD symptoms. Several studies have suggested that there might be cultural explanations for mental disorders such as depression and that language and culture shape views of illness (Kirmayer, Gomez-Carrillo and Veissière, 2017; Mayston *et al.*, 2020).

We also cannot be sure whether translation of instruments might have resulted in the loss of meaning of items measuring mental disorders as has been suggested by seminal work on translation and mental health care in South Africa, a culturally and linguistically diverse society (Kilian *et al.*, 2014, 2020).

Reports of childhood trauma and stressors could be affected by recall bias with participants underreporting the occurrence. However, retrospective accounts of trauma have been found to be acceptable for PTSD research (Dohrenwend *et al.*, 2006). Certain kinds of traumatic events were not

measured in this study. We did not ask about experiences of witnessing a murder or witnessing of rape, to name a few. Our study was not sufficiently powered because of our expectation of a higher prevalence of PTSD in this sample based on previous research that had indicated higher prevalence of PTSD in a slum setting.

5.6 Conclusions

Our findings shed light on the low levels of PTSD symptoms among this community based sample of poor urban women. However, there was a significant relationship between the experience of childhood trauma and PTSD. In addition, IPV and anxiety were also associated with PTSD. Our findings add to the literature which suggests that the consequences of early childhood experiences of trauma especially childhood sexual abuse and IPV can have quite serious mental health consequences including PTSD. These results speak to the urgency to prevent both childhood abuse as well as IPV. Policy and actions geared towards these two issues would be particularly important as both are preventable and ultimately could reduce the incidence of PTSD.

5.7 Declarations

Ethics approval and consent to participate

Ethical approval for this study was sought from the University Of Witwatersrand Faculty Of Health Science Human Ethics Committee (reference number: M180249) as well as the Ethics Review Board of the Oyo State Ministry of Health, Oyo State, Nigeria (reference number: AD/13/479/762). Both ethics committees approved the study. Permission to conduct the study was also obtained from appropriate local community authorities and written informed consent was obtained from all participants. The principles of beneficence, justice & non-maleficence were observed.

Consent for publication

Not applicable

Availability of data and materials

The data that support the findings of this study are available from the corresponding author upon reasonable request

Competing interests

The authors declare that they have no competing interests

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Authors' contributions

OS was involved in conception of the study, data collection, data analysis and interpretation and drafting the article. SM was involved in conception of the study, data analysis and interpretation and

critical revision of the article. NC was involved in conception of the study, data analysis and interpretation and critical revision of the article. OS, SM and NC all approved of the final version of the manuscript to be published.

06

Paper Three

6.0 The relationship between protective factors and common mental disorders among female urban slum dwellers in Ibadan, Nigeria.

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6.1 Abstract

Background

On the African continent, many people live in conditions of adversity known to be associated with the onset of mental disorders, yet not all develop a mental disorder. The prevalence of common mental disorders such as depression and anxiety in the general population of Nigeria is comparatively low. Prevalence data of mental disorders in slum settings in Nigeria is sparse. There is a need to better understand the relationship between protective factors and the occurrence of common mental disorders in the Nigerian slum context. This study aimed to describe the relationship between protective factors and the occurrence of common mental disorders among female urban slum dwellers in Ibadan, Nigeria.

Methods and Findings

A cross sectional household survey of 550 women was conducted in slum settlements in Ibadan, Nigeria. Interviewer administered questionnaires were completed to elicit information on protective factors (social connectedness, self-esteem, social support, resilience) and common mental disorders (depression, anxiety and stress). The DASS-21 was used to measure common mental disorders and protective factors were measured using the Social Connectedness Scale, Multidimensional Scale of Perceived Social Support, Resilience scale and the Rosenberg Self Esteem Scale. A multivariable logistic regression model was employed to examine associations while adjusting for relevant confounders.

Common mental disorders were reported by 14.0% of the respondents. Resilience and social support were found to be protective against reporting symptoms of common mental disorders. Women who reported higher levels of social support and resilience were less likely to report common mental disorders (OR:0.96, 95% CI 0.93,0.98) and (OR:0.95, 95% CI 0.91, 0.99) respectively. Women who were 65 years and older were also less likely to report the occurrence of common mental disorders (OR:0.38, 95% CI 0.15, 0.98) compared to those aged 18-34 years.

Conclusion

Social support and resilience appear to be protective against common mental disorders among these respondents. Further research should be conducted to explore the pathways through which protective factors reduce the likelihood of the occurrence of common mental disorders. This would be important in the development of mental health interventions.

Key words: Common Mental Disorders, Protective Factors, Nigeria, Female, Urban Slum Dwellers

6.1 Introduction

In LMIC (LMIC) including in sub-Saharan Africa, mental disorders are common and may be exacerbated by overburdened or fragmented health systems, high patient load and few psychiatrists, psychologists and other mental health professionals (Naslund *et al.*, 2017). In addition, virtually all LMIC have significant slum populations where there are higher levels of mental illness, and poorer outcomes (Otieno *et al.*, 2020). Research from slums in India and Bangladesh suggests high prevalence of mental disorders with 75% of adolescents in the slums of India reporting at least one type of mental disorder, which was similar to what was found among slum dwelling adults in Bangladesh (Gruebner *et al.*, 2012; Chauhan and Dhar, 2019). With the estimated increase in the population of slums across the world in the coming years, there is a corresponding potential for an

increase in the number of individuals at risk of common mental disorders within slum populations (Friesen *et al.*, 2019).

Women are at greater risk of developing common mental disorders, a finding which has been consistently highlighted in the literature (Baxter *et al.*, 2013; Steel *et al.*, 2014; Kiely, Brady and Byles, 2019). The cause for the gender variation is not entirely clear but evidence has pointed towards the role that hormones may play as well as a greater prevalence of internalizing symptoms among women which serve as triggers for mental disorders (Albert, 2015). Reproductive hormones and stress hormones fluctuate in women over the life course starting from puberty, during pregnancy and the postpartum period as well as the perimenopausal period and can predispose to the development of common mental disorders in vulnerable women (Barnes, 2014).

The prevalence of common mental disorders among Nigerian women has been examined through various lenses. The prevalence of depression has been found to range from 27.8% to 42.5% among women that are HIV positive, postpartum women, victims of IPV and among infertile women (Mapayi *et al.*, 2013; Obadeji, Ogunlesi and Adebowale, 2014; Odinka *et al.*, 2018; Agbaje *et al.*, 2019; Adelosoye *et al.*, 2020). Similarly, the prevalence of anxiety among Nigerian women has ranged between 5.6% and 33.3% among female victims of IPV, women within the community and among women postpartum (Mapayi *et al.*, 2013; Odinka *et al.*, 2018; Soyannwo, Matthew Adebayo and Sigbeku, 2018; Agbaje *et al.*, 2019). Evidence in the literature with respect to stress among Nigerian women is limited as existing research has focused mainly on occupational settings (Ezenwaji *et al.*, 2019; Onigbogi and Banerjee, 2019; John-Akinola, Ajayi and Oluwasanu, 2020). However, Adamu *et al.* reported moderate levels of perceived stress among HIV positive women (Adamu, Mchunu and Naidoo, 2019).

Adversity and poverty, which are characteristics of slum environments, have been associated with the onset of mental disorders such as depression, anxiety and stress (Subbaraman, Nolan, Shitole, Sawant, Shitole, Sood, Nanarkar, Ghannam, Bloom, *et al.*, 2014). Lower income and poorer housing, lower levels of education and food insecurity are also associated with mental disorders, although the relationship is not consistently reported (Lorant *et al.*, 2003; Saraceno, Levav and Kohn, 2005; Lund *et al.*, 2010; F. I. Reiss *et al.*, 2019; Tirfessa *et al.*, 2019). There is also a link between women's socioeconomic status and their mental health with women of lower socioeconomic status being at greater risk of mental disorders than those of higher socioeconomic status (Honjo *et al.*, 2014; Navarro-Mateu *et al.*, 2015).

The literature has also suggested that etiopathological factors such as environmental, personal and biochemical factors have a role to play in the onset of common mental disorders. These could range from factors such as maternal physiological stress in pregnancy, nutritional deficiency and environmental pollution to the state of biochemical factors within the body such as cortisol levels (Schmidt, 2007; Chi *et al.*, 2015; Choi *et al.*, 2019; Khan *et al.*, 2019).

Over the past decade, in addition to research to understand risks and extent of mental disorders, there have been studies exploring protective factors which may reduce the risk of developing mental disorders, including social support, social connectedness and resilience (Maulik, Eaton and Bradshaw, 2010; Windle, 2011; Teo, Choi and Valenstein, 2013; Åslund *et al.*, 2014; Kleiman, Riskind and Schaefer, 2014; Dray *et al.*, 2017). Resilience has been described as a function of active coping which in turn makes it possible for an individual to navigate conditions of adversity (Ozbay *et al.*, 2007; Shrivastava and Desousa, 2016). A plethora of research has examined factors such as social support and social connectedness and how these might be protective against the occurrence of common mental disorders in various settings (Teo, Choi and Valenstein, 2013; Kleiman, Riskind and Schaefer,

2014; Gariépy, Honkaniemi and Quesnel-Vallée, 2016; Dray *et al.*, 2017; Färber and Rosendahl, 2018). Systematic reviews on the relationship between social support and social relationships on mental health suggest that social support across the life course may protect against depression with a strong inverse relationship (Santini *et al.*, 2015; Gariépy, Honkaniemi and Quesnel-Vallée, 2016; Tough, Siegrist and Fekete, 2017). Social connectedness and resilience have also been found to be protective against common mental disorders (Schure, Odden and Goins, 2013; Saeri *et al.*, 2018b).

Various factors have been associated with an individual's ability to cope and be resilient in the adverse conditions of the slum environment. For example, in research among adolescents in the slums of Kenya and among children in South Africa and Malawi, resilience was associated with social support and a nurturing environment of care and encouragement as well as positive individual attributes such as social competence, critical thinking and autonomy (Ombati and Ombati, 2016; MacEdo *et al.*, 2018). However, researchers also point out that multiple factors interacting at various ecological levels are responsible for making an individual resilient (Southwick *et al.*, 2014; Masten and Barnes, 2018). Other researchers have also found social support and resilience to be predictive of mental well-being (Van Droogenbroeck, Spruyt and Keppens, 2018; Wu *et al.*, 2018).

The prevalence of common mental disorders in Nigeria has varied widely. While depression in community-based surveys in Nigeria has been found to be quite low (5.5%), (Adewuya *et al.*, 2018), there are variations for sub-populations. For instance, among individuals with varying clinical condition's such as stroke, hypertension, epilepsy and lymphatic filariasis the prevalence of depression ranged between 20.0 - 42.9% (Owolabi *et al.*, 2016; Obindo *et al.*, 2017; Ademola *et al.*, 2019b; Olibamoyo *et al.*, 2019). Similar findings have been observed in the prevalence of anxiety within the general population compared to specific subgroups in Nigeria. A community-based prevalence of anxiety was reported to be between 3.5% and 4.1% (Gureje *et al.*, 2006; Adewuya *et al.*, 2018).

However, in sub-groups such as medical students and adolescents the prevalence of anxiety was found to be 28.8% and 34.1% respectively (Badru *et al.*, 2018; Chinawa *et al.*, 2018; Esan *et al.*, 2019). A systematic review of stress among health workers in Nigeria reported a prevalence of 61.9% and among undergraduate medical students stress levels were similarly high (59.8%) (Asani, Farouk and Gambo, 2016; Onigbogi and Banerjee, 2019).

There are limited studies in Nigeria that have explored the relationship between protective factors and common mental disorders. Among medical students in Nigeria, an inverse relationship was found between the occurrence of common mental disorders and religiosity and social support. Similar findings were reported among elderly Nigerians (Nwoke, Chukwuorji and Ebere, 2016; Esan *et al.*, 2019).

Research into the health of slum inhabitants has become increasingly important considering the fact that almost two billion people would be living in slums globally by the year 2030 (UN-Habitat, 2003; Mahabir *et al.*, 2016). In addition, the sustainable development goals three, six, nine and eleven speak both directly and indirectly to the need to promote the health and well-being of slum inhabitants (UN, 2015b; Morton, Pencheon and Squires, 2017). In Nigeria, all large cities are characterized by the existence of slums which arise majorly from two types of slum formation. Either as traditional slums located in the city centre or the peri-urban slums located at the outer core of the city. Currently, about 57.7 million Nigerians live in slums (FGN, 2016). The number of people living in slums is expected to increase over the next decade (FGN, 2016; Akimoju and Sadri, 2017).

Mental health research among slum communities in Nigeria is particularly sparse. One study found that the prevalence of depression among adolescents in an urban slum in South West Nigeria was 29.4% and that social support was associated with better mental health outcomes (Cheng *et al.*, 2014). Understanding the experience of common mental disorders in slum environments and the role that

protective factors may play are important in this context. Our study was conducted to extend the literature on common mental disorders in slum environments and to explore the relationship between common mental disorders and protective factors among female urban slum dwellers in Ibadan, Nigeria.

6.2 Methods

6.2.1 Study Design and Setting

We conducted a community based cross-sectional study in slum areas of Ibadan in Oyo State, Southwest Nigeria in October 2018. Ibadan, the capital of Oyo State, is one of the largest cities in West Africa with 13 identified slum areas based on the UN Habitat classification of slums (UN-Habitat, 2012). Five out of the thirteen identified slums were selected randomly for the study, as it was not feasible to include all and the characteristics of the slums are similar. The slums are located within the central core area of Ibadan metropolis and are characterized by poor housing conditions and a haphazard cluster of houses made of mud, plastered with cement, with rusted corrugated iron roofs. Municipal facilities such as running water, waste disposal and sanitation services are non-existent and there are no access roads between dwellings (Adedimeji *et al.*, 2008; Makinde, 2012b; Akimoju and Sadri, 2017). Levels of literacy are low and most of the residents have low socioeconomic status (Adedimeji *et al.*, 2008; Makinde, 2012b; Akimoju and Sadri, 2017). Houses are commonly comprised of multigenerational households and represent a homogenous community of individuals (Makinde, 2012b).

6.2.2 Study Population

The study population consisted of adult women above the age of 18 years who were resident members of the selected households during the period October to November 2018. For a respondent to be eligible to participate in the study she was 18 years or older and a regular resident of the household. Regular residence was defined in line with similar research as spending at least four nights a week in

the household for at least one year (Machisa *et al.*, 2011). A minimum sample size of 418 women was determined based on sample size calculations utilising a prevalence of depression of 5.5% among a community sample in Nigeria (Adewuya *et al.*, 2018) and adjusting for a 10% non-response. However, as the data for this study was part of larger study that examined other variables and required a larger sample size to achieve other stated objectives with adequate power, a final sample size of 550 was utilised.

6.2.3 Sampling

A multistage sampling technique was employed. A simple random sampling of five of thirteen slum settlements in Ibadan was generated through the use of a table of random numbers. For the purposes of this study, Enumeration Areas (EAs) which are clearly delineated areas commonly utilised in the conduct of censuses in Nigeria were used as primary sampling units. The EAs are demarcated by the National Population Commission (NDHS, 2013). From the five selected slum settlements, one third of the EAs were selected randomly giving a total of 42 EAs. However this number was increased to 68 in order to ensure that there were enough households available per EA to select just one eligible respondent per household while still bearing in mind the required sample size. Weights used in the analysis were generated and applied based on population parameters for the slum settlements and the enumeration areas.

The NDHS 2013 report which is a nationally representative survey indicated 48 households per EA (NDHS, 2013). However, we assumed an average of 60 households per EA (four households per house in 15 houses per EA) given that slum settings are characterized by higher population density. One household was selected randomly by balloting per house where there were at least two households while one adult woman was selected randomly by balloting.

6.2.4 Procedures

Six female research assistants who had attained tertiary level education collected data through face-to-face interviews using standardized questionnaires programmed using Open Data Kit software uploaded on mobile devices. Training of research assistants took place over five days and they were trained in research ethics, the standard operating procedures for recruitment and conducting interviews and well as the key topics relevant for the study. A distress protocol was implemented and research assistants were trained to identify participants in distress and to provide referrals for immediate care to a clinical psychologist or psychiatrist should this be required. A small sachet of detergent was given to each participant as a token of appreciation for participation in the study.

In addition to the administration of questionnaires, research assistants were also trained to review questionnaires for completeness as well as maintenance of ethical standards. Training on the Open Data Kit was also carried out to teach the research assistants how to use the software and upload the data once obtained.

The questionnaire was translated to the most-commonly spoken language in the slums, Yoruba, and back translated to ensure that original meanings were preserved (Danielsen, Pommergaard and Burcharth, 2015). The questionnaire was pre-tested in an enumeration area within a slum area that had not been sampled. All detected ambiguities were removed and corrections made following analysis of the pre-test.

6.2.5 Ethical approval

Ethical approval for the study was obtained from the University of the Witwatersrand Faculty of Health Science Human Ethics Committee as well as the Ethics Review Board of the Oyo State Ministry of Health, Oyo State, Nigeria. Permission to conduct the study was also obtained from appropriate local community authorities. Respondents were given information on the study and

participation was voluntary. Written informed consent was obtained from all respondents. Interviews were conducted in private to ensure confidentiality.

6.2.6 Measures

Items of interest explored included common mental disorders with specific reference to depression, anxiety and stress, the presence of protective factors (social connectedness, self – esteem, perceived social support and resilience) as well as sociodemographic characteristics.

Outcome variable

The outcome variable for this study was the occurrence of common mental disorders. This was assessed using the Depression Anxiety and Stress Scale (DASS-21), a short version of the original 42 item depression, anxiety and stress scale. The internal consistency was found to be acceptable with a Cronbach's alpha of 0.73. Based on an exploratory factor analysis we found that the individual subscales for depression, anxiety and stress did not load on the three subscales as intended by the developers of the instrument (Lovibond and Lovibond, 1995). A previous study in Nigeria had reported high validity and reliability of the DASS in Nigeria among medical students (Coker, Coker and Sanni, 2018). This study reported good internal consistency for both the overall instrument as well as the subscales. Since this was not the case in our study, we decided not to use the subscales but instrument as a whole which measured the symptoms of common mental disorders.

Protective factors

Social connectedness was measured using the Social Connectedness Scale (Revised). This is a revision of the original 8 item scale to a more robust and encompassing version (Lee and Robbins, 2005). The revised version is a 20 item scale rated on a 6 point Likert type scale ranging from 1 = strongly disagree to 6 = strongly agree with ten positive and ten negative questions and a total score range of 20 to 120 (Lee, Draper and Lee, 2001). Respondents were asked statements that reflect various ways in which they had viewed themselves within the preceding week. Higher scores indicate higher levels

of social connectedness. Our examination of the internal consistency of this scale revealed it to be good with a Cronbach's Alpha of 0.81.

Self-esteem was measured using the Rosenberg self-esteem scale. It is a 10 item scale that identifies global self-worth by measuring both positive and negative feelings about the self with responses provided on a 4 point Likert scale of 'strongly agree' to 'strongly disagree (Rosenberg, 1965). Higher scores indicate higher levels of self-esteem. The scale has been favoured for use by several researchers and is noted to have undergone several rounds of psychometric analysis and validation lending further credence to its utility (Robins and Trzesniewski, 2001; Schmitt and Allik, 2005; Park and Yang, 2017). Several researchers also tend to favour treating self-esteem as a continuous variable from the scores obtained from the self-esteem scale which is what we also adopted (Newark, Elsässer and Stieglitz, 2016; Andreassen, Pallesen and Griffiths, 2017; B. Sun *et al.*, 2017). In this study, we found the internal consistency to be fair with a Cronbach's Alpha of 0.73.

For social support we used the Multidimensional Scale of Perceived Social Support developed by Zimet and colleagues in 1988 (Zimet *et al.*, 1988). This is a 12-item instrument that measures perceptions of support from family, friends and a significant other on a 7 point Likert scale. Total scores range from 12 to 84. Higher scores indicate higher levels of perceived social support. It has also been noted to have good reliability and validity and has been used by other researchers (Miloseva *et al.*, 2017; Tambag *et al.*, 2018; Alsubaie *et al.*, 2019; Ioannou, Kassianos and Symeou, 2019). In order to enhance precision, we treated social support as a continuous rather than a categorical variable. We found good internal consistency with a Cronbach's alpha of 0.89.

Resilience was measured using the resilience scale developed by Wagnild and Young and which is a summated reporting scale that utilizes a 7 point Likert format (Wagnild and Young, 1993). It has been previously used in Nigeria (Abiola and Udofia, 2011). The total resilience score ranges between 25

and 175 points in our study, the resilience scale had good internal consistency with a Cronbach's alpha of 0.88.

Sociodemographic characteristics

Sociodemographic characteristics: these included age, educational status, marital status, employment status, occupation and wealth index. Wealth index was assessed using a measure of relative wealth for urban populations derived from nationally representative survey data (Chakraborty *et al.*, 2016).

6.2.7 Statistical analysis

Data were analyzed using STATA version 14 (StataCorp, 2015). The analysis was cross sectional and all independent variables were between subjects. No participants were missing data for either DASS-21 or the protective factors. We confirmed the internal consistency of scales using a Cronbach's alpha. We adjusted for the cluster sampling during analysis using the *svyset* command in STATA. We also weighted the data to ensure that it was representative of the Ibadan slums using *pweight*. Weights used in the analysis were generated and applied based on population parameters for the slum settlements and the enumeration areas. The weights were calculated by taking the inverse of the probability of selection for each individual in the data sample. We generated a dichotomous variable, with those who had any symptoms of common mental disorders as "1" and those that did not have any symptoms of common mental disorders as "0". We calculated medians and the interquartile range for all protective factors. We calculated the odds ratios and 95% confidence intervals for all protective factors. Multivariable binary logistic regression model was employed to examine the relationship between protective factors (social support, resilience, self-esteem and social connectedness) and the occurrence of common mental disorders while controlling for relevant socio-demographic factors such as age and marital status. We assessed the goodness of fit using the Hosmer and Lemeshow's test and found that our model fitted the data well. All analyses were conducted at 5% level of significance.

6.3 Results

The median age of women in our study was 40 years with an interquartile range of 30-55 years. About a fifth had not acquired any formal schooling (23.3%) and almost two thirds were married/cohabiting (65.5%). The majority had been employed during the preceding three months (76.0%) and reported low socio-economic status with 72.8% categorized as being from the poor and poorest urban wealth quintiles (Table 6.1).

Table 6.1: Sociodemographic characteristics

Characteristic	Frequency	Unweighted percentage (%)	Weighted percentage (%)
Age at last birthday (n=550)			
18-34	198	36.00	37.21
35-49	169	30.73	29.99
50-64	92	16.73	16.98
≥65	91	16.55	15.83
Median age(median, IQR ^a)	40(IQR:30-55)		
Educational status (n=550)			
None	123	22.36	23.36
Any primary	165	30.00	28.38
Some secondary	67	12.18	12.58
Completed secondary/tertiary	195	35.45	35.69
Marital status			
Married/cohabiting	373	67.82	65.52
Single/never married	43	7.82	9.39
Separated/divorced/widowed	134	24.36	25.09
Employed in the last 3 months (n=550)			
Yes	425	77.27	76.02
No	125	22.73	23.98
Alcohol use in the past 12 months (n=550)			
Yes	35	6.36	5.33
No	515	93.64	94.67
Urban Wealth index quintiles (based on assessment of household assets) (n=550)			
Poorest	184	33.45	33.43
Poor	210	38.18	39.44
Slightly wealthier	156	28.36	27.14

^aIQR: Inter-quartile range

The majority of the women did not report any mental health symptoms. Overall, only 14.0% reported any symptom of a common mental disorder. (Table 5.2).

Table 6.2: Mental Health Status

Mental health	Frequency	Weighted percentage (%)
Mental health status		
Any mental health symptoms	77	14.00
No mental health symptoms	473	86.00

Majority of the respondents reported protective factors. The median social connectedness score was 97 (IQR: 88-101) while for self esteem the median was 30 (IQR: 29-32). Social support and resilience had median scores of 62(IQR: 53-72) and 142 (IQR:137-148) respectively (Table 5.3).

Table 6.3: Scores for protective factors: Social Connectedness, Self Esteem, Perceived Social Support and Resilience

Protective factors	Median	Interquartile Range
Social connectedness		
Social connectedness score	97	88-101
Self Esteem		
Self Esteem score	30	29-32
Social Support		
Social Support score	62	53-72
Resilience		
Resilience score	142	137-148

Unadjusted odds ratios of age group, marital status, education, wealth index as well as the protective factors of social support, resilience, self esteem and social connectedness with common mental disorders are presented together with the fully adjusted model in Table 4. No associations were found between age group, marital status, education, wealth index, self esteem, resilience, social connectedness and common mental disorders.

In the adjusted model, higher social support, higher levels of resilience and older age were all found to be protective against the occurrence of common mental disorders. For every one point higher on the social support scale, women were 4% less likely to report a mental disorder. Similarly, for every point higher on the resilience scale women were 5% less likely to report a mental disorder. Women aged 65 or older were 12% less likely to report any common mental disorder than women aged 18 to 34 years of age. There were no differences in self-esteem among those reporting symptoms of mental disorders and women who did not report any mental health symptoms.

Table 6.4: Unadjusted odds ratios and fully adjusted multiple regression model of protective factors and common mental disorders (N=495)

Variable	OR(95% CI)	AOR (95%CI)
Social Support	0.96 (0.93- 0.98)*	0.96 (0.93- 0.98) *
Resilience	0.96 (0.92 -1.01)	0.95 (0.91- 0.99) *
Self Esteem	1.04 (0.96-1.12)	1.09 (0.99-1.19)
Social Connectedness	0.99 (0.94-1.04)	-
Age group:		
18-34	Ref.	
35-49	0.91(0.47-1.75)	0.75(0.41-1.37)
50-64	1.28(0.56-2.89)	1.01(0.40-2.55)
≥65	0.88(0.48-1.63)	0.38(0.15-0.98) *
Marital status:		
Married/cohabiting	Ref.	
Single/never married	1.43(0.63-3.23)	1.38(0.51-3.72)
Separated/divorced/widowed	1.35(0.73-2.49)	1.33(0.56-3.15)
Education:		
None	Ref.	
Any primary	0.69(0.40-1.17)	-
Some secondary	0.87(0.45-1.67)	
Completed secondary/tertiary	0.65(0.39-1.09)	
Urban Wealth index:		
Poorest	Ref.	
Poor	0.78(0.44-1.38)	-
Slightly wealthier	0.73(0.35-1.52)	

p≤ 0.05**

6.4 Discussion

Our study set out to examine the prevalence of common mental disorders and the relationship between protective factors and reporting symptoms of anxiety, depression and stress among female urban slum dwellers in Ibadan, Nigeria. This was achieved through a cross sectional study design appropriate to estimate prevalence. The study had an adequate sample size with sufficient power and a representative sample. The prevalence of common mental disorders was found to be 14.0%. Protective factors against the occurrence of common mental disorders included resilience, social support and older age. There was no association between self-esteem or social connectedness with the occurrence of any common mental disorder in our study.

In the slums in Ibadan, despite poor living conditions and a context characterized by limited social protection or services, we found low levels of common mental disorders. This finding is not consistent with what has been reported in other places where those living in poor urban neighbourhoods in Bangladesh and Ghana were found to have high levels of common mental disorders (Gruebner *et al.*, 2012; Greif and Dadoo, 2015). One of the possible explanations for the low levels of common mental disorders in our study is the ethnic density and long history of the traditional slums. Many slums elsewhere in sub-Saharan Africa, such as those in Kenya and South Africa, are receiving areas for migrants and are characterized by diversity in ethnicity and culture and as a result, lower levels of trust and cohesion (Williams *et al.*, 2020). High levels of social cohesion are present in the inner city Ibadan slums. Social cohesion has been found to be positively associated with mental well-being suggesting that higher ethnic density in communities may be protective against common mental disorders such as depression and anxiety (Elliott *et al.*, 2014; Daoud *et al.*, 2016; Williams *et al.*, 2020). For instance, ethnic density within migrant communities in high income countries has been associated with lower levels of mental disorders (Bécares, Dewey and Das-Munshi, 2018). The reason that ethnic density is protective against mental disorders is that it fortifies an individual's sense of self-

identity since this is generally defined by the perceptions of others within their immediate environment. Hence individuals see themselves as being similar to those in their environment which fosters greater self-esteem (Halpern and Nazroo, 2000; Das-Munshi *et al.*, 2010; Shaw *et al.*, 2012).

As reported elsewhere, the women who participated in our study reported very high levels of social support which was associated with lower odds of common mental disorders. Informal neighbourhoods in Nigeria and Bangladesh where social networks and social support have been identified as strong, have been found to moderate the effects of adversity, thereby promoting mental health (Olagunju *et al.*, 2015; Rabbani *et al.*, 2018). Within the Ibadan slums, poverty and limited access to opportunities are a common experience and may represent a rallying point to which women in the communities can identify and accept. This phenomenon has been described as fatalism (Nepomuceno *et al.*, 2015).

While social support was protective against common mental disorders we did not find any association between social connectedness and common mental disorders among our respondents. A reason for this might be that because there were such high levels of social connection among this group, not much variability was observed in the data and hence it was not significantly associated with the occurrence of common mental disorders. Another reason could be that the measure was not validated previously in slum settings. It is also possible that social support might be more important in protecting against common mental disorders than social connectedness which might highlight the value of social quality over quantity.

Resilience was also found to be protective against common mental disorders among our sample of women. This finding corroborates the results from other studies. Coope *et al* found resilience to be protective of mental health in their review among internal migrants in LMIC and this was also seen by Wu *et al* in their review among both cross border and internal migrant youth across several countries (Wu *et al.*, 2018; Coope *et al.*, 2020)). Our findings of the protective nature of resilience contribute to

the literature on the role that resilience might play in the promotion of mental health. There is evidence to suggest that interventions to improve resilience are associated with lower rates of common mental disorders as reported by Mathias and colleagues in their study among female slum dwellers in India (Mathias *et al.*, 2018).

Researchers from other parts of Africa have reported associations between the occurrence of common mental disorders and lower educational levels, unemployment and poverty (Sipsma *et al.*, 2013; Greif and Dodoo, 2015; Denur, Tesfaw and Yohannis, 2019).

We acknowledge limitations in this study. Recall bias cannot be entirely ruled out as respondents were required to provide information about experiences that occurred in the past. In addition, being a cross-sectional study, the temporal nature of the associations cannot be ascertained. Social desirability bias must also be considered as a limitation as respondents may have under-reported symptoms of mental disorders given the stigma attached to mental illness in the study setting. Finally, we used the DASS as a whole rather than attempting to use the subscales for depression, anxiety and stress as the internal consistency was not optimal.

In spite of acknowledged limitations, the results of this study have implications for the development of mental health interventions in slum settings. Protective factors as observed in this study may represent drivers for the promotion of positive mental health as has been suggested by other researchers (McDowell, White Hughto and Reisner, 2019).

6.5 Conclusion

Low levels of common mental disorders reported among women in the inner-city slum setting suggest that the ethnic density among slum inhabitants may play a role in their mental health. In addition, our study identified associations between protective factors (social support and resilience) and common mental disorders as well as age and common mental disorders. Further epidemiological studies are

recommended to isolate these factors and their relationship to mental disorders. Programmatic interventions to enhance resilience and social support are also recommended but may not be sufficient. Given the high levels of poverty, lack of services and infrastructure in the slum setting, structural changes to address these issues are essential if the well-being of women in the slums and all Nigerians as a whole is to be assured.

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07

Discussion

7.0 Discussion

7.1 Introduction

The goal of this thesis was to investigate and understand the relationship between violence across the life course, protective factors and mental disorders among adult women living in a slum setting in Ibadan Nigeria. Specifically, the thesis aimed to: a) examine the prevalence and factors associated with PTSD among female urban slum dwellers in Ibadan, Nigeria; b) to describe the relationship between common mental disorders and protective factors among female urban slum dwellers in Ibadan, Nigeria; c) to examine the relationship between a history of childhood trauma and the experience of IPV among female urban slum dwellers in Ibadan, Nigeria and finally d) to determine the prevalence and factors associated with social support and resilience among female urban slum dwellers in Ibadan, Nigeria. Three journal manuscripts (Chapters 4-6) address the objectives of the study. The first two manuscripts have been published, while the third is currently under review (Sekoni, Mall and Christofides, 2021a, 2022).

The purpose of this discussion is to reflect on the results that have been presented in the preceding chapters and to discuss how these findings are situated within the existing body of literature that addresses trauma that occurs over the life course. This is with specific reference to childhood trauma, IPV and other traumatic life events as well as how these traumas may affect mental health. It is with this in mind that the results are discussed in a somewhat chronological order of the occurrence of trauma over the life course starting with childhood trauma

7.2 Summary of Key findings

Overall, the data from the papers suggests that increased events of childhood trauma, as measured by one or more forms of physical, sexual or emotional abuse or neglect is associated with greater odds of subsequently experiencing intimate partner violence with an associated dose response trend (Sekoni, Mall and Christofides, 2021b, 2022). In other words, women who had experienced more than one

form of childhood trauma had greater odds of experiencing intimate partner violence and those who had experienced more than two forms of childhood trauma had even greater odds of intimate partner violence. In addition to this, childhood emotional abuse/neglect was found to be the commonest form of childhood trauma, reported by about 1 in 3 of the women in the slums. Childhood trauma was also associated with common mental disorders among these women. Experiences of intimate partner violence are common among women in Ibadan slums and the prevalence is consistent with the national prevalence.

With respect to common mental disorders, depression, anxiety and PTSD were found to be low compared with prevalence estimates observed in other slums from other parts of the world (Solanki and Kulkarni, 2017; Chan *et al.*, 2020; Pawar *et al.*, 2022). Prevalence in the slum setting was similar or lower than other community-based studies in Nigeria which reported 5.5% , 28.9% and 17.4% for depression, anxiety and PTSD respectively (Adewuya *et al.*, 2018; Ben-ezra *et al.*, 2020; Soyannwo, Adebayo and Sigbeku, 2020). Not all women who experience childhood trauma and trauma during adulthood such as IPV develop mental disorders. Protective factors against the occurrence of common mental disorders among these women included resilience, social support and older age.

This PhD work raises an important question about why levels of mental disorders are lower in Ibadan slums than what has been reported in other slum settings (Solanki and Kulkarni, 2017; Chan *et al.*, 2020; Pawar *et al.*, 2022) in LMICs. In line with this, it is important to interpret the results in the context of the study setting. Unlike most slum settlements in low income countries that developed as a result of rural-urban migration as well as due to in country trading activities, slums within the core of Ibadan arose from an expansion of residential settlements that existed before the British colonization (Fourchard, 2003) (as was discussed in greater detail under subsection 3.1).

7.3 Experience of trauma across the life course.

In this sample, as has been reported elsewhere, experiences of physical, sexual or emotional trauma during childhood was associated with subsequent experiences of IPV during adulthood. The experience of violence during childhood is particularly critical as childhood represents the period when the foundation for the risk of re-victimization may be established and subsequent episodes of trauma over the life course entrench this (Kong and Easton, 2019). This phenomenon has been suggested by the cumulative disadvantage theory which posits that long term effects of childhood trauma are potentially sustained by factors associated with childhood trauma such as poverty, illiteracy, social seclusion and maladaptive coping (McDonough *et al.*, 2015). In addition, research has shown that childhood experiences of trauma are associated with subsequent perpetration of child maltreatment when parenting their own children, leading to a cycle that is known as the intergenerational transmission of violence (Widom *et al.*, 2015; Assink *et al.*, 2018).

The experiences of violence are associated with subsequent risk of mental and physical health problems and this can occur at any stage of the life course and indeed could occur several times over the life course (Norman *et al.*, 2012b). The degree to which the experience of violence at various stages of the life course are associated with subsequent mental and physical health problems are a function of the duration, severity, types and chronicity of the violent experiences (Armour and Sleath, 2014; Steine *et al.*, 2017).

The women in this study setting had considerable experience with violence over the life course with about one in three women having experienced violence as a child and/or as a result of intimate partner violence. The experience of violence during childhood has been found to be associated with major implications on the health and well-being of individuals over the course of their lives (Moffitt, 2013).

7.4 Experiences of trauma by women in Ibadan slums

The major experiences of trauma that were assessed among the women in this study were childhood trauma and intimate partner violence. Globally and specifically on the African continent, childhood trauma is a common phenomenon (Barth *et al.*, 2013; Badoe, 2017). Childhood trauma is also widespread in Nigeria with all forms of childhood maltreatment being reported viz: sexual, physical, emotional abuse as well as physical and emotional neglect (Chinawa *et al.*, 2014b; Fakunmoju and Bammeke, 2015; Adeyera, Uchendu and Owoaje, 2018; David *et al.*, 2018; Palermo *et al.*, 2019; Amole *et al.*, 2021). In Nigeria, child sexual abuse is thought to range from 25.7% to as high as 68.6% (Manyike *et al.*, 2015; David *et al.*, 2018; Gabriel-Job, Alikor and Akani, 2019; Chime *et al.*, 2021). Research evidence suggests that children who grow up in slums are at greater risk of child abuse (Rahayu and Hamsia, 2020). Even though this study did not specifically determine whether the respondents grew up in the slums, the likelihood of this is high due to the traditional, intergenerational nature of the slum surveyed.

The reporting of child sexual abuse in this study was not consistent with research from elsewhere where much higher rates have been reported as we found that only 8.9% women in our study reported a history of childhood sexual abuse. Given that the literature suggests that living in conditions of adversity and poverty may be risk factors for sexual abuse, this was not expected (Kunnuji and Esiet, 2015; Veenema, Thornton and Corley, 2015). However, the sensitive nature of sexual abuse may have contributed to these findings via low levels of disclosure due to stigma which is a common phenomenon with sexual abuse (Sawrikar and Katz, 2017; David *et al.*, 2018; Ramabu, 2020; Rueda *et al.*, 2021). In addition, the fact that perpetrators of sexual abuse of children are usually known to the child as well as the commonly seen living arrangements in these slums where children live with their parents and other extended family members presupposes that low levels of disclosure would be very likely.

A history of childhood emotional abuse and neglect was found to be quite common among the women in this study (70.4%) which is much higher than what has been reported by other researchers both within and outside Nigeria (Meinck, Fry, *et al.*, 2017; Chandraratne, Fernando and Gunawardena, 2018; Annor *et al.*, 2020b; Fung, Chung and Ross, 2020; Lee *et al.*, 2021). The psychological stress associated with the prevalent poverty of the slum environment and the subsequent tensions that arise as a result of this may fuel an emotional backlash from parents and caregivers to children. This link between poverty, stress and emotional abuse and neglect of children has been identified in the literature (Meinck, Fry, *et al.*, 2017).

With respect to the prevalence estimate for childhood physical abuse, when compared to reports from other researchers across the globe as well as in Africa, the prevalence has been found to range from 4.7% to 34.8% (MacMillan *et al.*, 2013; Fang *et al.*, 2015; Kamimura *et al.*, 2015; Jacob *et al.*, 2020; Myers, Bantjes, *et al.*, 2021; Myers, Browne, *et al.*, 2021; Sagram *et al.*, 2021). However, evidence from nationally representative data in Nigeria reports a much higher prevalence of childhood physical abuse with about one in two children experiencing physical abuse (Miller *et al.*, 2018). The results of this study were similar with a prevalence of 50.4%. Two major reasons could be responsible for this. Firstly, poverty and neighbourhood disadvantage have been found to be associated with higher levels of child abuse and neglect and may explain the higher rates of physical abuse observed in our study (Lane *et al.*, 2012; Farrell *et al.*, 2017; Maguire-jack and Font, 2017). Secondly, the use of physical violence as a means of discipline is widely acceptable in many LMIC including Nigeria as it is thought to be an effective way to elicit appropriate behaviour in children (Lansford *et al.*, 2014; Fakunmoju, 2018).

IPV was another type of trauma that was explored in this study. The experience of IPV has been identified as a global public health problem that affects women irrespective of educational level or

socioeconomic status. Generally speaking, the literature suggests that there are several factors that could pose as risk or protective factors against the experience of IPV among women. Younger age, parents with less than high school education, substance use by partner, family history of violence and a controlling partner are examples of risk factors that have been highlighted in the literature while older age, social support and the availability of community based services have been found to be protective (Capaldi *et al.*, 2012; Deribe *et al.*, 2012; Agumasie Semahegn, Tefera Belachew and Misra Abdulahi, 2013; Semahegn and Mengistie, 2015; Gerino *et al.*, 2018; Yakubovich *et al.*, 2018).

For this study, the experience of IPV among women in this slum setting was similar to that of women reported from nationally representative data within the country (NDHS, 2018). This was an unexpected finding as the prevalence of IPV has been reported to be higher in settings where conditions of adversity are prevalent such as in the slum environment. The potential for under reporting could have contributed to the findings observed in this study. Adverse conditions such as widespread poverty and inadequate social services serve as additional stressors that could precipitate the use of violence against women particularly where patriarchy and the subjugation of women is the norm (Sinha *et al.*, 2012b; Jungari and Chinchore, 2020; Winter, Obara and McMahon, 2020). This has also been tied to higher rates of neighborhood violence in the slums where violence is normative and is generally condoned (Yakubovich *et al.*, 2020). However, the relationship between neighborhood violence and IPV was not the focus of this study.

The link between childhood trauma and the experience of IPV in adulthood has been reported by researchers in several places (McMahon *et al.*, 2015; Abajobir *et al.*, 2017; Afifi *et al.*, 2017; Murphy, Elklit and Shevlin, 2020). In furtherance to this association, researchers have also identified that the likelihood of experiencing IPV in adulthood increases with an increase in the number of specific forms of abuse experienced as a child (Dugal *et al.*, 2019; Brassard *et al.*, 2020). The results of this study

mirrored this evidence from literature as the women in this study were more likely to experience IPV if they had experienced abuse as children. This was particularly so when they had experienced more than one form of abuse as children.

7.5 Mental disorders in Ibadan slums – why is Ibadan different?

In spite of the adverse conditions of the slum setting, including overcrowding and poor infrastructure, the women in this study had low levels of common mental disorders. This contradicts what has generally been reported in the literature with respect to common mental disorders in slum settings where higher levels of common mental disorders have been observed (Abdi *et al.*, 2021b; Nair *et al.*, 2021). The women in this study were mostly very poor, with lower levels of education, living in conditions of inadequate social infrastructure which has been suggested in the literature to be risk factors for mental disorders (Wahlbeck *et al.*, 2017; Bezerra *et al.*, 2021; Nair *et al.*, 2021; Yuan *et al.*, 2021) Poverty as a risk factor has been described in the literature as double edged, serving as both a cause as well as an effect of mental disorders (Wahlbeck *et al.*, 2017).

Scholars have suggested that the social determinants of mental disorders include factors such as low income, unemployment, lower levels of education, poorer housing quality and general poor quality of the built environment including social infrastructure and health facilities (Compton and Shim, 2015; Sederer, 2016; Silva, Loureiro and Cardoso, 2016). By definition, slum settings are characterized by all of these poorer living conditions and lower socioeconomic status and therefore poorer mental health would be expected (UN-Habitat, 2012; Reiss, 2013; Barnett *et al.*, 2022). However, comparatively low levels of depression, anxiety and PTSD were observed among women living in the Ibadan slums. Ndungu *et al.* (2020) in their work among women in South African slums found that almost half of them had experienced depression and almost one in four women had symptoms of PTSD (Ndungu *et al.*, 2020). Mutiso *et al.* (2018) found that almost a third of women in slum and rural areas of Kenya reported common mental disorders (Mutiso *et al.*, 2018). Lambert and Denckla also

reported high levels of mental disorders among slum dwelling women in Kenya (Lambert and Denckla, 2021).

There have been strong suggestions in the literature that resilience and social support are able to buffer the effects of trauma in certain individuals in which case mental disorders such as depression, anxiety and PTSD do not develop (Streb, Hällér and Michael, 2014; Levey *et al.*, 2016; Fletcher *et al.*, 2017; Okech *et al.*, 2018; Price *et al.*, 2018; Tirone *et al.*, 2021). Again, the possibility that factors such as social support and resilience may act as a buffer against common mental disorders as well as the benefits of social cohesion among this homogenous group of women cannot be ignored. Evidence in literature supports the role that these factors can play in the preservation of mental health (Becares, Nazroo and Stafford, 2011; Elliott *et al.*, 2014; Daoud *et al.*, 2016; Bécares, Dewey and Das-Munshi, 2018; Williams *et al.*, 2020).

In support of the literature highlighting the inverse relationship between social support and resilience with mental health disorders, social support and resilience were found to be high among the women in this study. This might have played a role in the lower levels of mental disorders observed. This has also been observed among other study populations. Liu *et al.* (2021) and Cheng *et al.* (2014) found that social support facilitated self-esteem and resilience and buffered against common mental disorders among adolescents while Martini *et al.* (2015) and Biaggi *et al.* (2016) reported similar findings among pregnant women (Cheng *et al.*, 2014; Martini *et al.*, 2015; Biaggi *et al.*, 2016; Liu *et al.*, 2021).

Further, for individuals that already have been diagnosed with common mental disorders, social support has been reported to be beneficial in facilitating recovery (Ghafari *et al.*, 2021; Thomas *et al.*, 2021). In connection with this, peer to peer support via the more recent mechanism of social media has also been proven to be beneficial (Naslund *et al.*, 2016). In addition, social support has also been found to make up for environmental and socioeconomic adversity that can be found in slums (Alaazi

et al., 2021) which could have served the women in this study in good stead as opposed to the widely held belief of a universal health disadvantage in slums (Alaazi and Aganah, 2019). Some characteristics such as multiple generations cohabiting and homogenous language and ethnic origin of people living in this slum setting could also be a source of appreciable social support for the women . These may act as networks that could provide social support and were readily available in this setting. These results suggest that even though there is a general consensus in the literature as to the deleterious health effects of the slum environment on the inhabitants, it is not absolute as the social milieu that is present may either buffer or contribute to negative health outcomes. The discourse in the literature corroborates this line of thought as Das-Munshi *et al* (2012), Dorsett *et al* (2015) as well as Bécares *et al* (2018) found that when people live where ethnic and language density is high, it mitigates the risk for mental disorders (Das-Munshi *et al.*, 2012; Dorsett *et al.*, 2015; Bécares, Dewey and Das-Munshi, 2018). Similarly, researchers have also found that living arrangements where multiple generations cohabit serve as a source of social support, enhances wellbeing which in turn reduces the risk for mental disorders (Quashie, 2015; Zimmer and Rada, 2020)

With respect to resilience, in this study, higher levels of resilience were found to be protective against the occurrence of common mental disorders. Researchers have highlighted that higher levels of resilience are associated with lower levels of mental disorders (Spies and Seedat, 2014). Skrove *et al* (2013) found that resilience was protective against mental disorders among adolescents with Farber and Rosendahl (2018) also reporting similar findings in their meta -analysis of clinical populations (Skrove, Romundstad and Indredavik, 2013; Färber and Rosendahl, 2018). Other researchers have also reported same (Song *et al.*, 2021). Panter-Brick *et al* (2012) posit that the pathway from conditions of adversity to resilience would require an examination of the specific social and environmental contexts of individuals rather than solely focusing on individual attributes of self-efficacy (Panter-Brick and Eggerman, 2012). Bearing in mind these risk factors it is however possible that the sociocultural

context of this slum may have played a role in enhancing the individual resilience of these women. Southwick et al highlighted the importance of contextual factors in facilitating resilience (Southwick *et al.*, 2014). It is also possible that the degree to which the adversity of a slum setting is perceived by these women may be affected by cultural interpretations of hardship. Almost all of the women in this sample were of the Yoruba tribe and the fatalistic approach to life has been identified as the prevalent belief system among the Yoruba based on their culture and tradition (Babátúndé, 2017) . This fatalistic approach lends itself to the notion that whatever an individual experiences is predetermined by “Ori” (literally translated as “head” but actually connotes an individual’s lot in life) and is out of one’s control and as such, the individual must accept it and live with it (Babátúndé, 2017). Further, culture specific reactions to adversity in the global south have been found many times to be at variance to what obtains in more developed countries and may mediate the influence of trauma experienced (Afana *et al.*, 2010; Zimmermann *et al.*, 2014). Fatalism has been suggested as being responsible for the paradox where individuals who experience significant adversity are less likely to perceive and express it as so and as such are seen to be more resilient (Maercker *et al.*, 2019).

7.6 Limitations

A number of limitations must be taken into account in interpreting the results of this PhD. The cross-sectional nature of the study design limits our ability to establish causality between variables for example, IPV and PTSD. This is a well-known limitation of cross-sectional study designs however, the benefits of this design in this instance cannot be overlooked as research on the mental health effects of trauma in slums generally as well as within the Nigerian context specifically is of much value given the fact that slum populations having been growing rapidly world -wide and are predicted to continue to do so. The emerging health needs of this slum population cannot be ignored and this would provide baseline information which is a major use of cross sectional studies and on which relevant interventions can be designed (Kesmodel, 2018).

In addition, the moderate size of our sample may have limited the nature of sub-analyses that could have been conducted between variables as opposed to if the sample size was much larger. This was evident for PTSD where the prevalence was particularly low and where further sub analysis of associations between PTSD and stressful life events may have been affected by limited study power. The DASS measure which was used to measure common mental disorders is a self-report tool and self-report tools have been found to indicate exaggerated prevalence rates for mental disorders (Thombs *et al.*, 2018). This is because even though they assess symptoms that are assessed through clinical interviews, they are not discriminant with respect to non-psychiatric conditions that can produce similar symptoms (Thombs *et al.*, 2018). However, this scale had been validated in Nigeria and we found it to be reliable on testing.

In assessing the occurrence of stressful life events among these women, the life events tool is designed to elicit only dichotomous responses (i.e whether and event had been experienced or not) and by so doing we could have missed out on the context of multiple stressful life events that some individuals might have experienced with its concomitant effect on their mental health.

In the use of the HTQ for the assessment of PTSD it is possible that cultural differences between our study population and the original population for which it was designed could have resulted in underreporting of PTSD symptoms. Several studies have suggested that there might be cultural explanations for mental disorders such as depression and that language and culture shape views of illness (Kirmayer, Gomez-Carrillo and Veissière, 2017; Mayston *et al.*, 2020).

With respect to the experience of childhood trauma, recall bias could have occurred based on how far in the past that traumatic events had occurred given that such events are events that must have occurred before the individual turned 18 years of age. In addition to this, it is also known that in an

attempt to cope with the experience of trauma and preserve mental health, suppression-induced forgetting of unwanted memories occurs and this could have influenced the responses given by the women when asked about their experience of childhood trauma (Costanzi *et al.*, 2021). Another important limitation would be the cultural acceptance of actions that are deemed as traumatic in other climes. Indeed, many behaviors that are considered abusive such as corporal punishment may be embraced by others as an acceptable and even desirable method of child rearing and this could have led to under reporting (Pinquart, 2021). In Nigeria, harsh parenting is culturally normative and respondents perception of some of the traumatic events that they experienced during childhood may have been seen as acceptable (Ofoha and Ogidan, 2020).

For IPV, particularly lifetime prevalence of IPV, recall bias cannot be ruled out for similar reasons as have been highlighted above for childhood trauma. The violent acts might have been forgotten particularly if they had occurred very long ago. This might have been the case with our findings of lower levels of reports of IPV among the older women. In addition, traumatic memories may also have been forgotten as an adaptive measure to get rid of unpleasant memories. Even though we made every attempt to ensure privacy, the physical structure of the slum environment i.e the very little space within and between houses might have led inadvertently to family members or neighbours being able to listen in on the interviews. Such scenarios have been associated with backlash in situations where there is a history of intimate partner violence (Okenwa, Lawoko and Jansson, 2009).

In this study we only used one measure to examine resilience, however the use of several measures would have provided a more robust picture of the state of resilience among these women as has been identified by the literature (Afifi and MacMillan, 2011). In spite of this, to the best of our knowledge, this study provides information about resilience in the slum setting that had not been available prior to

now. This also holds true for our findings on social support, self-esteem and social connectedness in slum settings in Nigeria where evidence from slums are sparse.

We acknowledge the need for an examination of how protective factors interact with childhood trauma and IPV to modify the occurrence of common mental disorders as this would have provided a clearer picture as to the experience of trauma among this population. We thus identify this as an area for future research.

It is possible that some respondents might have received some form of mental health care such as drug treatments, psychotherapy, or counselling prior to the conduct of our study. This might have impacted on mental health outcomes.

Since the study combined violence experiences over the life course i.e. childhood trauma, intimate partner violence (IPV) and adverse life events it was a challenge to do an exhaustive literature review of all three types of violence.

Even though life stressors were regarded as traumatic events in this study, some researchers argue that the severity of the event determines whether it can be regarded as traumatic or not highlighting the DSM criteria as a reference (Verlinden *et al.*, 2013). However, other researchers indicate that events that may not necessarily meet the DSM criteria could be distressing enough to result in mental health concerns (Robinson and Larson, 2010). In view of this we acknowledge that our measure of traumatic events could be debatable

With respect to our examination of violence, other interpersonal violence experiences such as non-partner sexual violence were not explored even though could also impact on mental health. This approach was chosen because our focus was the experience of violence perpetrated by an intimate partner.

08

Conclusion and Recommendations

8.1 Conclusion

This research aimed to investigate and understand the relationship between violence across the life course, protective factors and mental disorders among adult women living in a slum setting in Ibadan Nigeria. This was undertaken through the use of a cross sectional community-based survey using a multistage sampling technique to answer specific study objectives. The findings in this thesis suggest that in spite of the adverse circumstances that the women in this study live in, majority of them have not suffered from common mental disorders which was surprising based on the extant literature. This represents a novel contribution of this work and warrants further enquiry into the different level protective factors and pathways to resilience both from a qualitative and additional quantitative study approaches. It also contributes to the literature that speaks to violence over the life course and its mental health consequences with specific reference to slum settings. This is particularly important given the predicted population growth of slums globally as a result of rural-urban migration (United Nations, 2015b; UN-Habitat, 2016).

Increase in the number of types of childhood trauma experienced was associated with an increase the risk of being a victim of intimate partner violence. This has been corroborated in the literature with the ‘chain of risk’ model explaining the relationship between early life experiences and subsequent psychosocial function in adults (Kuh *et al.*, 2003).

Trauma was found to be associated with mental disorders however, this association was buffered by the presence of protective factors which were found to be unexpectedly high among this sample given their peculiar circumstance of adversity. In order to understand these findings fully, we must also take into account the cultural context in which trauma occurs and by extension, how it influences the development of protective factors. This is particularly so as the literature has highlighted the role of the environment and its ability to foster growth and resilience (Ungar, 2011, 2013; Ungar and Theron, 2020). Future research should also be geared toward evaluating interventions that foster resilience and

2	<p>Uncertainty about the prevalence of common mental disorders among women living in slums</p>	<p>There are low levels of common mental disorders among women in Ibadan slums in spite of adverse conditions of the slums.</p> <p>Protective factors against the occurrence of common mental disorders include resilience and social support</p>	<p>3. Women’s social support groups should be encouraged by the Government and fostered at the community level to enhance and sustain protection against mental disorders through social connections.</p> <p>4. Adequate treatment services should be available and accessible for women who already suffer from mental disorders</p> <p>5. Further research into factors that are associated with the development of protective factors</p> <p>6. Further research of qualitative nature and that explores the neighbourhood, culture, beliefs and other factors at other levels is required.</p> <p>7. Such data can also be collected quantitatively through mental health related surveys or longitudinal studies</p>	<p>Policy makers Researchers</p> <p>Policy makers Researchers</p>
3	<p>Uncertainty about the relationship between childhood trauma and experiences of IPV</p>	<p>Childhood trauma is associated with the experience of IPV in adulthood.</p> <p>Increased severity of childhood trauma is associated with greater odds of the experience of IPV with an associated dose response trend</p>	<p>6. Mental health services should be operationalized at the primary health care level for timely intervention and provision of mental health care for women at risk of IPV based on a history of childhood trauma</p> <p>7. Effective collaboration and referral systems should be established between the State</p>	<p>Policy makers Researchers Clinical practice</p>

			Ministry of Health, Ministry of Women Affairs and the Ministry of Justice in order to provide robust interventions for victims of IPV	
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Policy recommendations

We seek to recommend critical actions that will have a domino effect in reducing the burden of childhood trauma. There are several global initiatives that would be supportive if fully adopted and implemented in Nigeria. These include the prohibition of child marriage and full implementation of compulsory universal basic education as enshrined in the Universal Basic Education Act of 2004 (FGN, 2004). Based on this, we recommend to policy makers that there is domestication and implementation of the Child Rights Act in Nigeria in all states in the country as this was enacted into Federal law in 2003 (Enemo, 2021). Currently, there are still 12 out of 36 States in the country that have not domesticated this act (Mobolaji, Fatusi and Adedini, 2020). This will serve to mitigate childhood trauma and by extension, the mental health consequences associated with childhood trauma. This is particularly critical for children who live under the adverse conditions of the slums where the risk of exposure to trauma is much higher. The feasibility of interventions such as the provision of shelters for children in the slums should be explored as a child protection strategy.

The domestication of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) is also urgently required to protect women against violent acts. In tandem with this would be the need to provide poverty alleviation programs, women empowerment schemes and girl-child education programs to combat socioeconomic adversity that fuels gender inequality in slum settings.

We also recommend the development of health education policies to be implemented at the community level to discourage cultural tolerance of child maltreatment and harsh parenting. The role of parental interventions through parent-caregiver support can also be explored as a strategy to combat child maltreatment. The INSPIRE Program under the auspices of the WHO is an example of a global framework to end violence against children and has been yielding promising results (Cluver *et al.*, 2020). For women who already suffer from mental disorders, there is a need to ensure adequate treatment services are available and accessible. A comprehensive policy that addresses the integration of mental health care at the primary health care level as well as encourages the recruitment and retention of mental health specialists is urgently needed.

In addition, mechanisms to enhance and sustain protective factors are recommended. This can be achieved by the establishment of women's social support groups which are encouraged by the Government (through the provision of soft loans and micro-credit) and fostered at the community level to enhance protection against mental disorders through social connections. The effectiveness and impact of these measures can be assessed by researchers to enhance evidenced based decision making by policy makers.

Programme recommendations

We recognize that mental disorders are a common consequence of IPV and based on this we recommend that there should be operationalization of mental health services at the primary health care level for timely intervention and provision of mental health care for women at risk of IPV based on a history of childhood trauma. Mental health services are a component of primary health care in Nigeria, however, implementation at primary health care level is almost non-existent (Anyebe *et al.*, 2019, 2020).

Victims of IPV not only suffer mental health consequences but also face other challenges such as financial and legal. Many times women are unable to leave their abuser due to inability to sustain themselves financially and require support such as vocational training and micro credit in order to overcome this constraint. Legal support may also be required to facilitate a formal separation from their abuser. In line with this, effective collaboration and referral systems should be established between the State Ministry of Health, Ministry of Women Affairs and the Ministry of Justice so that women who are identified in the health system as being victims of IPV can be referred to the Ministry of Women Affairs for financial support and thereafter to the Ministry of Justice for legal support. This would provide a robust support framework from which victims can benefit and be supported to full recovery.

Further research

We recommend longitudinal studies that compare the correlates of protective factors among women from slum settings and other urban settings which will provide greater insight into the findings observed in this thesis.

We also recommend further research of qualitative nature and that explores the neighbourhood effect, culture, beliefs and other protective factors at other ecological levels. Such data can equally be collected quantitatively through mental health related surveys or longitudinal studies. In addition, further qualitative research is required to better understand different level pathways to resilience.

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Appendix I: Ethics Approval Certificates



R14/49 Dr Olutoyin Sekoni

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M180249

NAME: Dr Olutoyin Sekoni
(Principal Investigator)
DEPARTMENT: School of Public Health
Idaban, Oyo State, Nigeria


PROJECT TITLE: The relationship between traumatic events, PTSD
and intimate partner violence among adult men
and women living in a peri-urban setting in Idadan, Nigeria

DATE CONSIDERED: 23/02/2018

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Nicola Christofides and Sumaya Mall

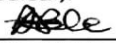
APPROVED BY: 
Professor CB Perry, Chairperson, HREC (Medical)

DATE OF APPROVAL: 25/06/2018

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 Research Office Secretary on the Third Floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. 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.** The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in **February** and will therefore be due in the month of **February** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

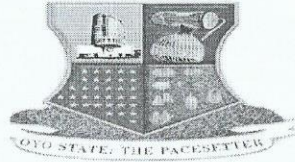

Principal Investigator Signature

Date 1st July 2018

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

TELEGRAMS.....

TELEPHONE.....



MINISTRY OF HEALTH
DEPARTMENT OF PLANNING, RESEARCH & STATISTICS DIVISION
PRIVATE MAIL BAG NO. 5027, OYO STATE OF NIGERIA

Your Ref. No.
All communications should be addressed to
the Honorable Commissioner quoting
Our Ref. No. AD 13/479/ 762

20th April, 2018

The Principal Investigator,
Department of Community Medicine,
College of Medicine,
University of Ibadan.

Attention: Olutoyin Sekoni

**ETHICS APPROVAL FOR THE IMPLEMENTATION
OF YOUR RESEARCH PROPOSAL IN OYO STATE**

This is to acknowledge that your Research Proposal titled: "The relationship between traumatic events, PTSD and intimate partner violence among adult men and women leaving in a peri-urban setting in Ibadan Nigeria has been reviewed by the Oyo State Ethic Review Committee.

2. The committee has noted your compliance. In the light of this, I am pleased to convey to you the full approval by the committee for the implementation of the Research Proposal in Oyo State, Nigeria.

3. Please note that the National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations, in line with this, the Committee will monitor closely and follow up the implementation of the research study. However, the Ministry of Health would like to have a copy of the results and conclusions of findings as this will help in policy making in the health sector.

4. Wishing you all the best.


Dr. Abbas Gbolahan
Director, Planning, Research & Statistics
Secretary, Oyo State, Research Ethics Review Committee

Appendix II: Questionnaire

The relationship between violence across the life course, protective factors and mental disorders among adult women living in a slum setting in Ibadan, Nigeria

Introduction

Good day. My name is _____. I am working with/I am a PhD student at the University of Witwatersrand working on a project to better understand the relationship between the experience of violence across the life course, protective factors and mental disorders among adult women.

You are invited to volunteer to be part of this study that is happening all over this enumeration area. You should not agree to take part in this study unless you fully understand what is asked of you and are completely happy with all the procedures involved. If you do not understand the information or have any other questions, feel free to ask the interviewer.

Enumeration area code.....

Serial Number.....

Section A: Sociodemographic characteristics

	Question	Options	Skip pattern
101.	How old were you as at your last birthday?	Specify age (in years)	
102.	What is your marital status?	1. Single, never married 2. Married 3. Separated 4. Divorced 5. Widowed 6. Cohabiting	If 1. Ask 3 or else skip to 4
103.	If single ask have you ever had a relationship?	Yes.....1 No.....0	
104.	What is the highest level of school you completed?	1. None 2. Some Primary 3. Primary 4. Junior Secondary 5. Senior Secondary 6. Tertiary (specify)	
105.	What religion do you practice?	1. Christianity 2. Islam 3. Traditional 4. Others (specify)	
106.	What tribe do you belong to?	1. Yoruba 2. Hausa	

		3. Igbo 4. Others (specify)	
107.	What is your current occupation?	1. Trader 2. Cab/bus driver 3. Motorcycle rider 4. Artisan 5. Civil servant 6. Teacher 7. Others (Pls specify).....	
108.	Have you been employed within the last three months?	1. Yes 2. No	
109.	Approximately how much income in cash do you earn from work each month?	Specify (in naira)..... 1. None/Not currently working 2. No response 3. Less than N10000 4. N10000-N20000 5. More than N20000 but less than N50000 6. More than N50000	
110.	Does your household have an electric iron?	1. Yes 2. No	
111.	Does your household have a fan?	1. Yes 2. No	
112.	Does your household have a television?	1. Yes 2. No	
113.	Does your household have a fridge?	1. Yes 2. No	
114.	Does your household have a generating set?	1. Yes 2. No	
115.	Does your household have cable TV?	1. Yes 2. No	
116.	Does your household have electricity?	1. Yes 2. No	
117.	What is the main material of the walls in your house	1. Cane 2. Palm 3. Dirt (mud) 4. Other (Pls specify)	
118.	What is the main material of the floor in your house	1. Earth 2. Sand 3. Dung Other (Pls specify)	
119.	What type of fuel does your household mainly use for cooking?	1. Wood 2. Kerosene 3. Other (Pls specify)	
120.	Does any member of this household have a bank account?	1. Yes 2. No	

Section B: Experience of Childhood Trauma

This section will address experiences that you might have had when you were growing up before the age of 18 years. Please read the following statements. To the right of each you will find five numbers, ranging from "1" (Never true) on the left to "5" (Very often true) on the right. Circle the number which best indicates your feelings about that statement. For example, if a statement was never true for you, circle "1", if it was sometimes true circle "3" and if it was very often true, circle "5" etc

	When I was growing up.....	Never true	Rarely True	Sometimes True	Often True	Very often True
201.	I didn't have enough to eat	1	2	3	4	5
202.	I knew that there was someone to take care of me and protect me	1	2	3	4	5
203.	People in my family called me things like 'stupid', 'lazy' or ugly	1	2	3	4	5
204.	My parents were too drunk or high to take care of the family	1	2	3	4	5
205.	There was someone in my family who helped me feel that I was important or special	1	2	3	4	5
206.	I had to wear dirty clothes	1	2	3	4	5
207.	I felt loved	1	2	3	4	5
208.	I thought that my parents wished I had never been born	1	2	3	4	5
209.	I got hit so hard by someone in my family that I had to see a doctor or go to the hospital	1	2	3	4	5
210.	There was nothing I wanted to change about my family	1	2	3	4	5
211.	People in my family hit me so hard that it left me with bruises or marks	1	2	3	4	5
212.	I was punished with a belt, a board, a cord or some other hard object	1	2	3	4	5
213.	People in my family looked out for each other	1	2	3	4	5
214.	People in my family said hurtful or insulting things to me	1	2	3	4	5
215.	I believe that I was physically abused	1	2	3	4	5
216.	I had the perfect childhood	1	2	3	4	5
217.	I got hit or beaten so badly that it was noticed by someone like a teacher, neighbor or doctor	1	2	3	4	5
218.	I felt that someone in my family hated me	1	2	3	4	5
219.	People in my family felt close to each other	1	2	3	4	5
220.	Someone tried to touch me in a sexual way or tried to make me touch them	1	2	3	4	5
221.	Someone threatened to hurt me or tell lies about me unless I did something sexual for them	1	2	3	4	5
222.	I had the best family in the world	1	2	3	4	5
223.	Someone tried to make me do sexual things or watch sexual things	1	2	3	4	5
224.	Someone molested me	1	2	3	4	5
225.	I believe that I was emotionally abused	1	2	3	4	5

226.	There was someone to take me to the doctor if I needed it	1	2	3	4	5
227.	I believe that I was sexually abused	1	2	3	4	5
228.	My family was a source of strength and support	1	2	3	4	5

Section C: Alcohol Use

Because alcohol use can affect your health, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest. Circle the number that best describes your answer to each question.

301.	Have you drunk alcohol in the past 12 months?	Yes1			No0		If no skip to 314
302.		Never	Monthly or less	2-4 times per month	2-3 times a week	4 or more times a week	
303.	How often do you have a drink containing alcohol?	1	2	3	4	5	
304.	How many drinks containing alcohol do you have on a typical day when you are drinking?	1	2	3	4	5	
305.	How often do you have six or more drinks on one occasion?	1	2	3	4	5	
306.	How often during the past year have you found that you were not able to stop drinking once you started	1	2	3	4	5	
307.	How often during the past year did you find you need a drink in the morning to get you going after a heavy drinking session?	1	2	3	4	5	
308.	How often in the past year have you failed to do what was normally expected from you because of drinking?	1	2	3	4	5	
309.	How often during the last year have you had a feeling of guilt or remorse after drinking?	1	2	3	4	5	
310.	How often during the last year have you been unable to remember what happened the night before because of your drinking?	1	2	3	4	5	
311.	Have you or someone else been injured as a result of your drinking?	1	2	3	4	5	
312.	Has a relative or friend or health worker been concerned about your drinking or suggested you cut down?	1	2	3	4	5	
313.	Have you ever quarreled with any of your female sexual partners about your drinking?	1	2	3	4	5	

314.	In the last 12 months how many times have you used drugs to make you high or have a good time?	1	2	3	4	5	
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Section D: Relationship control and IPV

401	Do you currently have a boyfriend or are you married, married in a polygamous relationship or living with a man or in an intimate relationship with a man even if you are you widow, separated or divorced?	Married to a man1 Living with man2 Boyfriend.....3 No boyfriend.....4 In a same sex relationship 5 Widow.....6 Separated.....7 Divorced.....8 Polygamous marriage.....9 Not in any intimate relationship.....10	→403 →403 →403 →406 →406 →403 →403 →403 → 402 → 444
402	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	
403	How old is your current or most recent boyfriend/husband?	[] []	
If not married, GO TO q407			
404	How old were you when you got married?	[] [] Never married 9	→406
405	Have you ever had a boyfriend or husband?	Yes.....1 No.....0	→ 444
406	Does your current or most recent boyfriend/husband drink alcohol? How often?	Every day/nearly every day.....1 Only at weekends.....2 A few times in a month3 Less than once a month.....4 Never5 Not now.....6 Don't know.....7	
407.	Does your current or most recent boyfriend/husband use drugs? How often?	Every day/nearly every day.....1 Only at weekends.....2 A few times in a month3 Less than once a month.....4 Never5 Not now.....6 Don't know.....7	
408.	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	
409.	Is your husband or boyfriend your ONLY partner?	No.....0 Yes.....1	

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

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

Experience of IPV

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.

421.	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?	Never Once Few Many	1 2 3 4	
422.	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?	Never Once Few Many	1 2 3 4	
423.	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?	Never Once Few Many	1 2 3 4	

424.	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?	Never 1 Once 2 Few 3 Many 4	
425.	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?	Never 1 Once 2 Few 3 Many 4	
426.	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?	Never 1 Once 2 Few 3 Many 4	
427.	Have any of these things happened in the past 12 months?	Yes.....1 No.....0	
<p>ECONOMIC ABUSE Sometimes the man controls the finances in relationship. I would like to discuss some of the economic issues within your relationships. I want you to speak freely and remember that everything you say will be confidential.</p>			
428.	Has a current or previous husband or any boyfriend ever prohibited you from getting a job, going to work, trading, earning money or participating in income generation projects? Did this happen many times, a few times, once or did it not happen?	Never 1 Once 2 Few 3 Many 4	
429.	If you have had any income, has a current or previous husband or any boyfriend ever taken your earnings from you? Did this happen many times, a few times, once or did it not happen?	Never 1 Once 2 Few 3 Many 4	
430.	Has a current or previous husband or any boyfriend ever forced you or your children to leave the house where you were living? Did this happen many times, a few times, once or did it not happen?	Never 1 Once 2 Few 3 Many 4	
431.	Has a current or previous husband or any boyfriend ever not provided money to run the house or look after the children, but has money for other things? Did this happen many times, a few times, once or did it not happen?	Never 1 Once 2 Few 3 Many 4	
432.	Have any of these things happened in the past 12 months?	Yes.....1 No.....0	
<p>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.</p>			
433.	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?	Never 1 Once 2 Few 3 Many 4	
434.	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?	Never 1 Once 2 Few 3 Many 4	
435.	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?	Never 1 Once 2 Few 3 Many 4	

436.	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?	Never 1 Once 2 Few 3 Many 4	
437.	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?	Never 1 Once 2 Few 3 Many 4	
438.	Have any of these things happened in the past 12 months?	Yes.....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.			
439.	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?	Never 1 Once 2 Few 3 Many 4	
440.	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?	Never 1 Once 2 Few 3 Many 4	
441.	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?	Never 1 Once 2 Few 3 Many 4	
442.	Have any of these things happened in the past 12 months?	Yes.....1 No.....0	
If sexual abuse is reported GO TO q473			
443.	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	
444.	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 time 3	→480
445.	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:	
446.	How old were you?	[][]	

447	Did this happen in the last 12 months?	Yes.....1 No.....0	
448	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 time 3	
449	Did this happen in the last 12 months?	Yes.....1 No.....0	
450	How many times were you forced to have sex with one man when you were too drunk or drugged?	Never 1 Once 2 More than 1 time.....3	
451	How many times have you been forced or persuaded to have sex with more than one man at the same time?	Never 1 Once 2 More than 1 time.....3	
452	What was your main concern after this experience of forced sex?	Someone would find out 1 It would happen again 2 HIV/AIDS 3 Pregnancy 4 STI 5 Other 6	

Section E: Depression, Anxiety and Stress Scale (DASS)

The next section addresses ways you might have felt or behaved over the course of the past week. Each question is a statement. Please indicate how much the statement applied to you over the past week.

There are four options: rarely or never, a little (1 to 2 days), some (3-5 days), or most of the time (6-7 days). Please circle the number that applies to you.

		Did not apply to me at all	Applied to me to some degree, or some of the time	Applied to me to a considerable degree or a good part of time	Applied to me very much or most of the time
501.	I found it hard to wind down	0	1	2	3
502.	I was aware of dryness of my mouth	0	1	2	3
503.	I couldn't seem to experience any positive feeling at all	0	1	2	3
504.	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
505.	I found it difficult to work up the initiative to do things	0	1	2	3
506.	I tended to over-react to situations	0	1	2	3
507.	I experienced trembling (e.g. in the hands)	0	1	2	3
508.	I felt that I was using a lot of nervous energy	0	1	2	3

509.	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
510.	I felt that I had nothing to look forward to	0	1	2	3
511.	I found myself getting agitated	0	1	2	3
512.	I found it difficult to relax	0	1	2	3
513.	I felt down-hearted and blue	0	1	2	3
514.	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
515.	I felt I was close to panic	0	1	2	3
516.	I was unable to become enthusiastic about anything	0	1	2	3
517.	I felt I wasn't worth much as a person	0	1	2	3
518.	I felt that I was rather touchy	0	1	2	3
519.	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3
520.	I felt scared without any good reason	0	1	2	3
521.	I felt that life was meaningless	0	1	2	3

Section E: Trauma Exposure

I 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? Please circle the number that applies to you.

		Did this occur in the past 6 months? (circle correct answer)	Impact (circle correct answer)	Did this occur more than 6 months ago? (circle correct answer)	Impact (circle correct answer)
601.	You yourself suffered a serious illness, injury or an assault	Yes/No	None/Some/Significant	Yes/No	None/Some/Significant
602.	A serious illness, injury or assault happened to a close relative	Yes/No	None/Some/Significant	Yes/No	None/Some/Significant
603.	Your parent, child or spouse died	Yes/No	None/Some/Significant	Yes/No	None/Some/Significant
604.	A close family friend or another relative (aunt, cousin, grandparent) died	Yes/No	None/Some/Significant	Yes/No	None/Some/Significant
605.	You had a separation due to marital difficulties	Yes/No	None/Some/Significant	Yes/No	None/Some/Significant
606.	You broke off a steady relationship	Yes/No	None/Some/Significant	Yes/No	None/Some/Significant
607.	You had a serious problem with a close friend, neighbor or relative	Yes/No	None/Some/Significant	Yes/No	None/Some/Significant

608.	Unemployed/seeking work for more than one month	Yes/No	None/Some/Significant	Yes/No	None/Some/Significant
609.	You were fired from your job	Yes/No	None/Some/Significant	Yes/No	None/Some/Significant
610.	You had a major financial crises	Yes/No	None/Some/Significant	Yes/No	None/Some/Significant
611.	You had problems with the police and a court appearance	Yes/No	None/Some/Significant	Yes/No	None/Some/Significant
612.	Something you valued was lost or stolen	Yes/No	None/Some/Significant	Yes/No	None/Some/Significant

Section F: 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. There are four options: rarely or never, a little (1-2 days), some (3-5 days), or most of the time (6-7 days). Please circle the number that applies to you.

		Not at all	A little (1-2 days)	Quite a bit (3-5 days)	Extremely (6-7 days)
701.	Recurrent thoughts or memories of the most hurtful or terrifying events	0	1	2	3
702.	Feeling as though the event is happening again	0	1	2	3
703.	Recurrent nightmares	0	1	2	3
704.	Feeling detached or withdrawn from people	0	1	2	3
705.	Unable to feel emotions	0	1	2	3
706.	Feeling jumpy, easily startled	0	1	2	3
707.	Difficulty concentrating	0	1	2	3
708.	Trouble sleeping	0	1	2	3
709.	Feeling on guard	0	1	2	3
710.	Feeling irritable or having outbursts of anger	0	1	2	3
711.	Avoiding activities that remind you of the traumatic or hurtful events	0	1	2	3
712.	Inability to remember parts of the most traumatic or hurtful events	0	1	2	3
713.	Less interest in daily activities	0	1	2	3
714.	Feeling as if you don't have a future	0	1	2	3
715.	Sudden emotional or physical reaction when reminded of the most traumatic or hurtful events	0	1	2	3
716.	Avoiding thoughts or feelings associated with the traumatic or hurtful experiences	0	1	2	3
717.	Feeling that people do not understand what happened to you	0	1	2	3

718.	Difficulty performing work or daily tasks	0	1	2	3
719.	Blaming yourself for things that have happened	0	1	2	3
720.	Feeling guilty for having survived	0	1	2	3
721.	Hopelessness	0	1	2	3
722.	Feeling ashamed of the hurtful or traumatic events that have happened to you	0	1	2	3
723.	Spending time thinking about why these events happened to you	0	1	2	3
724.	Feeling as if you are going crazy	0	1	2	3
725.	Feeling that you are the only one who suffered these events	0	1	2	3
726.	Feeling others are hostile toward you	0	1	2	3
727.	Feeling that you have no one to rely on	0	1	2	3
728.	Finding out or being told by other people that you have done something that you cannot remember	0	1	2	3
729.	Feeling as if you are split into two people and one of you is watching what the other is doing	0	1	2	3
730.	Feeling someone you trusted betrayed you	0	1	2	3
731.	Thinking about your whole life experience. Have you ever thought about ending your life?	No 0	Yes 1		
732.	In the past four weeks, has the thought of ending your life been in your mind?	0	1		

Section G: Social Connectedness Scale –Revised (SCS-R)

Following are a number of statements that reflect various ways in which we view ourselves. Rate the degree to which you agree or disagree with each statement using the following scale (1 = strongly disagree and 6 = strongly agree). There is no right or wrong answer. Please circle the number that applies to you.

		Strongly disagree	Disagree	Mildly disagree	Mildly agree	Agree	Strongly agree
801.	I feel comfortable in the presence of strangers	1	2	3	4	5	6
802.	I am in tune with the world	1	2	3	4	5	6
803.	Even among my friends, there is no sense of brother/sisterhood.	1	2	3	4	5	6
804.	I fit in well in new situations.	1	2	3	4	5	6
805.	I feel close to people	1	2	3	4	5	6

806.	I feel disconnected from the world around me	1	2	3	4	5	6
807.	Even around people I know, I don't feel that I really belong	1	2	3	4	5	6
808.	I see people as friendly and approachable	1	2	3	4	5	6
809.	I feel like an outsider	1	2	3	4	5	6
810.	I feel understood by the people I know	1	2	3	4	5	6
811.	I feel distant from people.	1	2	3	4	5	6
812.	I am able to relate to my peers	1	2	3	4	5	6
813.	I have little sense of togetherness with my peers	1	2	3	4	5	6
814.	I find myself actively involved in people's lives.	1	2	3	4	5	6
815.	I catch myself losing a sense of connectedness with society	1	2	3	4	5	6
816.	I am able to connect with other people	1	2	3	4	5	6
817.	I see myself as a loner.	1	2	3	4	5	6
818.	I don't feel related to most people	1	2	3	4	5	6
819.	My friends feel like family	1	2	3	4	5	6
820.	I don't feel like I participate with anyone or any group	1	2	3	4	5	6

Section H: Resilience

This section will address your general state of functioning. Please read the following statements. To the right of each you will find seven numbers, ranging from "1" (Strongly Disagree) on the left to "7" (Strongly Agree) on the right. Circle the number which best indicates your feelings about that statement. For example, if you strongly disagree with a statement, circle "1". If you are neutral, circle "4", and if you strongly agree, circle "7", etc.

		Strongly disagree				Strongly agree		
821.	When I make plans, I follow through with them.	1	2	3	4	5	6	7
822.	I usually manage one way or another	1	2	3	4	5	6	7
823.	I am able to depend on myself more than anyone else	1	2	3	4	5	6	7
824.	Keeping interested in things is important to me	1	2	3	4	5	6	7
825.	I can be on my own if I have to	1	2	3	4	5	6	7
826.	I feel proud that I have accomplished things in life	1	2	3	4	5	6	7
827.	I usually take things in stride	1	2	3	4	5	6	7
828.	I am friends with myself	1	2	3	4	5	6	7

829.	I feel that I can handle many things at a time	1	2	3	4	5	6	7
830.	I am determined	1	2	3	4	5	6	7
831.	I seldom wonder what the point of it all is	1	2	3	4	5	6	7
832.	I take things one day at a time	1	2	3	4	5	6	7
833.	I can get through difficult times because I've experienced difficulty before	1	2	3	4	5	6	7
834.	I have self-discipline	1	2	3	4	5	6	7
835.	I keep interested in things	1	2	3	4	5	6	7
836.	I can usually find something to laugh about	1	2	3	4	5	6	7
837.	My belief in myself gets me through hard times	1	2	3	4	5	6	7
838.	In an emergency, I'm someone people can generally rely on	1	2	3	4	5	6	7
839.	I can usually look at a situation in a number of ways	1	2	3	4	5	6	7
840.	Sometimes I make myself do things whether I want to or not	1	2	3	4	5	6	7
841.	My life has meaning	1	2	3	4	5	6	7
842.	I do not dwell on things that I can't do anything about	1	2	3	4	5	6	7
843.	When I'm in a difficult situation, I can usually find my way out of it	1	2	3	4	5	6	7
844.	I have enough energy to do what I have to do	1	2	3	4	5	6	7
845.	It's okay if there are people who don't like me	1	2	3	4	5	6	7

Section I :Multidimensional Scale of Perceived Social Support Scale (MSPSS)

		Very Strongly disagree	Strongly disagree	Mildly disagree	Neutral	Mildly agree	Strongly agree	Very strongly disagree
846.	There is a special person who is around when I am in need	1	2	3	4	5	6	7
847.	There is a special person with whom I can share my joys and sorrows	1	2	3	4	5	6	7
848.	My family really tries to help me	1	2	3	4	5	6	7
849.	I get the emotional help and support I need from my family	1	2	3	4	5	6	7
850.	I have a special person who is a real source of comfort to me.	1	2	3	4	5	6	7
851.	My friends really try to help me.	1	2	3	4	5	6	7
852.	I can count on my friends when things go wrong	1	2	3	4	5	6	7
853.	I can talk about my problems with my family	1	2	3	4	5	6	7
854.	I have friends with whom I can share my joys and sorrows	1	2	3	4	5	6	7
855.	There is a special person in my life who cares about my feelings	1	2	3	4	5	6	7
856.	My family is willing to help me make decisions	1	2	3	4	5	6	7
857.	I can talk about my problems with my friends.	1	2	3	4	5	6	7

Section J: Self Esteem

		Strongly agree	Agree	Disagree	Strongly disagree
858.	On the whole, I am satisfied with myself	1	2	3	4
859.	At times, I think I am no good at all	1	2	3	4
860.	I feel that I have a number of good qualities	1	2	3	4

861.	I am able to do things as well as most other people	1	2	3	4
862.	I feel I do not have much to be proud of	1	2	3	4
863.	I certainly feel useless at times	1	2	3	4
864.	. I feel that I'm a person of worth, at least equal to others	1	2	3	4
865.	I wish I could have more respect for myself	1	2	3	4
866.	All in all, I am inclined to feel that I'm a failure	1	2	3	4
867.	I take a positive attitude toward myself	1	2	3	4

Thank you for your time

Appendix III: Information Sheet

PARTICIPANT'S INFORMATION LEAFLET AND INFORMED CONSENT

(Each participant must receive, read and/or have the document read to her before the interview)

The relationship between violence across the life course, protective factors and mental disorders among adult women living in a slum setting in Ibadan, Nigeria

Introduction

Good day. My name is _____. I am working with / I am a PhD student at the University of Witwatersrand working on a project to better understand the relationship between the experience of violence across the life course, protective factors and mental disorders among adult women.

You are invited to volunteer to be part of this study that is happening all over this enumeration area. You should not agree to take part in this study unless you fully understand what is asked of you and are completely happy with all the procedures involved. If you do not understand the information or have any other questions, feel free to ask the interviewer.

Purpose of this interview

The purpose of this study is to collect information so I can understand the relationship between the experience of violence across the life course, protective factors and mental disorders among adult women.

In order to do this, I would like to ask to have an interview with you. In this interview I will ask some information about you, unpleasant things that might have happened to you while you were a child or an adult and about your current state of health and functioning. The interview will take approximately an hour.

You have been invited to participate because your household was one of the households randomly picked from this house (by chance) from all the households within this building in this area.

What procedures are involved?

You are being asked to complete a questionnaire with your consent. There are no right or wrong answers. I would like to know about you, your experiences or opinions. Your name will not be recorded. All your responses will be transferred to a computer and saved for analysis purposes. The responses that you give to the questionnaire will be saved using a unique identification number. This means that your name will not be linked to the answers that you give. Information that is collected from you will be put together with information from about 840 other individuals.

Are there any risks or discomforts from participating in this study?

The interview will be conducted in a private and safe place for both you and the researcher. The only potential risk from participating in this study is that you may feel uncomfortable answering some of the questions that may deal with some sensitive issues and unpleasant memories.

Possible Benefits of this study

There are no direct benefits that you may get from participating in this study. However the information collected from this study may be helpful in improving the lives of children as well as men and women in Nigeria. Your answers will help us make sure that the views and experiences of people like you are taken into account in designing future community programs.

What are your rights as a participant?

Your taking part in this study is entirely voluntary (your choice). You can refuse to participate or stop at any time without giving any reason. Some of the questions are very personal. Please remember that you are free to skip over any question you do not want to answer and you are free to stop answering questions at any time.

Confidentiality

All the information that you give in this study will be kept strictly confidential; we will not tell anyone your answers. The consent forms that you will be asked to sign will be securely stored and access will be limited to the research team. The consent forms cannot be linked to the answers you give to the questionnaire. The results of the study will be presented in a respectful manner and no information which could enable anyone to identify you personally will be reported. If you would like to be kept informed of the progress of the study, we will be happy to share any reports or publication produced with you.

Costs

There is no financial cost to you for participating in this study.

Information and contact person

If you have any questions about the study you may contact:

Olutoyin Sekoni

Department of Community Medicine,

College of Medicine, University of Ibadan.

Telephone number: +234-8033579048

Email address: osekoni@cartafrica.org

Resources for help

In case you are overly distraught or require counselling and support as a result of your responding to this interview, the contact details of a local counsellor and or psychiatrist will be made available to you.

Appendix IV: Informed Consent Form

The relationship between violence across the life course, protective factors and mental disorders among adult women living in a slum setting in Ibadan, Nigeria

Informed Consent Form

I hereby confirm that the person seeking my informed consent to participant in this study has given me information to my satisfaction. He/She explained to me the purpose, procedures involved, risk and benefits and my rights as a participant in the study. I feel that my questions regarding participation in the study have been answered to my satisfaction. I have been told that the information I give to the study will together with other information gathered from other people, be anonymously processed into a research report and scientific publications.

I am aware that it is my right to withdraw my consent in this study without any prejudice. I hereby, freely and voluntary give my consent to participate in the study.

Participant's name.....(Please print)

Participant's signature.....Date.....

Researcher's name.....(Please print)

Researcher's signature.....Date.....

Witness's name.....(Please print)

Witness's signature.....Date.....