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Sex and Young People in Urban Slums:
Exploring the Material Deprivation and Sexual Risk Nexus in Malawi and South Africa

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Thesis submitted for the degree of
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26th April, 2016






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Candidate declaration

I MPHATSO KAMNDAYA do solemnly declare, in accordance with Rule G27 that this thesis is my own work. This thesis is being submitted for the degree of Doctor of Philosophy at the University of the Witwatersrand, Johannesburg, and has not been used as a submission for any other degree or submitted at any other university.

Signature: 

Date: 26th April, 2016

Dedication

To my wife Kettie for your support during the PhD period, and for your endurance during the lonely moments. I am grateful to you for taking care of my daughters - Naledi and Nadia - during the long periods of my absence.

Thanks to almighty God for His grace and mercy.

Preface

"Today, nearly one-third of the world's population lives in urban slums, and over 90% of slum dwellers live in low-income and middle-income countries, including hundreds of millions of young people".

United Nations Children's Fund (2012)

"Currently, sexually transmitted infections (STIs) threaten the health of young people growing up in urban slums more than any other age group in low- and middle-income countries, and as many as 2.2 million young people are living with HIV".

(Mmari and Astone, 2013)

Malawi and South Africa lies in the Southern and Eastern Africa (SEA) region where HIV continues to be a challenge in urban slums (Thomas et al., 2011; Madise et al., 2012). Young people in these settings are a rapidly growing segment of the urban population at high risk of HIV acquisition in the region (Mberu et al., 2013; Gibbs et al., 2012; Stroeken et al., 2011).

A specific focus on young people living in urban slums is important today than at any time before given that (1) the majority of young people are growing up in these settings where they are among the most disadvantaged and vulnerable in the region and deprived of the most basic services (United Nations Children's Fund, 2012); and (2) a growing number of young people in these settings are out of school and fall outside the net of most of the existing HIV prevention interventions (Mberu et al., 2013; Gibbs et al., 2012; Stroeken et al., 2011).

A key challenge is that there is no comprehensive framework for understanding and responding to HIV among young people in urban slums in the region. As a result, young people living in these settings are not targeted appropriately in HIV prevention interventions.

It is my hope, therefore, that the findings from this research will not only contribute to science, but towards the need for an urban slum-specific combination HIV prevention framework that accounts for the unique needs of young people residing in the growing urban slums of the SEA region.

Abstract

Rationale

Young people aged 15-24 years account for nearly half (41 percent) of new HIV (Human Immunodeficiency Virus) infections in people over 15 years globally and 52 percent of this number occurs in the SEA region (UNICEF, 2011). Unprecedented urban growth in cities is occurring in this region and approximately 75 percent of the urban population are young people (UN-HABITAT, 2008). This urban growth has been accompanied by urbanisation of poverty in the growing urban slums or urban informal settlements[1], where approximately 70 percent of the urban residents live (UN-HABITAT, 2010b). The UN Human Settlements Programme has identified five characteristics that define an urban slum, namely poor structural quality of housing, overcrowding, insecure residential status, inadequate access to safe water, inadequate access to sanitation and infrastructure (UN-HABITAT, 2010b).

Research from some countries in the SEA region has shown that the HIV prevalence and incidence in urban slum populations is double (or more) that in the non-urban slum population of the same city (see, for example, Thomas et al., 2011; Madise et al., 2012; Rehle et al., 2007; Kyobutungi et al., 2008). This difference might be partly due to HIV-related sexual risk behaviour of young people living in urban slums (Mmari and Astone, 2013; Unger, 2013). Given that urban slums are home to a growing number of young people in the SEA region, there is the need for more innovative research on context-specific factors associated with HIV-related sexual risk behaviour to inform a specific combination prevention framework that will impact strongly on the HIV epidemic.

[1] In this thesis, I will focus on the term urban slum rather than urban informal settlement as per definition by the United Nations that I have given.

Malawi and South Africa are helpful examples of the currently urbanising and the most urbanised countries in the SEA region with some similarities between urban slum contexts, but also with large variations due to the historical, political and economic situations of the respective countries. For example, existing studies in Malawi (Mkandawire, 2011; Mkandawire et al., 2011a; Madise et al., 2007) and South Africa (Tenkorang et al., 2011; Burns and Snow, 2012) have highlighted that young people living in urban slum settings are at high risk of HIV acquisition. In addition, these studies highlight similar challenges faced by the growing numbers of young people living in urban slum settings, which include unemployment, poor access to education, health care, food, and continue to experience high levels of sexual abuse (Mkandawire, 2011; Tenkorang et al., 2011). Although these studies have provided important information, there are significant gaps in knowledge regarding context-specific (or local) indicators of disadvantage associated with sexual risk behaviour. Specifically, existing studies have focused on income-related measures of poverty (for example, low levels of income, unemployment, and education) to predict sexual risk[2].

One of the strongest critiques emerging of income-related measures of poverty is that they do not reflect access to basic needs and services (Thomas et al., 2011; Vearey et al., 2010). Such a critique has led some researchers to call for moving away from income-related measures of poverty to measures capturing critical aspects of poverty – that is, capturing material deprivation – that best represent the conditions and realities of living experiences in urban slums to predict sexual risk (Greif, 2012; Kunnuji, 2014; Mberu et al., 2013).

[2] In this research, I define HIV-related sexual risk (or sexual risk for short) as those sexual practices that have been found to be associated with high risk of HIV acquisition. These sexual practices considered in this research are: (1) non-use of condom at last sex; (2) multiple (two or more) sexual partners; (3) transactional sex; and (4) coercive sex. I use the term sexual risk as an umbrella term of these sexual practices in this thesis. Specific definitions of these sexual practices used in this research are provided in the published papers.

To this end, three measures of disadvantage – housing and food insecurity, and poor access to health care – have been highlighted as critical living conditions associated with sexual risk in urban slums in the SEA region (Greif, 2012; Mberu et al., 2013). Housing, food and health care access are multidimensional concepts that encompass aspects of housing quality, instability and overcrowding (Aidala et al., 2005); availability, accessibility and utilisation of food (Ivers and Cullen, 2011) and affordability, acceptability and availability of health care (Peters et al., 2008; Thiede and McIntyre, 2008).

My review of the literature confirms that there is no consistency on *what* constitutes and *how* to measure these critical living conditions in relation to HIV sexual risk in urban slums of the SEA region. Another limitation in existing studies is that the association between material deprivation and sexual risk is most frequently examined through the inclusion of either one dimension of deprivation or a single deprivation-related item (Greif, 2012). The lack of data on multiple-item measurement of the components of material deprivation has always been cited as a reason for considering one dimension of deprivation or a single deprivation-related item. It is likely that additional nuance underlying this association is not yet examined given that single-item measures of deprivations overestimate or underestimate the statistical significance leading to biased results (Noble et al., 2010). My research contributes in this direction by using multiple measures of housing and food insecurity and poor access to health care to conceptualise material deprivation in relation to sexual risk.

Aim

Based on the findings from two sub studies, this PhD aims to better understand relationships between local measures of material deprivation, economic deprivation, and dimensions of sexual risk that will inform the development of an urban slum-specific combination HIV prevention framework to reduce the HIV risk of young people in Malawi and South Africa.

Methods

Two sub studies were undertaken: one in South Africa (Sub study I) and another one in Malawi (Sub study II). Sub study I was a secondary analysis of a cross-sectional survey of young people (n = 530) living in urban slum households extracted from the 2011 loveLife survey with young people aged 18-23 years old in South African four of nine provinces – KwaZulu Natal, Mpumalanga, Eastern Cape, and Gauteng. Young people in the age cohort of 18-23 years old are important given that they transition rapidly from low HIV vulnerability when they are 10-19 years old to high HIV vulnerability (UNICEF, 2011). Sub study II included five focus group discussions and 12 in-depth interviews, undertaken with a total of 60 young people aged 18-23 years old, exploring living experiences and sexual risk practices in the urban slums of Blantyre, Malawi. This exploratory qualitative study informed a cross-sectional survey that explored material deprivation and sexual practices among young people (n = 1,071) in the urban slums of Blantyre, Malawi.

The focal research variables in Sub study I were 'material deprivation', 'financial difficulty' and 'sexual risk-taking'. Material deprivation was assessed by summing the single-item measures of housing and food insecurity, and poor access to health care to create a dichotomous measure that indicated the presence of one or more hardships. Financial difficulty was defined by assessing items that asked respondents if they received any income from any source last month or if anyone in the household receive a grant. The dependent variable, sexual risk-taking, was defined from a series of items about condom use, multiple (two or more) sexual partners and transactional sex. Variables from these measures were dichotomous, indicating whether a respondent used condom(s) at last sex or not, had two or more sexual partners or not, and exchanged sex for money or goods in the last 12 months or not. The variable on transactional sex involved the giving of cash or goods for males and

receiving for females. Given this information, 'high sexual risk-taking' was defined by those who reported that they had not used condoms at last sex or exchanged sex for money or goods in the last 12 months irrespective of the number of sexual partners they had or those who reported use of condoms at last sexual intercourse, but had more than one sexual partner.

In Sub study II, material deprivation was defined by a total of 20 indicators of insufficient housing, food insecurity, and poor access to health care (see Paper II, Table 1). From these indicators, all households in the study sites were assigned a deprivation sum score based on 17 items (11 on food insecurity, five on housing and one on poor access to health care) available from the survey instrument (see Paper III). Households with the highest scores were defined as 'deprived households' (Dodoo et al., 2007; Kuipers et al., 2013). Unemployment was determined by asking the young people their primary occupation – the work from which they earn most of their income (Dzator, 2013). Six occupational categories (construction, trading, services, industry, agriculture, and unemployed) were created from the responses and used in the analysis. Coercive sex was measured asking whether a respondent had been forced by a partner or non-partner to have sex when he or she did not want to.

Through synthesis of the findings from the two sub studies, four central themes were identified: (1) patterns of sexual risk; (2) underlying reasons for decisions to engage in transactional sex; (3) measures of disadvantage associated with sexual risk; and (4) study design and methods. These four themes assist me in making recommendations for a new urban slum-specific combination HIV prevention model for young people in the SEA region.

Key findings

Prevalence of no condom use at last sex was significantly higher in both young men and young women living in urban slums in Malawi than their counterparts in South Africa ($p<0.001$, respectively). With regards to multiple sexual partners, young people in Malawi

were less likely to report having multiple partners than their counterparts in South Africa (49.3% vs. 64.1% (p=0.002) for young men, and 18.7% vs. 28.7% (p=0.032) for young women). Prevalence of coercive sex in Malawi was 15.8% and 44.4% in young men and young women respectively. Lastly, transactional sex was significantly higher in young men and young women in Malawi than their counterparts in South Africa (p<0.001, respectively).

The qualitative data analysis reveals that housing and food insecurity influenced both young men's and young women's motivations for engaging in transactional sex. Poor access to health care and a desire for high-value social goods (such as cellular phones, the latest hair, and clothing styles) influenced the young women's motivations for transactional sex.

Adjusted logistic regression models show that material deprivation was significantly associated with increased odds of high sexual risk-taking for young men (adjusted odds ratio [AOR]=1.20; 95% confidence interval [CI]=1.10, 5.58) and young women (AOR=1.43; 95%CI=1.35, 3.28). However, financial difficulty is the most salient influence on young women's high sexual risk-taking (AOR=2.11; 95%CI=1.66, 2.70) (Paper I). A multi-level model adjusted for other risk behaviours, age, marital status, duration of residence, household structure, school status, level of education and received money from relatives shows that unemployment was associated with young men to report experiencing coercive sex (AOR=1.77, 95%CI: 1.09, 3.21) while material deprivation (AOR=1.34, 95%CI: 0.75, 2.39) was not. Young women in deprived households were more likely to report experiencing coercive sex (AOR=1.37, 95%CI: 1.07, 2.22) than in less deprived households (Paper III).

A further analysis of logged coefficients from the regression models (Model 2 in Paper I, Table 4, and Paper III, Table 5) multiplied by their standard deviations shows that: (1) for young women, financial difficulty (0.16 = (log 2.11)*(0.50)) exerted the strongest effects on sexual risk-taking followed by material deprivation (0.10 = (log 1.43)*(0.66)) (Paper I). In

the same Paper I, material deprivation (0.04 = (log 1.20)*(0.50)) shows noteworthy and significant effects on sexual risk-taking for young men; (2) material deprivation (0.08 = (log 1.37)*(0.58)) and unemployment (0.12 = (log 1.77)*(0.50)) were the most influential variables associated with coercive sex among young men and young women respectively. Based on this further analysis, I argue that existing HIV prevention efforts based on research that employed only measures of economic deprivation – and did not explore material deprivation – may not be effectively responding to the specific conditions found to be critical in the urban slum settings in Malawi and South Africa.

With regard to the strengths of association between various deprivations and dimensions of sexual risk, this research shows what the gaps are in understanding the differences between South Africa and Malawi and therefore what future research is needed to develop tools to assess the generic and specific settings in different countries in the SEA region regarding HIV risk. Material deprivation has been shown in this study to remain a robust predictor of sexual risk in statistical models (Papers I and III). Furthermore, findings from the qualitative study (Paper II) indicate that a desire for high-value social items (for example, latest clothing styles, hair products, and cellular phones) underlie young women's motivations for transactional sex in urban slums. Thus, it is argued that responses to material deprivation, to reach full potential, need to engage with a desire for fashionable goods as well.

Through the synthesis of the findings from the two studies, I have suggested key recommendations and strategies required for responses that prioritise young people in urban slums in Malawi and South Africa.

Implications

Based on the findings of this research, an urban-slum specific combination HIV prevention framework is suggested for young people in the SEA region. It is argued that a combination HIV prevention framework targeting young people living in these settings requires understanding of both material disadvantage and desire for high-value social goods, since intervention efforts that focus on a purely income-related measure of poverty of levels of income are likely to fail. This requirement is likely to be useful for addressing the unique challenges faced by young people residing in urban slums. Moreover, the understanding suggested here will enable countries in the SEA region to reduce health risks among young people living in urban slums.

This research contributes a new methodological approach that highlights what data are needed in order to better understand context-specific measures of disadvantage associated with sexual risk among young people living in urban slum settings in the SEA region. The study findings suggest that there is need to develop appropriate tools to collect more detailed research data on the generic and context-specific issues in different urban slum settings in the SEA region regarding structural determinants of HIV sexual risk that would inform context-specific responses. Future multi-country study should employ a settings approach to assess HIV-related sexual risks and guide the development of appropriate responses for young people living in urban slums of the SEA region.

Keywords: Material deprivation, young people, urban slums, HIV, sexual risk, combination HIV prevention.

Original papers

I. **Kamndaya, M.,** Thomas, L., Vearey, J., Sartorius, B., Kazembe, L. (2014) Material deprivation affects sexual risk behaviour among young people in urban slums, South Africa. *Journal of Urban Health* **91**(3):581-591.

Student's contribution to the paper: Data extraction, analysis and writing of the manuscript.

II. **Kamndaya, M**., Vearey, L., Thomas, L., Kabiru, CW., Kazembe, LN. (2015) The role of material deprivation and consumerism in the decisions to engage in transactional sex among young people in the urban slums of Blantyre, Malawi. *Global Public Health* **10**(4):1-14.

Student's contribution to the paper: Design of the study, training and supervising fieldworkers, data management, analysis and writing of the manuscript.

III. **Kamndaya, M.,** Kazembe, LN., Vearey, J., Kabiru, CW., Thomas, L. (2015) Material deprivation and unemployment affect coercive sex among young people in the urban slums of Blantyre, Malawi: A multilevel approach. *Health & Place* **33**(2015):90-100.

Student's contribution to the paper: Design of the study, seeking additional research funds, training and supervising fieldworkers, data management, analysis and writing of the manuscript.

Outputs generated during the PhD

I. Kamndaya M., Thomas L., Vearey J., Sartorius B., & Kazembe LN. Material deprivation and HIV: sexual risk-taking amongst women aged 18–23 years in South African urban informal settlements. Poster presentation at the Wellcome Trust 6th Meeting of the Directors of the African Institutions Initiative, Accra, Ghana, 27-30 November, 2012.

II. Kamndaya M., Thomas L., Vearey J., Sartorius B., & Kazembe LN. Lessons from secondary data analysis of material deprivation effects on youth sexual risk-taking in South African urban informal settlements. Oral presentation at the Urbanisation, HIV and Inequality Conference, 12-15 March, 2013, University of Western Cape, Cape Town, South Africa.

III. Kamndaya M., Thomas L., Vearey J., Sartorius B., & Kazembe LN. Lessons from secondary data analysis of material deprivation effects on youth sexual risk-taking in South African urban informal settlements. Poster presentation at the Urbanisation, HIV and Inequality Conference, 12-15 March, 2013, University of Western Cape, Cape Town, South Africa.

IV. Kamndaya M., Thomas L., Vearey J., Sartorius B., & Kazembe LN. Material deprivation affects sexual risk-taking among young people in urban slums, South Africa. Oral presentation at the International Conference, Intra-urban dynamics and

health, 11-13 September, 2013, University Paris Ouest-Nanterre La Défense, Paris, France.

V. Kamndaya M., Vearey J., Thomas L., Kabiru CW., & Kazembe LN. Material deprivation and consumerism: factors influencing sexual risk behaviour among young people in Blantyre urban slums, Malawi. Poster presentation at the Public Health Association of South Africa (PHASA) Conference, 24-27 September, 2013, Cape Town, South Africa.

VI. Kamndaya M., Vearey J., Thomas L., Kabiru CW., & Kazembe LN. Material deprivation, consumerism and agency: unmet basic needs and desire for fashionable goods influence the decisions to engage in transactional sex among young people in Blantyre urban slums, Malawi. Oral presentation at the 17th International Conference on AIDS and STIs in Africa (ICASA), 7-11 December, 2013, Cape Town, South Africa.

VII. Kamndaya M., Vearey J., Thomas L., Kabiru CW., & Kazembe LN. Forced sexual intercourse among young people in urban slums, Malawi: An analysis of material deprivation effects and implications for interventions aimed at reducing sexual and reproductive health risks in poor urban areas. Poster presentation at the 2nd COM-NAC Joint Research Dissemination Conference on *"Reduction of disease burden in Malawi: Evidence-based public health approach"* 27-28 November 2014, Lilongwe, Malawi.

VIII. Longwe MB., Kamndaya M., & Christofides N. The extent and risk factors for transactional sex among young people, in urban informal settlements in Blantyre, Malawi. Oral presentation at the second COM-NAC Joint Research Dissemination Conference on *"Reduction of disease burden in Malawi: Evidence-based public health approach"* 27-28 November 2014, Lilongwe, Malawi.

IX. Kamndaya M., Vearey J., Thomas L., Kabiru CW., & Kazembe LN. Forced sex among young people in urban slums, Malawi: Lessons from material deprivation effects and implications for interventions aimed at reducing sexual and reproductive health risks in poor urban areas. Oral presentation at the 18th International Conference on AIDS and STIs in Africa (ICASA), 8-13 November, 2015, Harare, Zimbabwe.

X. Longwe MB., Kamndaya M., & Christofides N. The extent and risk factors for transactional sex among young people in urban informal settlements in Blantyre, Malawi. MPH Thesis, **(Graduated in July 2015)**, School of Public Health, University of the Witwatersrand.

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4. Travel award by the WITS School of Public Health to attend the 9th Public Health Association of South Africa (PHASA) 2013 conference, 24-27th September 2013, Cape Town, South Africa.

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Structure of the thesis

This PhD is being written through a publication route; with the thesis consisting of a series of three published academic papers that is preceded by a 'cover story'[3].

The cover story

I will begin by presenting – upfront – the research question (in Section 1), research aim and the specific research objectives (in Section 2) that this thesis aims to address.

A background section (Section 3) follows that includes a literature review on the HIV epidemic and urban slums in Southern and Eastern Africa. The literature review outlines gaps in understanding – and responding to – local contexts associated with sexual risk in the growing urban slum settings in the SEA region that this thesis contributes towards.

A conceptual research framework is then presented. This framework has been developed to assist in explaining the complex relationships between local measures of deprivation and sexual risk, drawing on the social determinants of health framework.

I then move on to present the four central thesis themes that arose from the analysis of the empirical data, and has guided the synthesis of the research findings: (1) patterns of sexual risk vary by sex and country in urban slum settings; (2) underlying reasons for decisions to engage in transactional sex; (3) need for more detailed measures of disadvantage associated with sexual risk; and (4) study design and methods to understand generic and context-specific issues in urban slums.

An overview of the data and methods applied in this research are then presented in Section 4.

[3] The term 'cover story' originates from Umea University in Sweden. It has been adopted within the School of Public Health, University of the Witwatersrand to refer to the written piece that synthesises the set of publications that together form the requirements for submission of a PhD with publications.

I have organised the results section (Section 5) into three sub sections. The first sub section (by way of background) provides a short description of the socio demographic characteristics of the South African and Malawian study populations. The second sub section presents results from a comparative analysis of the two country quantitative datasets. The last sub section presents the four thesis themes emerging from a synthesis of all the data from the two sub studies and new results of an analysis of variables which explained the most variance in sexual risk in the two quantitative studies.

I use the discussion section (Section 6) to discuss the results thematically with reference to the four thesis themes and the existing literature. In addition, I use the discussion section to suggest innovations in combination HIV prevention strategies for young people living in urban slum settings in the SEA region.

A section outlining the limitations of this research follows (Section 7).

Finally, the concluding section (Section 8) of the 'cover story' summarises the research findings according to the emerging thesis themes and the implications for an urban slum-specific framework for HIV prevention among young people living in urban slums of the SEA region. The section concludes with suggestions for future research.

The last section is a presentation of the three papers of this thesis.

List of abbreviations

ADDRF	African Doctoral Dissertation Research Fellowship
AIDS	Acquired Immune Deficiency Syndrome
ANOVA	Analysis of Variance
APHRC	African Population and Health Research Center
CARTA	Consortium of Advanced Research Training in Africa
CBD	Central Business District
CI	Confidence Interval
CT	Cash Transfer
DHS	Demographic and Health Survey
FGD	Focus Group Discussion
HIV	Human Immunodeficiency Virus
HSRC	Human Science Research Council
IDRC	International Development Research Centre
IDI	In-Depth Interview
JAS	Joint Advanced Seminar
LMICs	Low-to-Middle Income Countries
MWK	Malawi Kwacha
NAC	National AIDS Council
AOR	Adjusted Odds Ratio
PCA	Principal Components Analysis
PhD	Doctor of Philosophy
REC	Research Ethics Committee
SADC	Southern Africa Development Community
SES	Socio-economic status
KII	Key Informant Interview
SSA	Sub-Saharan Africa
SD	Standard deviation
STI	Sexually Transmitted Infection
SRH	Sexual and Reproductive Health
UN	United Nations
UN-HABITAT	The UN Human Settlements Programme
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNFPA	United Nations Population Fund
UNICEF	United Nations Children Education Fund
VIF	Variance Inflation Factor
WITS	University of the Witwatersrand
WHO	World Health Organisation

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1. Research question

The key research question addressed in this research is: **how does the combined influence of material and economic deprivations, and individual-level factors affect sexual risk among young men and young women in urban slums in Malawi and South Africa?**

2. Aim and objectives

This research has two overall goals: (1) to provide suggestions about what innovations are needed for an urban slum-specific combination HIV prevention framework for young people living in urban slums of the SEA region; and (2) to contribute new methods for measuring local expressions (context-specific factors) of disadvantage associated with HIV-related sexual risk behaviour of young people in these settings.

2.1 Research aim

Based on a review of the literature and the synthesis of two sub studies conducted in Malawi and South Africa, the aim of this research is to better understand relationships between local measures of material deprivation, economic deprivation, and dimensions of sexual risk that will inform the need for the development of an urban slum-specific combination HIV prevention model in urban slum settings to reduce risk of young people in these settings.

2.2 Research objectives

1) To **examine** association between material deprivation and sexual risk-taking among 18-23 year old young women and young men in urban slums using secondary data from South Africa and **apply** the findings of this analysis to the study design and methods in Malawi;

2) To **explore** the role of material deprivation in sexual decisions among 18-23 year old young men and young women in the urban slums of Blantyre, Malawi;

3) To **describe** patterns of unsafe sex by gender among young people living in urban slums in Malawi and South Africa; and

4) To **develop** and test a multi-level model of associations of material deprivation, economic disadvantage with sexual risk behaviour among 18-23 year old young women and young men in the urban slums of Blantyre, Malawi.

3. Background

In this section, I will provide an overview of the links between urbanisation, HIV and inequality in the Southern and Eastern Africa (SEA) region. In particular, I will highlight what I consider to be the key limitations of our understanding of sexual risk within a context of high HIV prevalence in the growing urban slums of the SEA region. In addition, I will highlight what I consider to be the critical concerns in the existing structural interventions to address sexual risk among young people living in urban slums in this region. These issues have been identified through a review of the literature and the two sub studies that form this research. The two sub studies draw on both quantitative and qualitative methods to explore a range of urban experiences focussing on indicators of material deprivation – specifically housing and food insecurity, and poor access to health care – known to be associated with HIV-related sexual risks – (non-use of condom at last sex, multiple (two or more) sexual partners, and transactional sex) in urban slum settings (Greif, 2012; Kunnuji, 2014). However, my review of the existing studies confirms that there is no consistency on *what* constitutes and *how* to measure these critical factors in urban slum settings of the SEA region. The methodological approach used in my research shows what I consider to be three key study findings: (1) facing hardship in meeting basic necessities underlies motivations for decisions to engage in transactional sex among both young men and young women in urban slums; (2) young women may be coerced to have sex for things – such as housing, food or access to healthcare – deemed necessary for survival in urban slums; but beyond that (3) a desire for fashionable goods underlies young women's motivations for decisions to engage in transactional sex. These findings are used in later sections of the thesis to critique existing frameworks on HIV prevention that provide suggestions for the design of HIV prevention interventions in high HIV prevalence settings – in this case, urban slums – in the SEA region.

The findings from the two sub studies lead me to argue that existing frameworks on HIV prevention in high HIV prevalence settings are unable to engage adequately with the conditions and realities in urban slum settings. In particular, I will go on to argue that existing structural interventions – as well as research – that focus on income-related indicators of poverty do not deal adequately with the lived experiences of young people in urban slums in a context of high HIV prevalence. One of the strongest critiques emerging of income-related measures of poverty is that they do not reflect levels of access to key basic services among residents in urban slums (Thomas et al., 2011; Vearey et al., 2010; Lynch et al., 2000). As a result, HIV prevention interventions focussing on addressing income-related measures of poverty alone lack adequate suggestions for how to deal with broader deprivations – such as a reduced access to key basic services - in order to reduce the health risks among young people in these settings. Findings from the two sub studies have informed the key recommendations and strategies required for responses that prioritise young people in urban slums in HIV prevention. Specifically, I argue that strategic prevention interventions should focus on addressing material deprivation and the desire for high-value social items when targeting young people in urban slums. A specific focus on young people in urban slums of the SEA region is important given that: (1) research from some countries in this region has shown that the HIV prevalence and incidence in urban slum populations is double (or more) that in the non-urban slum population of the same city (Thomas et al., 2011; Madise et al., 2012; Rehle et al., 2007; Kyobutungi et al., 2008); and (2) recent evidence has highlighted young people in these settings as an increasingly marginalised segment of the urban population at high risk of HIV acquisition (Mberu et al., 2013; Gibbs et al., 2012; Stroeken et al., 2011).

3.1 Urbanisation and HIV in the Southern and Eastern Africa (SEA) region

Unprecedented urban growth is occurring in the SEA region where estimated rates of urban growth are considered to be the highest (at 3.3% per year between 2005 and 2010) globally

(UN-Habitat, 2010a). The urban population of this region was 53 million in 1990 – a number that rose to approximately 110 million in 2010 – (United Nations, 2011). Furthermore, the United Nations has estimated that the urban population in this region will exceed 200 million by 2030 (United Nations, 2011). Currently, approximately 70% of the urban population in the region live in urban slums (UN-HABITAT, 2008).

Urban slums are associated with a high HIV prevalence in the SEA region (Thomas et al., 2011; Madise et al., 2012; Kyobutungi et al., 2008; Rehle et al., 2007). Research from some of the countries in the SEA region has shown that the HIV prevalence in urban slums is double (or more) that in the non-slum areas of the same city (Thomas et al., 2011; Madise et al., 2012; Kyobutungi et al., 2008; Rehle et al., 2007). For example, a recent survey undertaken with 3000 men and women in two urban slums in Nairobi, Kenya showed that HIV prevalence was 12% among urban slum residents compared with 5% and 6% among residents in other urban and rural areas respectively (Madise et al., 2012). Similarly, HIV prevalence in South Africa is highest in urban slum settings where approximately 21.6% of the residents are HIV-positive (Shisana et al., 2009). Approximately 8.7% of the South African population lives in urban slums, and this estimate represents approximately 30% of new HIV infections (Rehle et al., 2007). Magadi (2012) used data from the Demographic and Health Surveys (DHS) from 20 countries in sub-Saharan Africa to establish the extent to which these intra-urban differences are generalisable across countries. The study came up with broadly similar findings to existing research that residents in urban slums have significantly higher odds of HIV infection than their counterparts in non-slum areas (Magadi, 2012). Although existing studies on urban slum residence and HIV provide useful findings, gaps exist in knowledge regarding how specific urban slum conditions may be associated with a high HIV prevalence. Limited attention is paid to the mechanisms of how poor urban living conditions are associated with a high HIV prevalence.

The lack of such studies is especially notable among young people living in urban slums – who are highlighted as an increasingly marginalised segment of the urban population at high risk of HIV acquisition (Mberu et al., 2013; Gibbs et al., 2012; Stroeken et al., 2011). It is thought that young people growing up in these settings are among the most disadvantaged and vulnerable in the SEA region and deprived of the most basic services (United Nations Children's Fund, 2012). Young people who face this marginalisation are thought to be most at risk of HIV acquisition in urban slums (Unger, 2013; Mmari and Astone, 2014). However, existing studies have in a large part provided limited analysis of the magnitude of differences in HIV status and/or acquisition among young people in urban slums and non-slum areas. A contributing factor to the dearth of scholarly work in this direction has been the unavailability of urban-specific data which disaggregate young people in urban slum and non-slum areas.

3.2 Sexual risk and the urban slum environment

Research from some countries in the SEA region – including Malawi and South Africa – and around the world have highlighted the significant disadvantages faced by young people with respect to sexual risk relative to other population sub-groups in non-slum settings (see, for example, Kabiru et al., 2010; Zulu et al., 2002; Beguy et al., 2009; Greif et al., 2011; Dodoo et al., 2007; Krishnan et al., 2008; Brewster et al., 1993; Browning et al., 2008; Mkandawire, 2011; Tenkorang et al., 2011). These studies have focused on issues of social and economic inequality, as well as other structural factors, such as youth unemployment and education opportunities, social cohesion and integration (or the lack of thereof) to determine how deprivation is associated with sexual risk in urban slums (Brewster et al., 1993; Browning et al., 2008; Dodoo et al., 2007; Greif et al., 2011). Regarding social cohesion and integration, these studies have shown that social networks through forms of social support, social influence, social engagement and attachment are linked to access to resources and material goods in urban slums. The greater social density and social isolation in these settings may

contribute to closed sexual networks that underpin HIV risk, particularly for women. Alternatively, family and social networks can provide social support and reinforce social norms and behaviour that serve as protective factors (financial assistance) and reduce risk of HIV acquisition. Despite this evidence, Greif (2012) and Burns and Snow (2012) noted that these social aspects might not be critical in urban slums in the SEA region. A dominant theme that has emerged from studies conducted in this region and other countries in sub-Saharan Africa, is that the economic stresses associated with low wages and widespread youth unemployment are associated with young women using sex in exchange for basic needs – commonly referred to as transactional sex (see, for example, Luke, 2005a; Izugbara et al., 2013; Adedimeji et al., 2007).

Defining transactional sex is a challenge because it is a common practice to exchange resources in sexual relationships (Stoebenau et al., 2013; Zembe et al., 2013). Nonetheless, there seems to be a common understanding by social scientists that transactional sex differs from sex work in that: (1) the exchange for resources is undertaken in a relationship; (2) the negotiation of exchange for resources is neither explicit nor upfront; and, (3) those who engage in the practice differentiate their behaviour from sex work (Leclerc-Madlala, 2003; Poulin, 2007; Wamoyi et al., 2010; Wojcicki, 2002). In the qualitative component of this PhD research, transactional sex operated as exchange of sex for goods or resources in casual or committed relationships (see Paper II).

Whilst existing studies have provided useful insights on transactional sex, limited attention is paid to what influences decisions to engage in this sexual practice from the perspective of both young women and young men living in urban slums of the SEA region. However, research that used data from the Demographic and Health Surveys (DHS) has shown that 7.4% - 42.8% of unmarried young men and 3.4% - 18.3% of married men reported engaging

in transactional sex (Luke, 2005b). Transactional sex in DHS surveys across countries in sub-Saharan Africa is defined by *ever paid for sex* – which is inadequate given that the inclusion of *paid* in the definition leads to young people to report participation in paid transactional sex (Stoebenau et al., 2013). Another study in the urban slums of Ibadan, Western Nigeria, showed that 29% of young men and 38% of young women aged 15 – 24 years were engaged in transactional sex (Adedimeji et al., 2007). This situation is critical in urban slums given that many young people in these settings experience an acute lack of resources including poor access to healthcare, and where deprivation of material resources manifests in different ways and influences young people to make different decisions to survive, including decision-making around sexual behaviour.

Furthermore, literature exists that suggests that in urban slums, a desire for high-value social goods (for example, latest clothing, hair products, and cellular phones), and use of mass media technologies are examples of factors that underlie young women's decisions to engage in transactional sex (Zembe et al., 2013; Kaufman et al., 2014; Stoebenau et al., 2013). Few studies have addressed the question of why and how desire for consumer goods becomes so relevant in these settings. Thus, HIV prevention programmes might not be successful if we do not understand **why** young people are inclined to consumerism to a point that they can risk their health in urban slums. While the question of **why** consumerism has become so central in these settings it goes beyond the aims of this thesis. I focus on the roles of **both** material disadvantage and a desire for fashionable goods in decisions to engage in transactional sex as well as decision not to use condoms and to have more than one sexual partner. This focus is important as it will assist in what implications this has for the design of future research and effective HIV prevention targeting young people living in these settings.

Linked to the circumstances surrounding young people's decision to exchange sex to address unmet needs or a desire for fashionable goods, Tyler and Johnson (2006) add some caution – that some young people may be coerced to have sex for basic things deemed necessary for survival in urban slums. In a qualitative study undertaken with homeless youth in the United States, Tyler and Johnson (2006) found that whilst some young people had exchanged sex for things – food, shelter, money or drugs – they deemed necessary in order to survive, others were coerced or forced to do so. While transactional sex and coercive sex are defined differently, the research findings by Tyler and Johnson (2006) suggest a continuum of determinants of the two sexual risk behaviours among young people living in disadvantaged urban settings. The interest in research to explore these indicators of material disadvantage in relation to coercive sex has grown in urban slum settings of the global south (Chant, 2013; McIlwaine, 2013). For example, McIlwaine (2013) has commented that poor housing, food insufficiency and poor access to health care intensify or attenuate the effects of individual-level factors that influence coercive sex in urban slums. However, innovative and high-quality research is needed to substantiate McIlwaine's (2013) claim. Gaining a clearer understanding of those factors identified in the literature not only contributes to knowledge, but also to measure progress in addressing the social determinants of health in order to reduce health inequalities between residents in urban slums and non-slums (Vearey et al., 2010; Thomas et al., 2011). In the light of this thought, Thomas et al. (2011) note that there is a growing need to address the upstream determinants of HIV acquisition – such as transactional sex and coercive sex – among the residents in slums by focusing on housing and food insecurity, and poor access to health care that are found to be critical in the SEA region. Thomas et al. (2011) conclude by suggesting that there is a need for HIV prevention strategies in slums to address food insecurity, insufficient housing, and poor access to health

care. This call is made given that these factors affect the likelihood of acquiring HIV and focussing on these factors is necessary in order to inform effective HIV prevention strategies.

In summary, I have outlined what I argue to be the critical measures of deprivation associated with transactional sex and coercive sex in urban slums – in particular, insufficient housing, food insecurity, and poor access to health care. I have also argued that it is important to explore the roles of both material deprivation and a desire for fashionable goods in decisions to engage in unsafe sex in urban slums. Findings from this research have important implications regarding how to understand and respond specifically to HIV among young people living in urban slum settings of the SEA region.

3.3 Responding to HIV among young people in slums of the SEA region

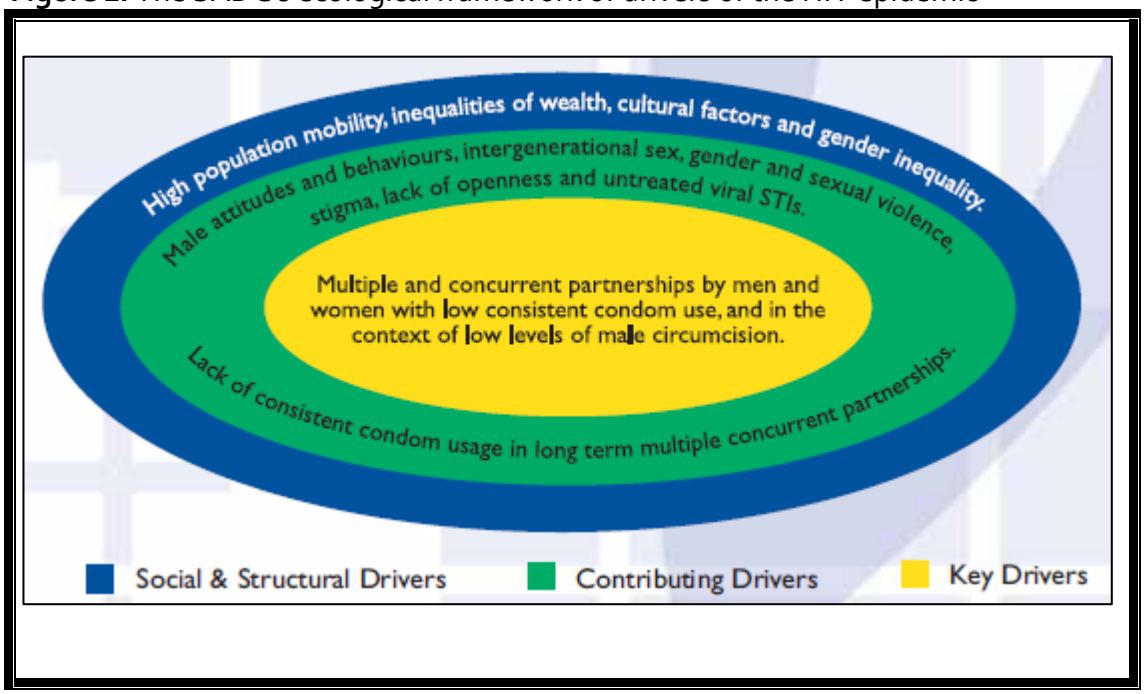
In this section, I will review the existing frameworks guiding the development of prevention interventions among young people in high HIV prevalence settings in the SEA region. The review shows that there is no comprehensive framework to assists governments in planning for – and implementing – interventions to reduce HIV sexual risk of young people in urban slum settings. I use the HIV ecological framework – that was developed by the Southern Africa Development Community (SADC) for addressing HIV in high HIV prevalence settings in southern Africa (SADC, 2006) – as a key conceptual framework assist me in organising my review. I will summarise the current state of knowledge from this framework by providing examples of what are considered to be best practices. In this regards, I will pay particular attention to the combination HIV prevention framework that the Joint United Nations Programme on HIV/AIDS (UNAIDS) recommends for addressing weaknesses in existing HIV prevention frameworks and for generating significant and sustained reductions in HIV incidence in high HIV prevalence settings (UNAIDS, 2010b). Thereafter, I will argue that existing frameworks should be further developed for young people in urban slums.

3.3.1 The SADC HIV ecological framework

The SADC framework (Figure 1) was developed by the 14 member states of the SADC – including Malawi and South Africa (UNAIDS, 2010a). This framework recognises that:

> "key drivers of the HIV epidemic in high HIV prevalence settings in southern Africa include multiple concurrent partnerships by men and women with low consistent condom use, and in the context of low levels of male circumcision; the contributing drivers of the HIV epidemic include male attitudes and behaviours, intergenerational sex, gender and sexual violence, stigma, lack of openness, untreated viral STIs and lack of consistent condom usage in long-term multiple and concurrent partnerships. Underlying these drivers are the social and structural factors such as high population mobility, inequalities of wealth, cultural factors and gender inequality that render young women vulnerable to HIV acquisition" (SADC, 2006: 3).

Figure 1: The SADC's ecological framework of drivers of the HIV epidemic



(Figure adapted from SADC, 2006 : 3)

The SADC ecological framework highlights inequalities of wealth, high population mobility, cultural factors and gender inequality as important social and structural drivers of HIV

particularly among young women in high HIV prevalence settings in the region (SADC, 2006). However, part of the overall limitation of this framework is that there is no framework to guide its implementation in urban slum settings of a country-specific context. In addition, the framework does not provide any guidelines for suggestions of how to develop or implement prevention interventions to address the social and structural drivers of HIV.

Some structural prevention interventions – for example, cash transfers – have been developed and implemented among young people in different settings (Baird et al., 2012; Cluver et al., 2014; Pettifor, 2015). While cash transfers (CTs) promise to change young people's HIV-related sexual risk behaviour, there are doubts about whether they will be able to affect the social and structural drivers of HIV (Doherty et al., 2013; Zembe et al., 2013). One of the critiques emerging of CTs is that their assessment in programmatic settings has been anecdotal and few have been designed with rigorous research design linked to biological outcomes such as HIV incidence and are thus unlikely to show any evidence of effectiveness (for a useful discussion, see Doherty et al., 2013; Pettifor et al., 2012). More than this, CTs do not address 'complex social and economic inequalities' (Johnston et al., 2015 : 337). For this reason, Doherty et al. (2013 : 199) argue that CT's pause a threat of 'oversimplifying the complex mix of challenges' of living in urban slums and of solutions that might be needed to improve the health and wellbeing of residents in these settings. In the light of these challenges, there is a need for more and better designed research of measures of economic inequalities, disadvantage and sexual risk as these types of studies are few and the overall body of evidence is weak to guide structural interventions aimed at addressing complex social issues in urban slums of the SEA region.

The SADC ecological framework is important given that it usefully engages with economic inequalities and sexual risk, and therefore can engage with intra-urban inequalities

encompassing disadvantage in urban slums. It also recognises a range of sexual risks – including coercive sex (sexual violence) and young women's involvement in transactional sex with older men – all of which have been associated with HIV acquisition among young people. However, in the light of the limitations highlighted above, there is a need for research to further develop and adapt the SADC framework to urban slums.

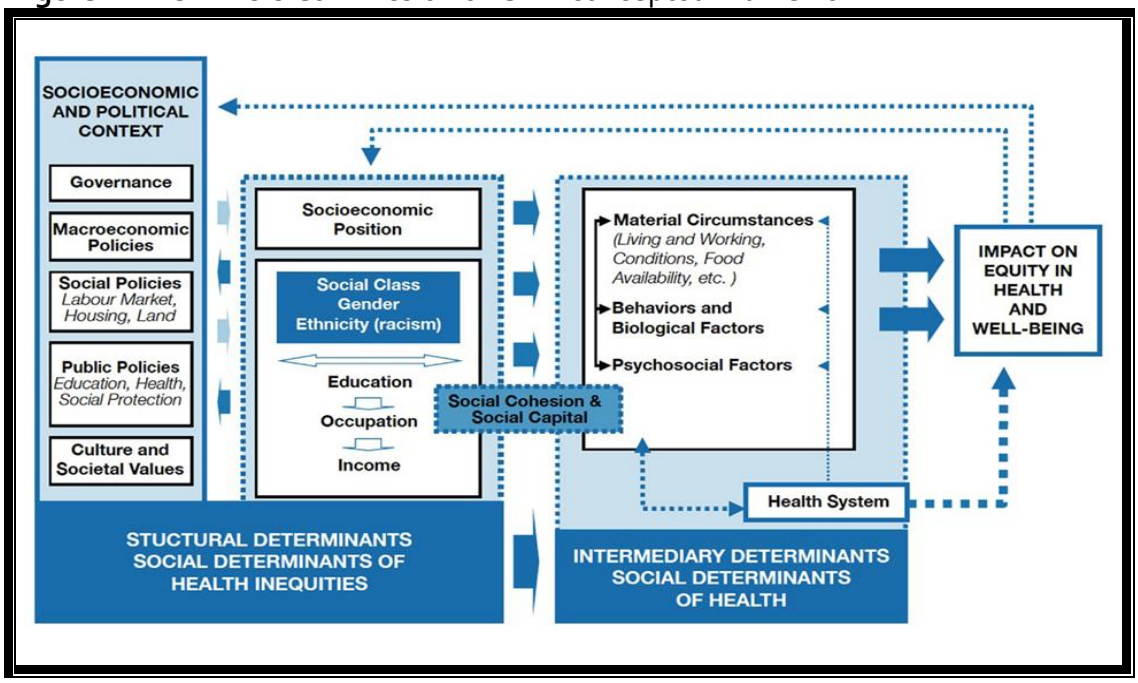
Various frameworks have been developed for urban health developed to assist in understanding the impact of urban living conditions on health (see, for example, Vlahov et al., 2005; Freudenberg et al., 2005; Galea et al., 2005; WHO, 2008; WHO, 2010; Starfield, 2007). One of the strongest critiques emerging of the existing urban health frameworks is that they fail to assist in what needs to be known and done to reduce risk of young people in urban slum settings in the global south (for a useful discussion, see Vearey, 2011). Most of these urban health frameworks draw on the Social Determinants of Health (SDH) framework (WHO, 2008; WHO, 2010), which is discussed in the next sub section.

3.3.2 The Social Determinants of Health framework

The Social Determinants of Health (SDH) framework provides an overview of the social and economic determinants of health, and depicts how these determinants could be interlinked. It is premised on various theoretical traditions – including, material (or structuralist) theory, eco-social theory, psycho-social model, social production of health model – and on other previous SDH models that define the risk and the impact of ill health as the outcomes of inequalities in the distribution of SDH in a population (WHO, 2010). The framework distinguishes 'structural determinants' (for example, macro-economic policy, social policy, public policy, governance and social and cultural values) that configure socioeconomic position (for example, social class, ethnicity or gender) from 'intermediary determinants' that include living and working conditions, behavioural, psychosocial and biological factors and the health care system. Interactions between the structural and intermediary determinants

determine disparities in health and well-being. Figure 2 shows the SDH framework by the WHO's Commission on Social Determinants of Health (CSDH) (WHO, 2010).

Figure 2: The WHO's Commission on SDH conceptual framework



(Figure adapted from WHO, 2010)

While the SADC and the SDH frameworks reviewed above are important, they do not help in taking forward a setting-specific approach to assessing HIV risks and guiding the development of appropriate interventions for young people in urban slum settings in different countries in the SEA region. Thus, based on my literature review and findings from my study, I argue that an urban slum-specific framework is required to assist in the planning for – and implementing – prevention interventions to address material deprivations and consumerism in urban slums of the SEA region.

I will now turn to combination prevention approaches that the Joint United Nations Programme on HIV/AIDS (UNAIDS) recommends for HIV prevention in high HIV prevalence settings (UNAIDS, 2010b). This focus is important given that combination HIV prevention interventions have become a consensus framework for HIV prevention (UNAIDS,

2010b). More than this, combination HIV prevention approaches recognise that isolated HIV prevention efforts that do not address context can be far less successful in reducing HIV incidence (Hankins and de Zalduondo, 2010; Shanaube and Bock, 2015).

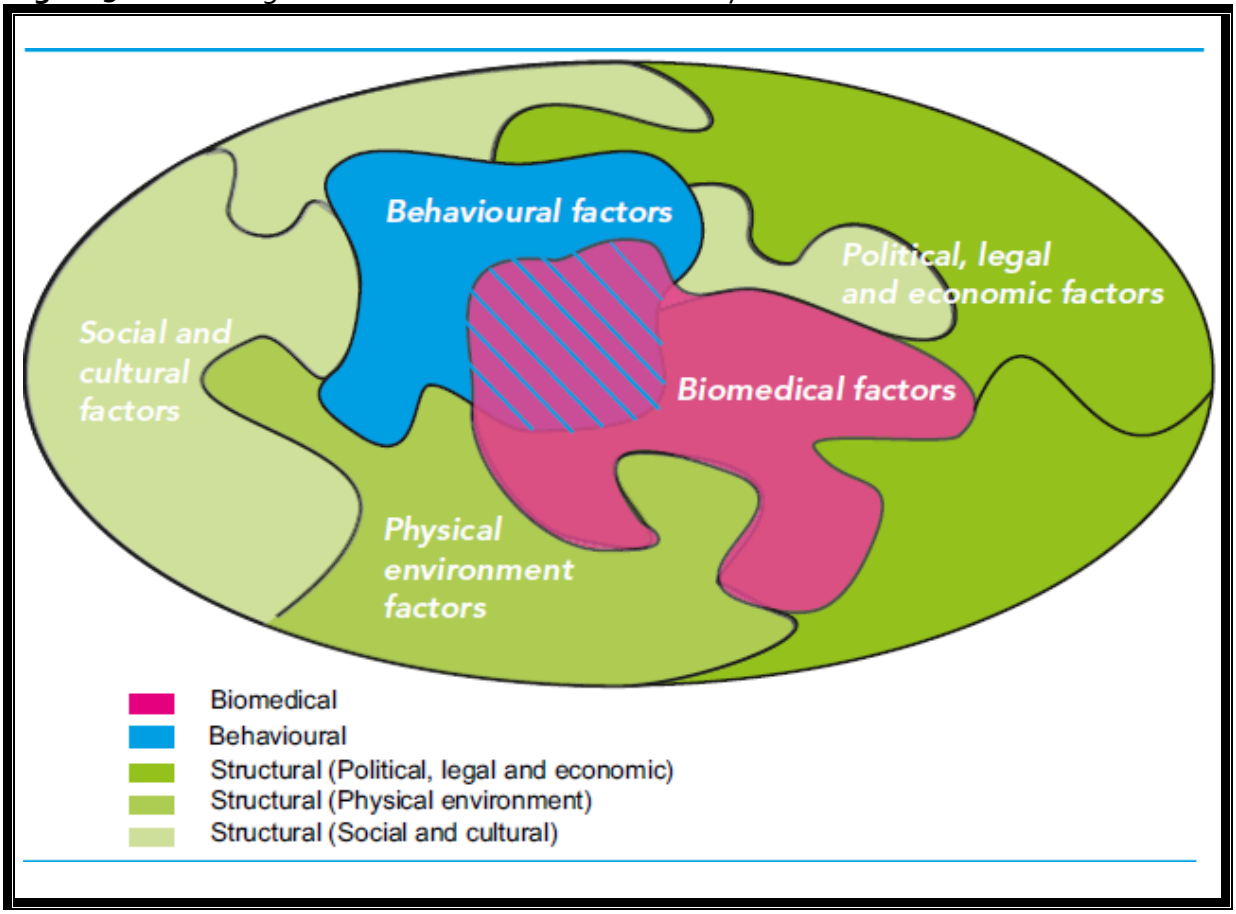
3.3.3 Combination HIV prevention interventions

The UNAIDS defines combination prevention interventions as:

> "... rights-based, evidence-informed, and community-owned programmes that use a mix of biomedical, behavioural, and structural interventions, prioritised to meet the current HIV prevention needs of particular individuals and communities, so as to have the greatest sustained impact on reducing new infections. Well-designed combination prevention programmes are carefully tailored to national and local needs and conditions; focus resources on the mix of programmatic and policy actions required to address both immediate risks and underlying vulnerability; and they are thoughtfully planned and managed to operate synergistically and consistently on multiple levels (e.g. individual, relationship, community, society) and over an adequate period of time. They mobilise community, private sector, government and global resources in a collective undertaking; require and benefit from enhanced partnership and coordination; and they incorporate mechanisms for learning, capacity building and flexibility to permit continual improvement and adaptation to the changing environment.." (UNAIDS, 2010b : 8).

Combination prevention programmes operate on different levels (for example, individual, relationship, community, societal) to address the specific, but diverse needs of the populations at risk of HIV infection (see Figure 3).

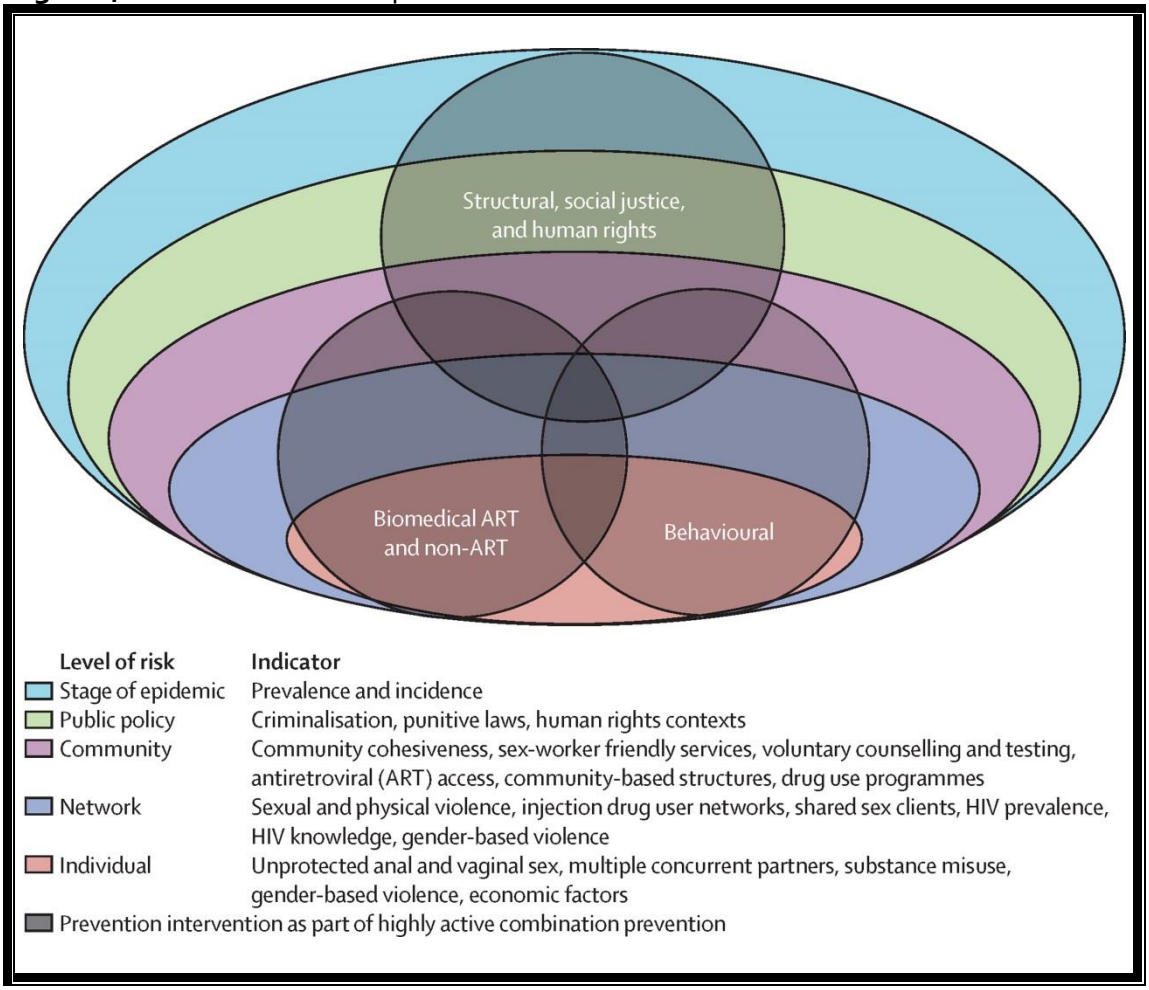
Figure 3: Interacting causes of HIV risk and vulnerability



(Figure adapted from UNAIDS, 2010b)

A typical combination prevention approach includes three critical components: (1) biomedical interventions (for example, medical male circumcision, and treatment of STI's); (2) behavioural interventions; and (3) structural interventions to address the social and structural drivers of the HIV epidemic and create environments more supportive for vulnerable populations (UNAIDS, 2010b). Figure 4 shows a typical example of a combination HIV prevention framework for vulnerable groups.

Figure 4: A combination HIV prevention framework: levels of risk and interventions



(Figure adapted from Bekker et al., 2015 : 73)

Best practice of combination prevention recommends that a specific combination intervention drawing from the three critical components should be designed based on local contexts (Hankins and de Zalduondo, 2010; Shanaube and Bock, 2015). However, there is still debate regarding how to best implement combination intervention approaches in sub-Saharan Africa (Vermund et al., 2013; Kurth et al., 2010). Given that few dedicated studies have been conducted to provide an understanding of local context associated with sexual risk among young people in urban slum settings in the SEA region, little evidence exists to inform specific combination interventions for this segment of the urban population in a context of high HIV prevalence. Thus, there is still the need for more innovative research on local context to inform combination interventions that will impact strongly on HIV in urban slums.

3.4 A conceptual framework

From my review of existing frameworks, it is evident that there is no comprehensive framework regarding what needs to be known and done to address material deprivation and consumerism to reduce risk of young people living in urban slum settings of the SEA region. There is also no urban slum-specific framework specifically to guide combination HIV prevention strategies in urban slum settings.

Against this backdrop, I have **developed** a conceptual framework that has enabled me to: (1) explore local expressions of material deprivation and consumerism associated with sexual risk of young people; (2) **suggest what the gaps** are in understanding the differences between different settings and contexts and therefore what future research is needed to develop tools to assess the generic and specific settings in different countries in the SEA region regarding HIV sexual risk; and (3) **suggest what innovations** are needed in combination HIV prevention strategies specifically for young people living in urban slums of the SEA region.

Based on review of literature and existing frameworks, the fundamental premise of my conceptual framework is that deprivation in the form of limited access to basic needs and resources create social and structural conditions that affect health and well-being of urban residents (Harpham, 2009). I draw on this perspective to emphasise the local expressions of material deprivation that are important in understanding key structural factors associated with sexual risk among young people in urban slums in Malawi and South Africa.

Emphasis on local expressions of deprivation is in recognition of the idea that in order to better understand the impact of inequalities of wealth in the SADC ecological framework on sexual risk in urban slum settings, it is important to move away from purely income-related measures (which do not reflect levels of access to basic services) to measures that represent the living experiences in specific urban slum settings (Thomas et al., 2011; Vearey et al.,

2010). In the light of this idea, the work of Greif (2012) in Nairobi slums, Kenya provides useful guidance for me to suggest in my conceptual framework how material deprivation and purely income measures could interconnect in relation to sexual risk in urban slum settings in Malawi and South Africa.

It is important to acknowledge that the effects of material deprivation on sexual risk operate through different processes – one of which may be the neighbourhood environment – that is, residential area in which people live (Diez-Roux, 2001). In this research, urban slums constitute the neighbourhood environment. Diez-Roux's work on effects of neighbourhood environment on health-related behaviour (Diez-Roux, 2001) provides a useful theoretical guide for me to conceptualise material deprivation as a household-level contextual factor within urban slum settings as illustrated in Figure 5. I will now go on to describe material deprivation in detail and how it relates to other contextual and individual-level factors in explaining sexual risk within urban slums.

3.4.1 Material deprivation and consumerism

In this sub-section I will focus on material deprivation and consumerism - as illustrated in my conceptual model (Figure 5 below) - and how these two relate to other contextual and individual-level factors in explaining sexual risk among young people in urban slum settings.

3.4.1.1 Material deprivation

Material deprivation, in my conceptual framework, is a multidimensional construct of local measures of lack of appropriate housing, food, and poor access to healthcare. Housing, food and health care access are multidimensional concepts that encompass aspects of housing quality, instability and overcrowding (Aidala et al., 2005); availability, accessibility and utilisation of food (Ivers and Cullen, 2011) and affordability, acceptability and availability of health care (Peters et al., 2008; Thiede and McIntyre, 2008). Existing studies have considered

either one component or single-item measurement of the components of material deprivation (see, for example, Greif, 2012; Kunnuji, 2014; Dodoo et al., 2007). The association between material deprivation and sexual risk is most frequently examined through the inclusion of either one dimension of deprivation or a single deprivation-related item (Greif, 2012). The reason for considering one dimension of deprivation or a single deprivation-related item has always been the paucity of data on multiple-item measurement of the components of material deprivation. Single-item measures of deprivations often overestimate or underestimate the statistical significance leading to biased results (Noble et al., 2010). Thus, my conceptual framework proposes multiple items to measure material deprivation which is different from the majority of existing studies that used either one component or single-item measurement of the components of material deprivation. In so doing, it makes the findings of this study more meaningful when material deprivation is discussed, and thus expands the discussion on deprivations and understanding of how a combination of varied forms of deprivations may be associated with sexual risk of young people in urban slum settings.

The conceptual framework also illustrates two structural factors that are important in moderating the association of deprivation and sexual risk. The two factors are migration (population mobility) and family structure. Migration of young people from rural to urban areas, in the context of poverty, has been suggested as partly responsible for the high sexual risk behaviour in urban slum settings in sub-Saharan Africa (Mberu and White, 2011; Greif and Dodoo, 2011; Zulu et al., 2011). I included one migratory factor in my conceptual framework, which only reflects length of stay since arrival in the urban slums. This decision was based on the fact that the focal construct, material deprivation, is conceptualised based on material living conditions (food insecurity, living in overcrowded or unsafe housing, and poor access to health care) which are dependent on duration of residence within urban slum settings (Greif, 2012). Turning to family structure, most of the existing studies have showed

that young people living with neither- or one-parent families are more likely to experience more deprivations and therefore greater likelihood of reporting sexual risk behaviour than those living with two-parent families (Mkandawire et al., 2011b; Madise et al., 2007). The effects of the family structure as well as migration on sexual risk may be interacting with individual-level characteristics, revealing a greater overall impact of sexual risk behaviour. If the effects are interactive then the results may reveal that the differential vulnerability is partly explained by characteristics of their family structure and migration.

3.4.1.2 Consumerism

Consumerism – a desire for fashionable goods – is another construct included in my conceptual model. The model construct of consumerism helps me to argue that material deprivation alone might be insufficient to explain sexual risk among young people in urban slum settings. It also helps me to argue that there is need to delve into this aspect to properly inform the development of an urban slum-specific combination and HIV prevention framework to reduce HIV risk of young people in Malawi and South Africa. Along with material deprivation, consumerism might be an important, albeit often overlooked, structural driver of young people's decisions to engage in risky sex in urban slum settings in sub-Saharan Africa (Underwood et al., 2011; Zembe et al., 2013). As such, it is important to explore the roles of both material deprivation and consumerism in relation to sexual risk in order to better inform effective combination prevention strategies in these settings.

3.4.2 Individual-level factors

The factors described above influence sexual risk through intermediate individual-level factors categorised as behavioural, socio-demographic or psychosocial factors. From the SADC ecological model (Figure 1), important behavioural factors include engaging in other risk behaviour (for example, substance abuse), age-disparate sex, and early age of sexual

debut. On the other hand, the socio-demographic factors include sex, marital status, school status, and employment status. Psychosocial factors, which include access to HIV/AIDS information, knowledge, attitudes, and beliefs, were not included in Figure 5. An explanation for not including these factors in Figure 5 is that previous studies on deprivations and sexual risk did not consider psychosocial factors (see, for example, Greif, 2012; Kunnuji, 2014; Dodoo et al., 2007) or did not yield any significant results (see, for example, Burns and Snow, 2012). However, it is possible that other psychosocial factors, such as self-efficacy and social support may serve as protective factors and reduce risk of HIV acquisition. I did not focus at protective factors in my conceptual framework given that they are not considered as critical in urban slums in the SEA region (Burns and Snow, 2012). The next paragraph is a brief description of the individual-level factors associated with sexual risk of young people in urban slum settings in sub-Saharan Africa.

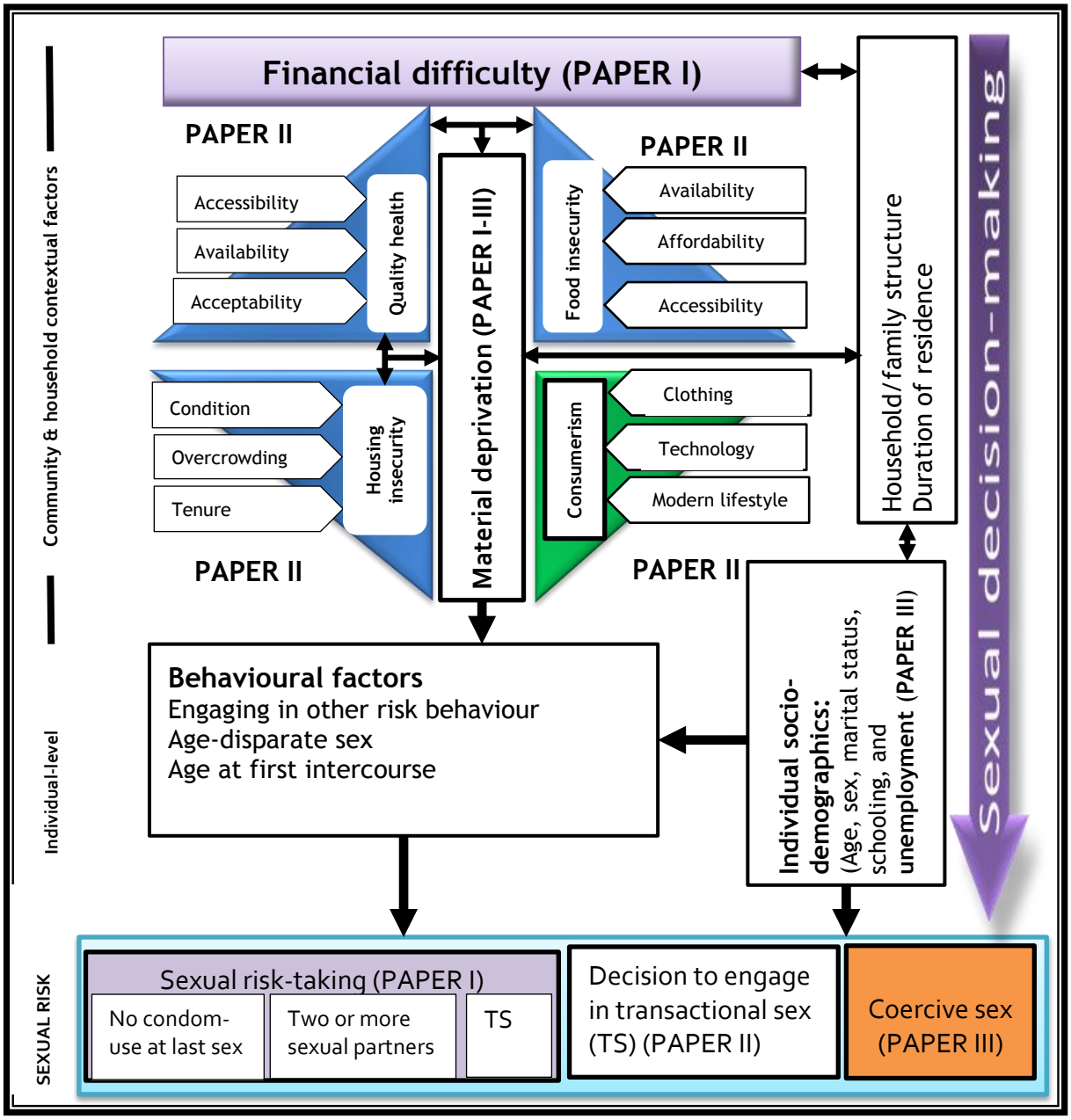
Early age of sexual debut is associated with a longer history of sexual activity with multiple partners and, therefore, greater likelihood of acquiring HIV in urban slums (Kabiru et al., 2010). Young women's involvement in sexual relationships of with older men is associated with greater likelihood of acquiring HIV in urban slum settings in the sense that the age-disparity hampers negotiation of safer sex (Luke, 2003). Marital status influences sexual behaviour in the sense that married women may be less likely to negotiate safer sex due to fears of being labelled as promiscuous, even when they suspect or are aware of their spouses' extramarital relationships (Kabiru et al., 2010). Low socio-economic status (low income, unemployment) at individual level is associated with sexual risk among young women in urban slum settings (Dodoo et al., 2007). Evidence has also shown that being out of school in these settings is associated with sexual risk (Stroeken et al., 2011).

3.4.3 Sexual risk

The SADC socio-ecological framework (discussed previously in Figure 1) highlights a number of key drivers and contributing drivers of the HIV epidemic in high HIV prevalence settings in southern Africa. I have used some of these drivers, which are relevant to my study, to define outcome measures in my conceptual diagram. Specifically, I have conceptualised sexual risk using the following variables: no condom-use at last sex, multiple sexual partners, transactional sex, and coercive sex. It is important to note that this way of conceptualising sexual risk is an improvement on previous research that approached the same concepts without adequate information especially on transactional sex and coercive sex for both young men and young women living in urban slums (Gyimah et al., 2012; Luke, 2003).

I have used arrows between the constructs in the conceptual model to illustrate the interactive and dynamic nature of the factors in influencing sexual risk. Gender differences must be acknowledged in interpreting the links, although the conceptual model does not include gender-related norms, inequalities and power. The reason for not including gender inequality is that this research used the term gender as a dichotomy – that is, divided into two non-overlapping parts (male and female) - which is (in my view) a simplistic way of analysing gender inequality considering that it excludes varying attributes given to men and women in an society. As a result, I have used the word "sex" when referring to reporting outcomes for men versus women, instead of "gender" throughout this thesis.

Figure 5: A conceptual framework used to explore the material deprivation and sexual risk nexus in urban slums in Malawi and South Africa



3.5 Thesis themes

Through the literature review, my research question, and application of my conceptual research framework to the synthesis of the findings of two sub studies, I identified four emerging thesis themes. These are: (1) patterns of sexual risk vary by sex and country in urban slum settings; (2) underlying reasons for decisions to engage in transactional sex; (3) need for more detailed measures of disadvantage associated with sexual risk; and (4) study

design and methods to understand generic and context-specific issues in urban slums. The themes build on my original conceptual research framework and emerged during the data collection and analysis of the data. These themes, which are presented below, have assisted me to synthesise the results from the two sub studies and conclude with implications for an urban slum-specific combination HIV prevention framework for young people and future research in urban slums of the SEA region. The themes are introduced below and will be expanded upon in the results section of this thesis.

3.5.1 Patterns of sexual risk vary by sex and country in urban slum settings

General findings about sexual risk and urban disadvantage will not benefit the formation of strategic interventions for young people in urban slums if significant differences in patterns of sexual risk exist in the urban environments across countries. There are noteworthy differences of sexual risk between young men and young women in the urban slums across the two countries, as well as in the countries that house them.

3.5.2 Underlying reasons for transactional sex

An overall theme that connects the two sub studies in this research relates to material deprivation experienced by young people in urban slums. However, the narratives from young people highlights that in addition to the need to secure basic necessities of everyday life, consumerism – a desire for fashionable goods – is another major driving force for sexual risk among young people living in urban slums (Paper II). In this regard, young women were often motivated to engage in transactional sex in order to access fashionable goods that would help them achieve a modern social identity (Paper II). A desire for fashionable goods is driven largely by the media or mass technologies (Underwood et al., 2011); young people are captivated by fashionable goods, the allure of which some poor young people find irresistible.

3.5.3 Need for detailed measures of disadvantage associated with sexual risk

Through the research, it has become clear that refining measures of economic disadvantage to incorporate material deprivation can benefit research and strategic interventions that target young people living in urban slums of the SEA region. For example, material deprivation is an important factor associated with sexual risk in urban slums in South Africa and Malawi (Papers I-III). These findings imply that combination HIV prevention approaches for young people in urban slums of the SEA region should be designed to engage with the context and implications of material deprivation and consumerism when targeting populations most at risk of contracting HIV. Whilst structural interventions such as cash transfers have shown that they reduce sexual risk among young women, strategic approaches for dealing with both material deprivation and consumerism must be in place in urban slums. In terms of further research, the findings imply that future studies should incorporate specific measures of deprivations that are found to be critical in urban slums.

3.5.4 Study design and methods to understand generic and context-specific issues in slums

During the design and implementation of this research, the challenges of measuring deprivations and sexual risk using a single data collection method became clear. For example, the use of secondary data (Paper I) was challenging because of the use of proxy measurements in order to define residence in urban slums. Proxy measurement of urban slum residence has face validity, and it is likely to miss key aspects of actual urban slum locations (Fink et al., 2014). However, the use of secondary data, and identifying limitations of the proxy measurement enabled me to design the two sub studies in Malawi to address these limitations. Exploring the sexual experiences of young people in urban slums in Malawi was challenging: for example, to find young men who are involved in transactional sex. Conducting a cross-sectional household survey in urban slums proved challenging: for example, being a household survey, it was not possible to select young people in urban slums

who were homeless (see Paper III), and ensuring the safety of fieldworkers presented problems when conducting fieldwork during late hours to find young people at home.

These four thesis themes presented above facilitate the synthesis of the findings from the two sub studies. A summary of the four themes is presented in Table 1. The four themes assist in suggesting implications for strategic interventions and future research shown in Figure 6. Then, Table 2 indicates how the four cross cutting themes link the three papers in responding to the specific research objectives. The findings of the sub studies are expanded upon in the results and discussion sections. The methods used to explore the nexus of sexual risk and deprivation follow.

Table 1: A summary of the four thesis themes

Theme	Key components and description
THEME I: Patterns of sexual risk vary by sex and country in urban slum settings: *Objective 3*	• General findings about sexual risk in urban slums will not assist in informing strategic interventions for young people in urban slums if there are significant differences in patterns of sexual risk between settlements and within and between SEA countries. • Noteworthy differences exist in sexual risk between young men and young women in the urban slums between the two countries.
THEME II: Underlying reasons for transactional sex: *Objective 2*	• Narratives from young people highlight that apart from the need to secure basic necessities of everyday life, consumerism – a desire for fashionable goods – is another major driving force for sexual risk among young people living in urban slums.
THEME III: Need for detailed measures of disadvantage associated with risk: *Objectives 1 & 4*	• Local measures of a range of dimensions of deprivation are needed to inform development of a new combination HIV prevention framework for young people in urban slums of the SEA region. • Future studies should include measures of material deprivation that are found to critical in urban slums of the SEA region.
THEME IV: Study design and methods needed to develop tools to assess the generic and specific urban settings: *Objectives 1, 2, 3 & 4*	• Design and methods for both (1) research in urban slums and (2) the implementation of strategic interventions for young people in urban slums. • A key issue here is use of qualitative methods to give voice to a marginalised segment of young people at high risk of HIV acquisition in urban slums.

Figure 6: The four thesis themes are used to synthesise the findings from the two sub studies in order to suggest a combination HIV prevention framework in urban slums of the SEA region.

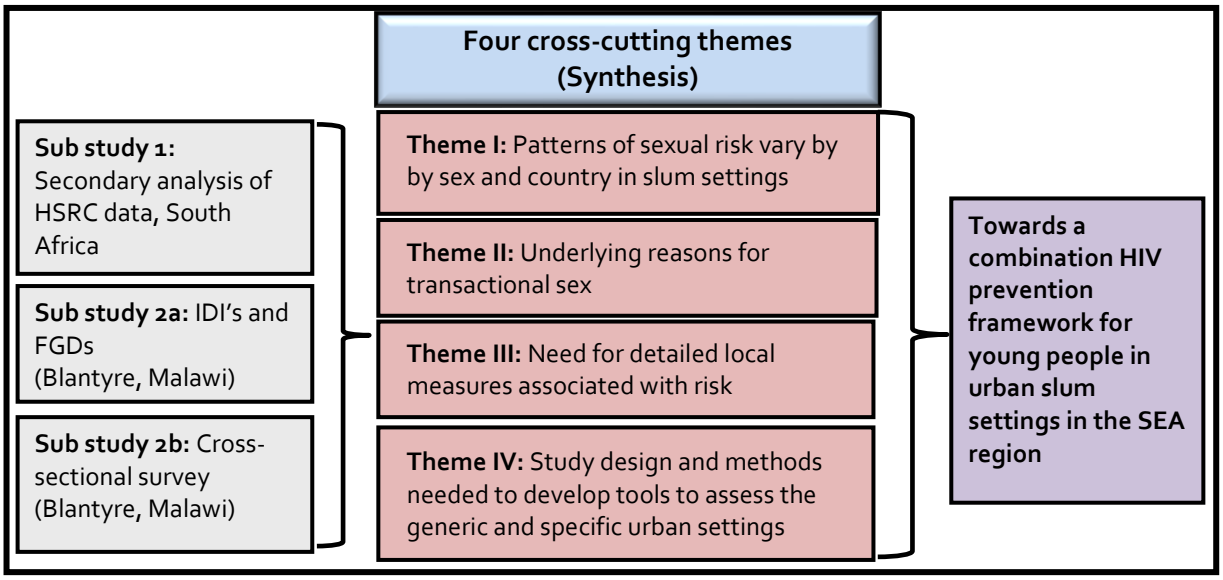


Table 2: Thesis themes covered by the research and a summary of findings of the related original papers

THEMES	PAPER I Published in Journal of Urban Health , 2014	PAPER II Published in Global Public Health, 2015	PAPER III Published in Health & Place, 2015	COVER STORY To be submitted to Global Health Action
THEME I: Patterns of sexual risk vary by sex and country in urban slum settings: *Objective 3*	Sexual risk-taking in males and females – South Africa	Common practice of transactional sex in males and females – Malawi	Marked prevalence of coercive sex in males and females – Malawi	Cross-national patterns of sexual risk in males and females – Malawi and South Africa
THEME II: Underlying reasons for decisions to engage in transactional sex: *Objective 2*	–	Housing, food deprivation (male and female); poor healthcare access and desire for fashion (female) – Malawi	–	Housing, food deprivation (male and female); poor healthcare access and desire for fashion (female) – Malawi
THEME III: Need for detailed measures of disadvantage associated with sexual risk: *Objectives 1 & 4*	Material deprivation and male and female sexual risk-taking, financial difficulty and female sexual risk-taking (South Africa)	–	Components of material deprivation and female coercive sex, unemployment and male coercive sex - Malawi	Components of material deprivation and sexual risk in urban slums in Malawi and South Africa
THEME IV: Study design and methods needed to develop tools to assess the generic and specific urban settings: *Objectives 1, 2, 3 & 4*	Slum proxy measures; Single-item measurement of material deprivation. (South Africa) – too limited in guiding design of interventions	Sampling in hard-to-reach population, in-depth interviews and focus group discussions (Malawi)	Deficiency of sampling in slums, limitation of cross-sectional survey, multiple-item measures of material deprivation, added contribution of multi-level modelling	Overall contribution of study design and limitations in methods points to new ways of researching sexual risks in urban slum settings, conceptual diagram revisions – towards a new approach to sexual risks in slums of the SEA region

4. Data and methods

4.1 Exploring the deprivation and sexual risk nexus in urban slums in Malawi and South Africa

This study used a mixed research design to guide the purposeful development of research questions and generate meaningful data (see Figure 7 below). Within the mixed methods research paradigm, a sequential mixed methods research model was applied. The study followed a quantitative-qualitative-quantitative approach to generate data (Creswell and Clark, 2011). The rationale for this approach was to integrate the whole research process, not just as a way to treat qualitative or quantitative data because they appear in the study methods. It is widely recognised that measures of material disadvantage are complex and at the same time hard to measure using a single data collection method. Therefore, mixed methods research is more appropriate and useful for understanding the complex nature of material disadvantage in relation to sexual practices.

In this study, a series of two sub studies – secondary analysis of quantitative data in South Africa, primary qualitative data collection in Malawi and primary quantitative data collection in Malawi – were used. The quantitative analyses focused on measurable variable of interest – material deprivation – from multiple indicators, while the qualitative analysis focused on understanding local expressions of deprivation and the *how* dimension of sexual experience and risk. Table 3 shows an overview of the two studies, and summarises the methodologies employed and the study populations. Details on the specific methods are provided in the published papers (Paper I-III).

Figure 7: A Flow chart showing the two sub studies and their linkages

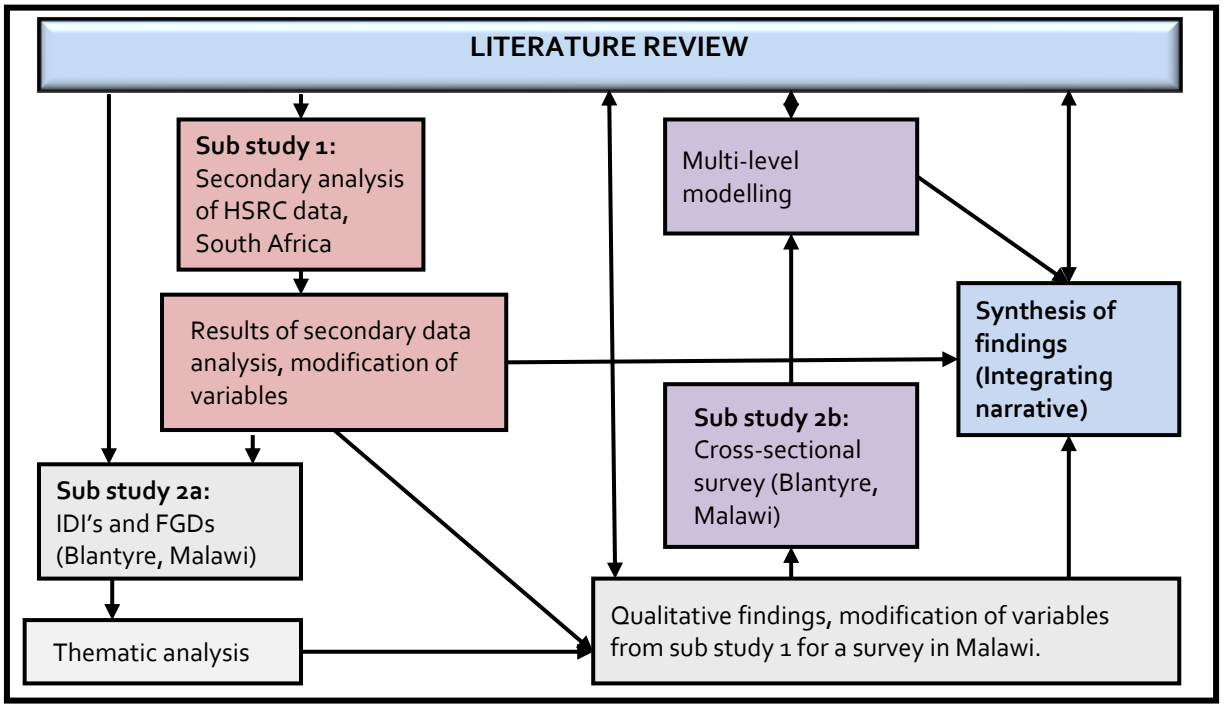


Table 3: An overview of the two sub studies, the methodologies used and the study populations

Sub study	Summary of methodology	Overview of the study population	Papers published from sub studies
1. Secondary analysis of HSRC data, South Africa	• Proxy measurement of slum households from the loveLife dataset of a survey in four South African provinces – KwaZulu Natal, Mpumalanga, Eastern Cape, and Gauteng; Analysis using logistic regression.	• Young people aged 18–23 years (263 males, 267 females) living in urban slums.	PAPER I
2a. Exploratory qualitative study in Malawi	• Five focus group discussions and 12 in-depth interviews with young people: Analysis using anticipated and grounded codes.	• A total of 60 young men and women aged 18–23 years old living in the two urban slums of Blantyre, Malawi.	PAPER II
2b. The survey in Malawi	• Cross-sectional household survey in the urban slums of Blantyre city, Malawi; Analysis using multi-level modelling.	• Young people aged 18 -23 years • Information obtained from 1123 young people living in the two urban slums of Blantyre, Malawi.	PAPER III

4.2 Ethical considerations

This research was granted approval from the University of the Witwatersrand Committee for Research on Human Subjects (ethics approval number M120658) and National Health Sciences Research Committee in Malawi (ethics approval number 1078). Copies of the Ethics certificates are included in **Annexure 1**.

The fieldworkers were carefully trained on the ethical principles guiding research on human subjects and these were fully respected during the study process. Participation in the various studies was only by those who voluntarily agreed to participate and gave written consent to participate after the studies were fully explained. Separate informed consent was also obtained to record the interviews.

4.3 Literature review

A review of international and local literature was undertaken using multiple databases, including PubMed, PsycINFO, Scopus and JSTOR. This review included both published and unpublished work. Key search terms included – urban; urban slum; urban health; framework; sexual risk; deprivation; disadvantage; inequalities; young people; HIV. The literature review was informed using an iterative process by the results of two sub studies (one secondary analysis of existing data from South Africa and another one in Malawi that used both qualitative and quantitative methods). Furthermore, I kept track of the new literature and debates in this developing field throughout the study.

4.4 Analysis of secondary data from the loveLife Study (Sub study One)

The first phase of this research consisted of a cross-sectional analysis of secondary data from a loveLife study conducted in 2011in South African four provinces – KwaZulu Natal, Mpumalanga, Eastern Cape, and Gauteng – by the Human Sciences Research Council

(HSRC) Ethics clearance of the loveLife survey was given by the HSRC (Protocol No. REC 2/16/02/11) (for further information see, HSRC, 2012). A letter of permission to use the loveLife data as part of this study was obtained from the loveLife's National Office in Johannesburg, South Africa (see **Annexure 2**). The use of data from South Africa in this research informed the study design of primary quantitative data collection in Malawi.

To extract the analytical sample from the loveLife dataset, the full loveLife sample of 3,123 young people was used. A proxy indicator was used based on the type of dwelling through the item in the survey which assessed the structural integrity of the wall materials: "what type of wall does your dwelling have?" Those who responded by indicating "corrugated iron or cardboard" were considered in this paper as living in informal housing or urban slums. This process translated to a selected sample of 267 young women and 263 young men of the loveLife study sample of 3,123.

The first set of analyses included descriptive statistics of independent variables and the dependent variable sexual risk-taking (Table 1 in Paper I). The second set of analyses included bivariate associations between predictors and sexual risk-taking (Tables 2 and 3 in Paper I). Only independent variables found to be significantly associated with the dependent variable at the 10% level of significance in the bivariate analysis (Table 3 in Paper I) were included in the multivariable logistic regression models. Test for collinearity among the variables included in the multivariate analysis was done. Additionally, interaction was tested between various variables with a p-value <0.10 at the univariate level. Separate multivariable logistic regression models were fitted for young men and young women to examine the association between an aggregate measure of material deprivation and sexual risk taking, adjusted for age, education, employment, and staying with parents (Table 4 in Paper I).

4.5 Primary data collection and analysis (Sub study Two)

In addition to the secondary analysis of data from the South African loveLife study, this thesis made use of the following sub study conducted in the urban slums of Blantyre, Malawi (see Figure 1 in Paper III showing the location of the study sites):

- An exploratory qualitative study with young people conducted between December 2012 and May 2013 (Sub study 2a).
- A household survey with young people undertaken between June and July 2013 (Sub study 2b).

The methods used in this sub study highlighted findings in their own right and formed the forth theme (**Theme IV**) of this thesis. These findings will be drawn on in the discussion and conclusion sections regarding the implications of this research for future studies on deprivations and sexual risk in urban slum settings in the SEA region.

4.5.1 Exploratory qualitative study with young people (Paper II)

Sixty young people (24 young men and 36 young women, 18–23 years of age) participated in five FGDs (two for young men and three for young women). The aim here was to gain a detailed understanding of local conceptions of deprivation and youth sexuality and behaviour that shape their risk of HIV. FGD guide questions (**Annexure 3**) focused on how participants made sense of sexual risk. Each FGD had more individuals who self-reported multiple sexual partners than monogamous sexual relationships. The two FGDs for young men were organised according to marital status (married and unmarried), while the three FGDs for young women were organised as follows: (i) married and out-of-school, (ii) unmarried and out-of-school, and (iii) unmarried and in-school. This organisation of FGDs was based on feedback during piloting phase of this study.

Two trained and experienced male (aged 26 years) and female (aged 25 years) fieldworkers facilitated the discussions and interviews in Chichewa, the national language of Malawi. The local research assistants were identified with the help of community leaders from the study sites. Two local, trained research assistants (one male and one female) from each study site identified their friends who were willing to take part in the study as initial participants for snowball sampling. Three days were spent recruiting young people from the pre-existing friendship groups of these initial participants, so that they knew each other well and were hopefully free to discuss sensitive issues in each other's presence.

The IDIs were held with a subset of FGD participants so as to build on the rapport established during the group discussion, and to explore some of the issues that had emerged during FGDs. IDI guide questions (**Annexure 4**) allowed participants to reflect on young people's motivations for having sex. The interview guides were flexible to accommodate emerging issues. Approximately 2–3 interviewees were purposively sampled per FGD to represent schooling status and marital status, and to include both dominant and reserved FGD participants. A total of 12 IDIs were conducted with six young men and six young women.

Data analysis

Cleaned and verified transcripts were entered into QSR International's Nvivo 9 software for coding and identification of themes. A pragmatic approach that combined the use of anticipated codes and grounded codes (Mason, 2006) was adopted to code the data. Grounded codes were developed from multiple reviews of the transcripts, while anticipated codes were developed from prior knowledge as well as multiple reviews of transcripts. Once coding was completed and themes identified (Figure 1 in Paper II), a written account of the interpretation of the themes was then compiled (Paper II).

4.5.2 A survey with young people in the urban slums of Blantyre, Malawi (Paper III)

Based on the findings of this qualitative exploratory study and the loveLife survey analysis, a survey questionnaire (**Annexure 5**) was developed and administered to a random sample of 1071 young people in the urban slums of Blantyre, Malawi. The survey questionnaire collected information on various demographic, socioeconomic and behavioural aspects of the young people and their families.

All young people between 18-23 years old in the two areas at the time of study were eligible and were asked to participate in the study. Participants were recruited through a three-stage sampling process in two purposively selected slum locations, Mbayani and Mtopwa, in Blantyre. In the first stage, 11 clusters, defined by geographic location, were selected. Households within selected clusters were systematically selected from a listed sampling frame. Every second or third household, depending on the cluster size, was selected for the survey. Eligible respondents identified in each selected household were 18-23 years old who spent the previous night in the household. One individual per household was selected using a Kish grid (Cramm et al., 2012) to ensure that all age-eligible individuals in the household stood an equal chance of being interviewed. Ten same-sex trained interviewers administered the pre-tested questionnaires in the relevant local language, Chichewa, in a private setting. The interviews took approximately 30-45 minutes to conduct. All interview data were double entered into EpiData v. 3.1 by trained data entry specialists.

Data analysis

The quantitative data were analysed using STATA version 12. Sample demographics were computed (See Tables 1 and 2 in Paper III). Each of the variables was tested for normality using the one sample Kolmogorov-Smirnov test. A p-value < 0.05 denoted a non-normal distribution and where a variable was not normally distributed, log_{10} transformation was

applied to the data before further analyses were conducted, and otherwise non-parametric statistics were used for further analysis.

Bivariate analyses were performed to assess the association between each of the explanatory variables and the outcome variable (see Tables 3 and 4 in Paper III). To analyse the impact of material deprivation on coercive sex, a multilevel logistic model (Table 5 in Paper III) was used, with the individual as the first level and the household as the second level.

Additional analyses

A chi-square test was used to compare some of the socio-demographic factors, indicators of material deprivation, and patterns of sexual risks between the two quantitative datasets from Malawi and South Africa. In addition, logged coefficients from the final model in Paper I (Table 4 in Paper I) and Paper III (Table 5 in Paper III) were multiplied by their standard deviations in order to determine variables which explained the most variance in sexual risk.

5. Key findings

The results of the two sub studies have already been reported in the three original papers. The findings reported below have three sub sections. The first sub section (by way of background) provides a short description of the socio demographic characteristics of the South African and Malawian study populations. The second sub section presents results from a comparative analysis of the two country quantitative datasets. The last sub section presents the four thesis themes emerging from a synthesis of all the data from the sub studies and results of an analysis of variables which explained the most variance in sexual risk in the two quantitative studies. The emerging themes have already been introduced in Table 2 of the Methods section above. Throughout this section references are provided of the papers which contain the details of the sub study findings.

5.1 Socio-demographic description of the two study populations

This sub section provides a summary of the socio-demographic characteristics of the South African and Malawian study populations. A summary of the socio-demographic characteristics of the study participants in each of the two sub-studies have been presented in the three papers: Paper I (Table 1), Paper II (Table 2) and Paper III (Table 1).

In South Africa, of the 530 young people, 49% were male and 51% female. The average age of the respondents was 20.66 years (SD=2.90) for males and 20.42 years (SD=2.87) for females. About 86% of males had received secondary or higher education compared to 90% of the females. About 35% of males and 51% of females reported being unemployed.

In Malawi, of the 1071 young people, 596 (55.6%) were male and 470 (43.9%) were in-school. Almost half (48.8%) of young men were out-of school, compared with 65.3% of young women who were out of school. Participants were roughly equally distributed among the different categories for wealth and income, except for high numbers of unemployed young women (48.6%) compared to young men (26.3%) (Paper III).

5.2 Cross-national comparisons between the two study populations

In this sub section, Table 5 presents a cross-national comparison of selected socio-demographics material deprivations in the two study samples between Malawi and South Africa by gender.

Using the results of the two quantitative studies, the cross-national comparison of selected socio-demographic and material deprivation variables in the two countries' study samples were assessed by gender (See Table 4). The analysis found that there were no statistically significant country differences by age, insufficient housing and poor healthcare access between the young people in South Africa and Malawi. These results in Table 4 indicate that

housing and medical deprivations (access to health care) in the sample do not differ significantly between the two countries. However, there were statistically significant country differences in terms of unemployment and food insecurity. Young men living in urban slums in South Africa were more likely to be unemployed than in Malawi (35.1% vs. 15.8%). Young men (50.2% vs. 20.9%) and young women (45.5% vs. 21.6%) in urban slums in Malawi were approximately twice more likely to report food deprivation than their counterparts in South Africa.

Table 4: Comparison of socio-demographic factors and indicators of material deprivation in Malawi and South Africa

	Young men			Young women		
Variables	**MALAWI (n=596) %**	**SOUTH AFRICA (n=263) %**	**p-value**	**MALAWI (n=475) %**	**SOUTH AFRICA (n=267) %**	**p-value**
Age (mean)	20.20 ±2.02	20.66 ±2.90		19.70 ±1.70	20.42 ±2.87	
Never married	86.4	100	**<0.05**	51.0	100	**<0.05**
Household size	4.6	4.0	**<0.05**	4.7	4.0	**<0.05**
Unemployed	15.8	35.1	**0.002**	44.4	51.0	0.322
Food deprivation	50.2	20.9	**<0.05**	45.5	21.6	**<0.001**
Housing deprivation	65.1	66.3	0.882	72.0	67.0	0.443
Medical deprivation	28.2	26.6	0.874	23.6	17.2	0.220

5.3 Synthesising the two sub studies

This sub section presents the four thesis themes emerging from a synthesis of all the data from the sub studies and results of an analysis of variables which explained the most variance in sexual risk in the two quantitative studies. The emerging themes have already been introduced in Table 2 of the Methods section above. In addition, references are provided of the original papers which contain the details of the sub study findings.

5.3.1 Patterns of sexual risk vary by sex, and country in urban slum settings (Theme 1)

Table 5 presents patterns of sexual risk (non-use of condoms at last sex, multiple sexual partnerships, transactional sex, and coercive sex) in urban slums in Malawi and South Africa.

Prevalence of 'no condom use at last sex' was significantly higher in both young men and young women living in urban slum settings in Malawi than their counterparts in South Africa (45.6% vs. 19.5% ($p<0.001$) for young men, and 65.7% vs. 21.3% ($p<0.001$) for young women). With regards to multiple (two or more) sexual partners, young people in Malawi reported significantly lower numbers than their counterparts in South Africa (49.3% vs. 64.1% ($p=0.002$) for young men, and 18.7% vs. 28.7% ($p=0.032$) for young women). As Table 5 below shows, the prevalence of coercive sex in Malawi was 15.8% and 44.4% in young men and young women respectively (coercive sex was not measured in the South African study). Lastly, transactional sex (measured by gift-giving) was significantly higher in young men and young women in Malawi than their counterparts in South Africa (66.4% vs. 11.2% ($p<0.001$) for young men, and 52.0% vs. 5.5% ($p<0.001$) for young women).

Table 5: Prevalence of unsafe sex in Malawi and South Africa by sex

	Young men (%)			Young women (%)		
Unsafe sex	**MALAWI**	**SOUTH AFRICA**	**p-value**	**MALAWI**	**SOUTH AFRICA**	**p-value**
No condom use at last sex	45.6	19.5	**<0.001**	65.7	21.3	**<0.001**
Multiple (2 or more) sexual partners	49.3	64.1	**0.002**	18.7	28.7	**0.032**
Coercive sex*	15.8	–	–	44.4	–	**–**
Transactional sex	66.4	11.2	**<0.001**	52.0	5.5	**<0.001**

* Not measured in the South African study

5.3.2 Underlying reasons for transactional sex (Theme 2)

Transactional sex – operating as exchange of sex for goods or resources in casual or committed relationships – was recognised by both young men and young women in the FGDs and IDIs as a common practice and expectation in the study sites in Malawi (Qualitative data were not collected in South Africa). The two major narratives highlighted either material deprivation or consumerism as the driving force behind the decision to engage in such behaviour (see Table 6). Insufficient housing and food insecurity influenced both young men's and young women's motivations for engaging in transactional sex. Poor access to health care and a desire for high-value social goods (such as cellular phones, the latest hair style, and clothing style) also influenced the poor young women's motivations for engaging in transactional sex.

Table 6: Underlying reasons for decisions to engage in transactional sex (Paper II)

Major themes	Sub-themes	Quotes from Paper II
Material deprivation	Housing insecurity	*"When a girl lacks housing and she wants to find a place to sleep, or she does not have rent, she is mostly found in a bar as she does not have a place to live. She will have sex with a guy* [in order to have a roof over her head for the night] *and then does the same thing the next day*. (Nasiyato, married, out-of-school, female, 22)".
		"Most of us here [Area name] *live in one-roomed rental houses. We share the room with relatives and sometimes friends. … Many of us need to pay (house) rent, so men get money and give it to women for sex*. (FGD 1, unmarried, out-of-school, female, 18–23)."
		"*Young men here sometimes sleep with older women, just because they want to stay* [and sleep] *at a decent place. Several young men get STIs in the process*." "*It is because of poverty that some young men end up having sex with older women... If a young man lacks a safer sleeping place even two days, of course you would go to a woman who shows you love*. (FGD 3, married, out-of-school female 18–23)."
	Food insecurity	*"When you go to the market there is no maize and when we go to the vendors it's at K8500* [about US$22 per 50 kg bag of maize]*, which we don't have. We just use sex with men so that we source food but there is still no maize at the market … You just have sex to source enough money to buy enough food for you and your children.* (Nankho, unmarried, out-of-school, female, 21).
		"You cannot sleep on an empty stomach when you have a business (meaning vagina) *that does not need capital. We think that, when you have sex with a particular man then we will at least have a visa for eating that particular day."* (Nachi, married, out-of-school female, 20)."
		"With a plate of food here, you can easily get a girl. It happens here regularly. (FGD 5, unmarried, in-school male, 18–23)."
		"The problem in our area is that girls accept to have sex with a man with just a plate of Nsima. They accept having sex for eating Nsima at someone's home. So the main issue is poverty. It cannot happen if one has food at home. (Yotamu, male, unmarried, out-of-school, 22)."
		*"I have even witnessed it; the (young) man is my friend and he tells me how an older woman uses him for sex after giving foo*d. (FGD 4, married and unmarried out-of-school young men aged 18–23 years)."
	access to health	*"You go to a government hospital with a child and wait for hours on a queue. When it is your turn, they tell you there are no drugs or just give you Panadol. How can Panadol cure Malaria? Sometimes they tell you to go and buy medication. That's why you end up meeting a man to save* [the] *life of your child.* (Nabiyeni, unmarried female, out-of-school, 23)."

		"Well it [consideration of having sex in exchange for care for her sick child] *has happened to me a number of times, it usually happens when my child is very sick and I have no means to go to clinic* [Referring to private clinic] *and there is no money. Something tells me, 'Why am I rejecting the men, after all, my child will be better …' When my mother or my child is sick you ask him to help. Just know that you will have sex. Otherwise, next time he will refuse to help you. And it goes on.* (Nagama, unmarried, out-of-school, female, 19)."
		"Interviewer: *So what happens if you don't have money to take your child to a hospital?* Nasimati: *"[Silence] Sometimes we borrow money from friends"* *Interviewer: "Friends?"* Nasimati: *"Hmm [Agreeing]"* Interviewer: *"Okay. What if your friend doesn't lend you their money?"* Nasimati: *"Try other means"* Interviewer: *"Like what?"* Nasimati: *"'Ask' a sugar daddy. It's what most women do around here…"* Interviewer: *"Okay, but why not go to a clinic for free health care for your child?"* Nasimati: *"Most of the nurses in the public hospital are careless and don't even want to touch your sick child. I go to a public hospital only to be told that there are no drugs. They tell you to go and buy medication.* (Married, female out-of-school, 22)."
Consumerism	**Modernity**	*"Who is going to ask you out? Nowadays men want to ask out a girl who wears clothes with a label. So, a modern girl here wants to have leggings, fishnets, cellular phone…* (Ndazi, out-of-school unmarried female, 21)."
		"Everything is fashion nowadays. When I get a skin jean, others want to have theirs as well and will accept any man for sex, be it older, to get money for a skin jean. (Selina, out-of-school unmarried female, 20)."
		"Girls here don't want to be outdone. When one has a cellular phone, the other will become resentful and will readily accept the advances of a taxi driver so she too can get money for a cellular phone, but of course the taxi driver wants sex in return. (FGD 5, unmarried in-school male, 18–23)."
		"With a cellular phone here, you can easily get a girl. Girls here are easy to convince. It happens here regularly. (FGD 5, unmarried in-school male, 18–23)."
	Aspirations	*"In the past it didn't matter whether you were poor or rich, but nowadays we want high status, these are things we learn from television and emulate. The life we live changes by the day, and as it changes so do we.* (FGD 3, married, out-of-school female 18–23)."
		"You tell yourself that you have feelings for this (married) man and invite him to buy fishnets for you. I think that it is the older men who take care of us a lot because if they leave K500 at their home, they make sure to leave me with K500 as well. It's not just the same with young men. Older men are able to pay school fees and buy clothes for you. (Ireen, unmarried in-school female, 18)."
		"Most of us want to have things quickly and have no patience to wait. We want to have everything at once by having sex with older men. (FGD 2, unmarried female in-school, 18–23)."
		"What influence[s] these girls here is, wanting things to be easy in life and get what their hearts desire. (Jonasi, male, married, out-of-school, 23)."

5.3.3 Need for detailed measures of disadvantage associated with sexual risk (Theme 3)

This section presents determinants of sexual risk-taking among young people in South African urban slums and coercive sex among young people in urban slums in Malawi.

5.3.3.1 Material deprivation, financial difficulty and sexual risk in South Africa (Paper I)

In the South African study, the analysis involved 530 young people: 263 (49%) young men and 267 (51%) young women (Paper I). Distribution of sexual risk-taking in the study population by explanatory variables is shown in Paper I, Tables 2 and 3. Fifty percent (50%) of young men and 33% of young women were involved in sexual risk-taking. Significant predictors of sexual risk-taking are financial difficulty and material deprivation.

Adjusted logistic regression model (Paper I, Table 4) showed that young women in materially deprived households had almost one and a half times the odds of sexual risk taking (adjusted OR=1.43; 95% CI=1.35, 3.28) compared with young women from non-deprived households. A slightly weaker association was found between material deprivation and sexual risk taking in young men (adjusted OR=1.20; 95% CI=1.10, 5.58). Financial difficulty remained the most salient influence on risk taking among young women (adjusted OR=2.11; 95% CI=1.66–2.70) after correcting for covariates (Paper I, Table 4).

5.3.3.2 Material deprivation, unemployment and coercive sex in Malawi (Paper III)

In the urban slums of Blantyre, Malawi, the analysis involved 1071 young people: 596 (55.6%) young men and 475 (44.4%) were young women (Paper III, Table 1). Distribution of the prevalence of material deprivations and the sexual history of the participants (Paper III, Table 2) shows that thirty-five percent (35%) of young men and 36.6% of young women reported some material deprivation. Nearly half (44.4%) of young women who had reported coercive sex, compared with 15.8% of young men. This indicates high numbers of potentially unsafe sexual events especially for young women.

A multi-level logistic model for young men, adjusted for other risk behaviours, age, marital status, school status, and received money from relatives (Paper III, Table 5, Model 1), shows that material-deprivation was not significantly associated with coercive sex (adjusted

OR=1.59, 95% CI: 0.90–2.82). The association between material deprivation and coercive sex remained insignificant when SES measures were added (adjusted OR=1.34, 95% CI: 0.75–2.39). However, young men who were unemployed had 77% (adjusted OR=1.77, 95% CI: 1.09–3.21) higher odds of reporting coercive sex than those who were working.

On the other hand, a multi-level logistic model for young women, adjusted for other risk behaviours, age, marital status, duration of residence, household structure, school status, level of education and received money from relatives (Paper III, Table 5, Model 1) shows that young women who lived in materially-deprived households were almost one and half times as likely to report coercive sex compared with those in less deprived households (adjusted OR=1.40, 95% CI: 1.06–2.24). The association between material deprivation and coercive sex remained significant (adjusted OR=1.37, 95% CI: 1.07–2.22) when the three SES measures (income, education and employment) were added to the model (Model 2). The implications of the robustness of the association between coercive sex and material deprivation even when SES measures were added to the model will be discussed in detail in the Discussion section below.

5.3.3.3 Measures of disadvantage with the most variance in explaining sexual risk by gender in South Africa and Malawi – new findings

The measures of disadvantage that explained the most variance in sexual risk were determined by using the logged coefficients from the final model in each of the two papers (Model 2 in Paper I, Table 4, and Paper III, Table 5, respectively) multiplied by their standard deviations (Pampel, 2000) (See Table 7). For young women, financial difficulty (0.16 = (log 2.11)*(0.50)) exerted the strongest effects on sexual risk followed by material deprivation (0.10 = (log 1.43)*(0.66)) in the South African study (Sub-study 1). On the other hand, the measure of disadvantage that demonstrated noteworthy and significant effects on sexual risk in the model for young men was material deprivation (0.04 = (log 1.20)*(0.50)). From the

Malawi study (Sub-study 3), material deprivation (0.08 = (log 1.37)*(0.58)) and unemployment (0.12 = (log 1.77)*(0.50)) were the most influential variables of disadvantage associated with coercive sex among young women and young men respectively.

Table 7: Measures of disadvantage with the most variance in explaining sexual risk in Papers I & III

	PAPER I		PAPER III	
Measures of disadvantage	**Male**	**Female**	**Male**	**Female**
Material deprivation	0.04 = (log 1.20)*(0.50)	0.10 = (log 1.43)*(0.66)	–	**0.08 = (log 1.37)*(0.58)**
Financial difficulty	–	**0.16 = (log 2.11)*(0.50)**	–	–
Unemployment	–	–	**0.12 = (log 1.77)*(0.50)**	–

5.3.4 Study design and methods to understand generic and context-specific issues in slums (Theme 4)

Key issues here are that the study design and methods used in this research have shown that:

- The use of existing data, and identifying gaps in the existing data (for example, being imprecise or incomplete) was used to ensure that the two sub studies in Malawi were designed to address these gaps.
- The context for primary data collection in the two sub studies in Malawi (Papers II & III) was unique in terms of the urban slum contexts where the research was carried out, and believes we managed to reach young people who normally are difficult to involve in this type of research. The risks of conducting research in such areas especially during odd hours are several and the areas have a notorious reputation when it comes to violence and other social problems. For instance, when it became known that airtime vouchers were given to participants as appreciation for the time given, some of the fieldworkers were harassed by drunkard persons or parents who

thought the fieldworkers were satanic worshipers. All fieldworkers were then escorted during odd hours, which was not part of the initial set up for the research team.

- Qualitative methods provided a further understanding of the complex factors (for example, a desire for fashionable goods, caring for a sick member of family) that could not be tested in the statistical models of association between material deprivation and sexual risk (Paper II).
- Purposive sampling (Paper II) provided a unique opportunity to reach young people in urban slums that has in some way provided important new knowledge on how deprivation affects young people's decisions to engage in unsafe sex.
- Sampling per household using a Kish grid (Cramm et al., 2012) proves problematic for young people who are homeless (Paper III).
- Single-item measurement of facets of material deprivation in Paper I underestimated young women's sexual risking taking, where financial difficulty was found to be the most salient influence. This explanation is based on the findings that suggest that material deprivation is a more proximate determinant of risk than financial deprivation (Greif, 2012). As opposed to aggregate analysis, the modelling framework in Paper III allowed me to explore the effect of deprivations at different levels on sexual risk taking while accounting for other differences across households, including unobserved ones. It allowed us to control for individual economic status, allowing for a nonlinear effect on the probability of experiencing coercive sex.
- A good deal of similarity is observed in the association between material deprivation and sexual risk among young people in the urban slums in Malawi and South Africa. However, the strength of the association differs by gender in the two countries, with the association being generally weakest in South Africa. A possible explanation for

these variations could be something to do with inequality range in urban slum settings in Malawi and South Africa being different.

5.4 Summary

In South Africa, material deprivation predicted sexual risk-taking for both young men and young women in urban slums; however, financial difficulty was the most salient influence on young women's high sexual risk taking (Paper I). In Malawi, material deprivation was an important risk factor for coercive sex among young women, but not among young men. However, unemployment influenced young men to be coerced into sex (Paper III). The association of material deprivation and sexual risk remained significant in the presence of socioeconomic-based measures (financial difficulty in Paper I, and unemployment in Paper III). From the qualitative data from Malawi, insufficient housing and food insecurity influenced young men's and young women's motivations for engaging in transactional sex. Poor access to health care and a desire for high-value social goods (such as cellular phones, the latest hair style, and clothing style) influenced the poor young women's motivations for engaging in transactional sex (Paper II) (qualitative data was not available for South Africa). Although, the association between material deprivation and sexual risk remained significant, it is evident from the Malawi narratives about transactional sex that a desire for fashionable goods combined with material deprivation, must be better understood in order to understand the complex range of factors increasing sexual risk in urban slums. Reflecting on the study design, data collected and the findings from the two sub-studies, a number of study design and methodological issues have emerged. The implications of the methods and results of the overall study are discussed below.

6. Discussion

This thesis has **highlighted what** methodological approach is needed to assess the generic and specific urban slum settings regarding HIV risk to be able to suggest what interventions are needed to reduce risk of young people in these settings in Malawi and South Africa; **shown that** facing hardship in meeting basic needs seems to underlie motivations for decisions to engage in transactional sex among both young men and young women in urban slum settings in Malawi. Additionally, poor health care access and a desire for fashionable goods may lead young women to engage in transactional sex; **indicated that** the specific patterns of sexual risk or unsafe sex vary by sex and country in urban slum settings; and **provided multi-level evidence that** young women may be coerced to have sex for things – such as housing, food or access to healthcare – deemed necessary for survival in urban slums in Blantyre, Malawi. Estimates from multi- level models also suggest positive association between unemployment and coercive sex among young men in Malawi.

These findings not only have implications regarding what combination prevention intervention strategies are needed for vulnerable groups of young people in urban slum settings in Southern and Eastern Africa, but also allow me to highlight what the gaps are in understanding the differences between different urban slum settings and contexts. In addition, these findings enable me to suggest what future research is needed to develop relevant tools to assess the generic and specific urban slum settings regarding HIV risk in different countries in Southern and Eastern Africa so as to improve targeting of HIV prevention interventions.

I will now go on to reflect on the findings from this research in relation to the literature. I have organised the discussion according to the four thesis themes: (1) patterns of sexual risk vary by sex, urban slum settings and country context; (2) underlying reasons for decisions to

engage in transactional sex; (3) need for more detailed measures of disadvantage associated with sexual risk; and (4) study design and methods to understand generic and context-specific issues in urban slums. This section also discusses the key contributions of the research, and ends with suggestions to guide planning and implementation of combination HIV prevention approaches that engage with the unique needs of young people in slums of the SEA region.

6.1 Patterns of sexual risk vary by sex, urban slum settings and country context (Theme 1)

Table 8: Patterns of sexual risk: Key findings and implications

Key findings
• Significant variations in prevalence of sexual risk practices by country and gender. • The distribution of sexual risk practices by gender in urban slums is complex both in Malawi and South Africa. • Marked prevalence of coercive sex and transactional sex among both young men and young women in Malawi.
Implications for strategic interventions
• Gender sensitive prevention programmes targeted young people in urban slums are needed. These need to be context appropriate and developmental (for example, access to school, healthcare and housing) • Successful policy and prevention programmes to reduce risk of HIV acquisition among young people in urban slums may require research informed context-specific strategies.

This study has highlighted significant variations in prevalence of sexual risk practices amongst young people in the urban slums in Malawi compared with young people in South African urban slums. Research undertaken in sub-Saharan Africa has affirmed that residents in urban slums demonstrate more sexual risk practices compared with residents in non-slum locations (Greif et al., 2011; Zulu et al., 2002). For example, residents in urban slums demonstrate earlier age at sexual debut, more sexual partners, transactional sex, and lower condom use compared with residents in non-slums (Greif et al., 2011; Zulu et al., 2002; Adedimeji et al., 2007; Dodoo et al., 2007; Bhana and Petersen, 2010). However, few studies

have focused on cross-national differences in sexual risk practices, highlighting examples of inter-urban inequalities. This approach to understanding how place relates to unsafe sexual practices might be useful in order to inform the development of 'contextually sensitive' interventions at community level (Cummins et al., 2007).

This research also has documented marked prevalence levels of unsafe sexual encounters among young men and young women living in urban slums in Malawi and South Africa. However, the distribution of unsafe sexual practices by sex is mixed. Similar studies in urban slums in Kenya (Zulu et al., 2002; Dodoo et al., 2007; Greif et al., 2011), Nigeria (Kunnuji, 2014; Adedimeji et al., 2007) and South Africa (Burns and Snow, 2012; Tenkorang et al., 2011) have also reported a mixed gender distribution of unsafe sexual practices. For example, Burns and Snow (2012) documented a prevalence of 'no condom use at last sex' of 21.6% for black young men versus 32.3% for black young women. The same study recorded a prevalence of multiple sexual partners of 43.1% for black young men vs. 16.9% for black young women. In this research, Paper I documented a prevalence of multiple sexual partners of 64.1% for black young men and 28.7% for black young women; no condom use at last sex of 19.5% for black young men and 21.3% for black young women. The differential prevalence of sexual risk by sex among young people could be attributed to differences in items used to measure sexual risk. Additionally, a far more likely set of factors have to do with how structural factors differentially affect young men and women, including lack of female controlled methods of HIV prevention, gender-specific norms related to sex and alcohol consumption, differential access to cash, as well as differences in local expression of material deprivation for men and women. This issue points to the need for standardised indicators or measures for some things but also context specific and culturally appropriate where need be. The importance of appropriate indicators will be discussed more fully in Theme IV below.

This research found strikingly high levels of coercive sex among young women and young men in the urban slums of Blantyre, Malawi. The high prevalence of coercive sex found in this research and other studies conducted in similar settings elsewhere in sub-Saharan Africa (Decker et al., 2014; Misganaw and Worku, 2013; Oduro et al., 2012; Jewkes et al., 2006) indicates that there has been little progress in reducing the risks associated with sexual violence in urban slums. The urgency to address sexual violence in urban slums is highlighted in a number of studies (Chant, 2013; Mberu et al., 2013). Interventions to address sexual violence among different, defined sub-populations (for example young people or young women) are undertaken in different settings, but are often small-scaled and do not reach larger proportions of young people living in urban slum settings (Gibbs et al., 2012; Mberu et al., 2013). Additionally, reporting from these interventions tends to be anecdotal and few have been designed with rigorous research design linked to biological outcomes such as HIV incidence and are thus unlikely to show any evidence of effectiveness (Jewkes et al., 2008). Even fewer interventions are directly targeting structural factors that include deprivation of material resources (Burns and Snow, 2012; Gibbs et al., 2012; Greif, 2012) or other factors such as alcohol abuse and cultural norms. Furthermore, these interventions are undertaken only by a few organisations (Auerbach et al., 2011). The deprivation of material resources, such as those described in this research, need to be addressed using a combination prevention approach, central to sustained behaviour change. However, better designed research in relation to sexual risk is needed as these types of studies are few and the existing research evidence is not sufficiently robust to be able to inform development of combination interventions for young people in urban slums of the SEA region.

6.2 Underlying reasons for transactional sex (Theme 2)

Table 9: Underlying reasons for transactional sex: Key findings and implications

Key findings
• Poor access to health care and a desire for high-value social goods (such as cellular phones, the latest hair style, and clothing style) influenced the young women's motivations for engaging in transactional sex (Malawi). • Housing and food deprivation influenced the decisions of both young men and young women to engage in transactional sex (Malawi).
Implications for research and interventions
• For HIV prevention programmes to be successful there is need for more research to understand **why** young people are inclined to consumerism to a point that they can risk their sexual health in urban slums. • Future studies should gather more perspectives from young men who engage in the transactional sexual relationships described in this thesis.

In so much as the findings suggest the central role of material deprivation, participants in this study also pointed to an important role of consumerism in the young people's decisions to engage in transactional sex. In line with these findings, Underwood et al. (2011) identified poverty, and a desire for fashionable goods, as motivations for engaging in transactional sex among young women in Malawi.

Most of the existing studies in urban slums in sub-Saharan Africa have described transactional sex as a means for young women to survive (see, for example, Luke, 2005a; Izugbara et al., 2013). However, other studies have suggested that young women living in poverty make decisions to engage in transactional sex not only due to economic need but also in response to a desire for fashionable goods such as latest clothing styles and cellular phones (see, for example, Zembe et al., 2013; Underwood et al., 2011). In this regard, the two authors argued that young women develop multiple sexual partnerships to provide them with fashionable goods. This issue was identified from the qualitative data collected (Paper II). Despite young women's empowerment as perceived by young men, their risk of acquiring

HIV is still not diminished as it is likely that their agency stops at the point of having sex. By accepting fashionable goods or money in exchange for sex, the 'paying' partner gains the right to use his 'investment' in the way he chooses (Wood and Jewkes, 2001). Thus, in transactional sexual relationships, young women are likely to be signing away their power and rights to negotiate the terms for sex (Silberschmidt and Rasch, 2001; Kaufman and Stavrou, 2004; Luke, 2003; Wojcicki and Malala, 2001). Therefore, structural interventions that engage with material deprivation and/or a desire for fashionable goods are needed to enable young people to resist risky sexual relationships characterised by material exchange. In addition, future research should gather more perspectives from young men who engage in the transactional sexual relationships described in this study.

6.3 A need for detailed measures of disadvantage associated with sexual risk (Theme 3)

Table 10: Disadvantage and sexual risk: Key findings and implications

Key findings
• Material deprivation (making use of simple measures) predicted sexual risk-taking for both young men and young women in South African urban slums. • Financial difficulty was the most salient influence on young women's high sexual risk taking in South African urban slums although material deprivation was only superficially measured. • A multi-level model was used in the analysis of association between local measures of material deprivation and coercive sex in Malawi. - At household-level, material deprivation was an important factor in predicting coercive sex among young women, but not among young men. - At individual level, unemployment was associated with coercive sex among young men.
Implications for research and interventions
• The point about young women's financial difficulty being associated with sexual risk highlights the social and material constructions of sexuality. More searching questions using qualitative methods on what constitutes financial difficulty and nature of its relationship to lack of food, housing and poor healthcare and consumptive patterns require future research. • Future studies should incorporate a range of sub measures of material deprivation and consumerism that are found to be important in the urban slums of the SEA region. • Standard indicators as well as context specific indicators are needed for the design of interventions as well as for ongoing monitoring and evaluation of HIV prevention interventions and cross site comparisons. • Combination prevention strategies should include addressing material deprivation and consumerism when targeting young people in urban slums.

In South Africa, material deprivation is significantly associated with or increased odds of high sexual risk taking for both young men and young women who reside in urban slums (Paper I). Along with material deprivation, financial difficulty was the most salient influence on young women's high sexual risk taking in South African urban slums. In Malawi, results from multi-level models suggest positive association between unemployment and coercive sex among young men (Paper III). However, there was no statistically significant relationship

between material deprivation and coercive sex for young men in the adjusted multi-level models – suggesting that facing hardship in meeting basic necessities does not seem to affect coercive sex for young men in urban slums. This could be about egos - that unemployment meant that young men felt inadequate (low self-esteem) and therefore more at risk of coercive sex (as victims). This view is similar to what was reported in a study about the association of marginalistion, low self-esteem/identity issues and peer pressure with higher sexual risks (measured by pregnancy, non-use of condoms and having multiple sexual partners) among young people in South Africa (HSRC, 2012). The Malawi study also showed that some young women may be coerced to have sex for things (such as housing, food or access to healthcare) deemed necessary for survival – a notion described as coercive transactional sex in a study among youth in the United States (Tyler and Johnson, 2006).

Disparities in findings must be expected given that Paper I examined how material deprivation together with financial difficulty affects sexual risk-taking, while Paper III examined the impact of material deprivation together with unemployment on coercive sex, using a multilevel approach. Another explanation of these disparities might be a result of the fact that the key independent variable, material deprivation and other covariates such as unemployment and financial difficulty vary with time (Tenkorang et al., 2011). The overall design of the research undertaken using South African and Malawian data was a cross sectional and exploratory study. As a result, time-varying covariates were not included in this study because the aim of this research was not to examine changes in these variables in relation to sexual risk.

Findings in Paper I are supported in other recent studies in South Africa (Tenkorang et al., 2011; Burns and Snow, 2012), indicating that young people living in deprived households are more likely to engage in sexual risk taking. However, the finding that financial difficulty was

the most salient influence on young women's high sexual risk taking contradicts the notion that material deprivation, measured as a function of lack of finances, should be a better determinant of sexual risk than financial deprivation in low-income households.

Findings in Paper III about the significant gender differences on the risk factors (material deprivation and unemployment) for coercive sex are supported by findings from the additional analysis of logged coefficients of the two quantitative datasets regarding sexual risks by gender – Tables 5 and 7 above. The findings are also supported by other studies that give insights to the different contexts within which coercive sex occurs for young women and young men (Conroy and Chilungo, 2014; Erulkar, 2004; Jewkes et al., 2002; Moore et al., 2012; Sikweyiya and Jewkes, 2009).

In both papers (Papers I and III), we learn that the joint use of measures capturing material deprivation and SES (financial difficulty and unemployment) are potentially fruitful for partitioning the effects of material deprivation and economic factors (i.e. financial difficulty) on sexual risk among young women and young men respectively. However, two issues are worth noting: Firstly, although the association of material deprivation and sexual risk remained significant in the presence of measures of SES (financial difficulty or unemployment), it is evident from the narratives about transactional sex (Paper II) that a desire for fashionable goods must be included in the model in order to fully understand sexual risk in urban slums. These factors, which were not quantified and tested in the models, may derive from individual's desire for fashionable goods (for example, the latest hair or clothing styles and cellular phones). Secondly, comparing the degree of material deprivation between Malawi and South Africa can be challenging as Paper I relied on proxy measurement of slum residence to allow existing data sources to be applied to research on association between deprivations and sexual risk. Proxy measurement of urban slums misses key aspects

of actual urban slums (Fink et al., 2014) because it only has face validity. Using self-reported indicators at the time of the survey, the material deprivation composite variable from the Malawi quantitative dataset not only captures a more accurate picture of the hardships young people in urban families living in poverty face, but it is unique exploring differences between the two urban slum study sites. However, there are some issues of interpretation that need to be considered. The Malawi study found that the sample of young people have only lived approximately 18 years since the age group was 18 – 23 years. On the other hand, length of stay in urban slum settings in the South Africa survey was not recorded. As a result the length of exposure to material deprivation of the individual was not known. This issue points to the need to understand the history of the settlement and the history of the mobility of residents to understand the factors influencing sexual risk.

Nevertheless, the robustness of the relationship between material deprivation and sexual risk – in the face of the selected control variables – between the two countries that differ in their rates of poverty, urbanisation, and other economic, political, social and cultural characteristics is an important and meaningful result. Therefore, living in materially-deprived households in urban slums presents a powerful barrier to safer sexual practices, regardless of the particular country in which these urban slums are located. However, marked variations by gender within slums suggest that successful policy, action plans and programme interventions to reduce sexual risk may require gender and context-specific prevention efforts in slums.

These findings have potential implications for strategies required for promoting safer sexual practices among young people residing in urban slums in Malawi and South Africa. As a growing segment of young people living in urban slums continue to experience high risk of HIV acquisition, considerable effort to reduce their risk has aimed to change individual-level risk factors (Mmari and Astone, 2013). However, it has been widely recognised that HIV

related sexual risks are driven by structural factors that are beyond an individual's control (Auerbach et al., 2011). Thus, contemporary research has shifted from making generalisations based on individual-level determinants of sexual risk to structural contexts associated with sexual risk. However, there seems to be limited evidence to support the success of structural interventions. There has been much recent interest in the findings of CTs. A study in Malawi showed that CTs were associated with a 38% reduction in sexual risk (Baird et al., 2010). Recent evidence from a similar study in rural South Africa showed that CTs resulted in reduced sexual risk, but did not find a reduction in HIV incidence (Pettifor, 2015). Cluver's work (Cluver et al., 2014) (in urban and rural settings) shows that CTs are of value but that the impact of CTs were enhanced when combined with social interventions (for example, social support). Such the equivocal findings add strength to the argument that CTs might not be universally effective in urban slum settings. In the light of findings from my study, I argue that structural interventions that engage with material deprivation and consumerism are necessary in order to yield positive results and more effective interventions.

6.4 Study design and methods to understand generic and context-specific issues in urban slums (Theme 4)

Table 11: Study design and methods: Key findings and implications

Key findings
• The use of secondary data as the first phase in this research, and identifying gaps in the existing data (being imprecise or incomplete for the purpose of my study question) was central to the process of designing the two sub studies in Malawi. • The context for primary data collection in Malawi (Papers II & III) in sub studies 1 and 2 provided a unique opportunity that has provided new insights on the material deprivation and sexual risk nexus among young people that needs to be addressed in intervention efforts to reduce sexual risk. • Qualitative methods (Paper II) provided a depth of understanding of the complex underlying factors that could not be empirically tested in the statistical models of association between material deprivation and sexual risk. • Sampling of young people per household using a Kish grid to ensure that eligible individuals in the household stand an equal chance of being interviewed in research on disadvantage and risk excluded young people who are homeless who also experience higher levels of risk. • Based on the notion that deprivation is a function of shortage in income (Greif, 2012), and therefore a more proximate determinant of sexual risk than income, single-item measurement of facets of material deprivation in Paper I were found to underestimate young women's sexual risking taking, where financial difficulty was found to be the most salient influence. • The multi-level modelling framework in Paper III examined the effect of deprivations, at different levels, on sexual risk.
Implications for further research
• There is need for more research to uncover the most critical structural factors that drive the material deprivation and sexual risk relationship in urban slums. • The need for localized measurement for material disadvantage points to the difficulty in research trying to account for the value systems and socially constructed frames of reference that sanction acceptable and non-acceptable forms of sexual practice and interpretation of factors that health and livelihoods. • Qualitative research focusing on the formation of localized identities in urban slum contexts that builds and expands on quantitative methods will deepen engagement on issues of material disadvantage.

The study design and methods used in this research have contributed to addressing a key question regarding the extent of heterogeneity in measures of disadvantage and sexual risk across and within urban slums. The variations between findings in urban slums in Malawi and South Africa in the material deprivation and sexual risk add strength to previous findings

of the danger in taking urban slums as homogeneous groups whose challenges can be addressed through uniform interventions (Zulu et al., 2011).

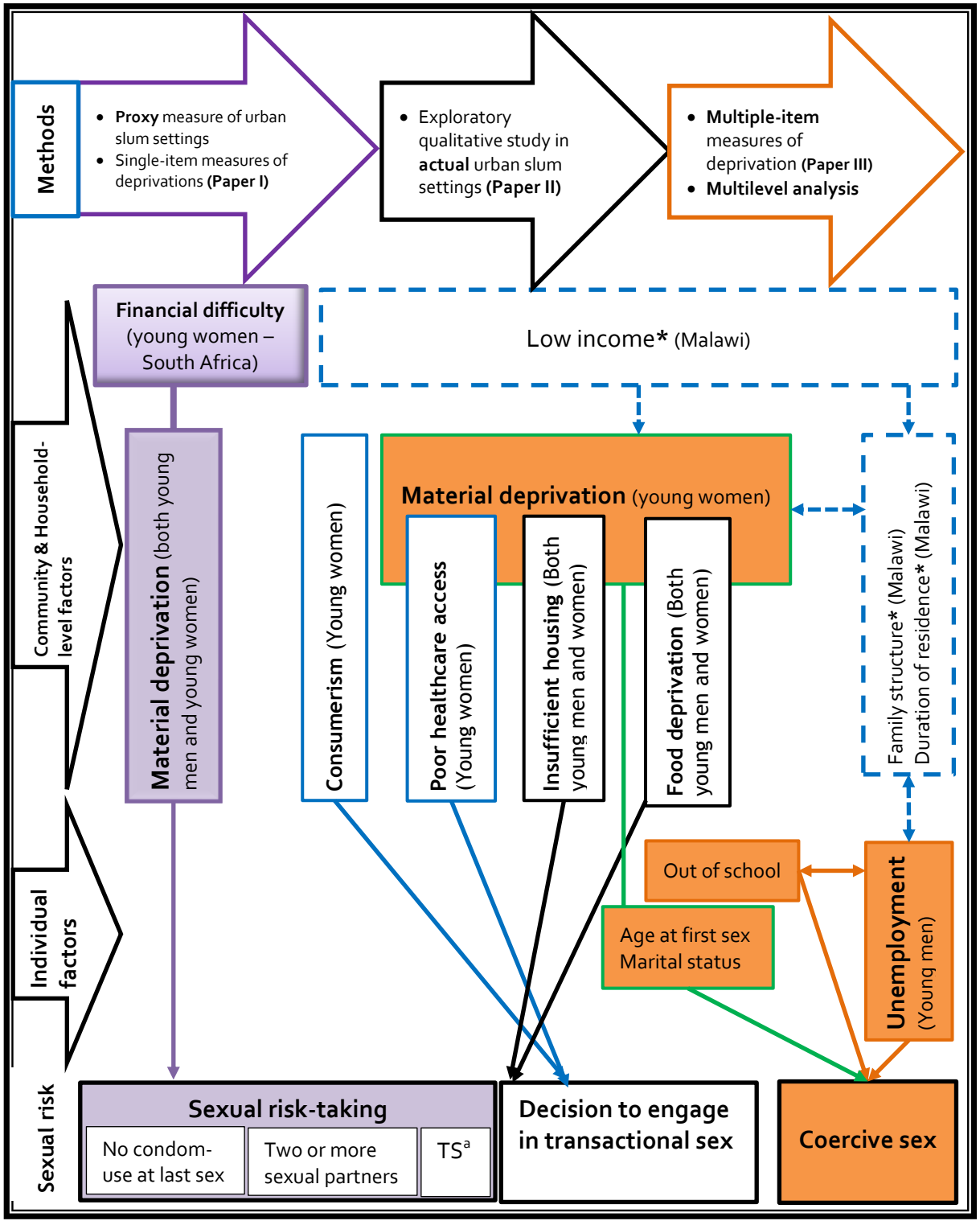
6.5 Contribution to measuring local disadvantage in urban slums

This research contributes a new methodological approach that highlights what data are needed in order to better understand local measures of disadvantage associated with sexual risk in urban slum settings in the SEA region. There is a dearth of research on quantifying local indicators of disadvantage associated with sexual risk of both young men and young women in specific urban slum settings in the SEA region. In addition, there has never been consistency on *what* constitutes and *how* to define and quantify local measures of disadvantage associated with sexual risk in specific urban slum settings in the SEA region. As a result, evidence has been lacking in this region to be able to plan for effective combination HIV prevention approaches that address unique needs of vulnerable young people in urban slum settings. My study contributes in this direction by conceptualising a model of local measures of disadvantage in light of key findings from this research (see Figure 8). This conceptual model shows that:

1. A multi-phase study design combining both qualitative and quantitative methods is needed to assess the generic and specific urban slum settings regarding HIV risk to be able to suggest what interventions are needed to reduce risk of young people in slums.
2. Using single-item measures from existing data, material deprivation predicted sexual risk-taking for both young men and young women in urban slums; however, financial difficulty was the most salient influence on young women's high sexual risk taking.
3. A desire for fashionable goods and poor health care access may lead young women to engage in transactional sex in urban slum settings in Malawi.
4. Facing hardship in meeting basic needs (housing and food) seems to underlie motivations for decisions to engage in transactional sex among both young men and young women.
5. Young women may be coerced to have sex for things – such as housing, food or access to healthcare –

deemed necessary for survival in urban slum settings in Malawi. Estimates from multi- level models also suggest positive association between unemployment and coercive sex among young men in urban slum settings in Malawi.

Figure 8: Key study findings: Material deprivation and sexual risk in urban slum settings in Malawi and South Africa



[a] TS=transactional sex; *No statistically significant effect on sexual risk in actual urban slum settings in Malawi.

I will now go on to suggest what (1) interventions are needed in urban slum settings to reduce risk of young people in these settings in Southern and Eastern Africa (SEA); and (2) what future research is needed to develop tools to assess the generic and context-specific issues in urban slum settings in the SEA region regarding HIV risk.

6.6 Towards a combination prevention model in slums of the SEA region

In my review of the literature, I have struggled to find what I consider to be a comprehensive framework to guide planning and implementation of combination HIV prevention approaches that engage with the unique needs of young people in urban slums in Southern and Eastern Africa (SEA). In the light of my findings from the two sub studies, my suggestion is that we need to generate and empirically test an urban slum-specific version of a combination prevention framework that accounts for local concepts of material deprivation and consumerism in order to reduce a high risk of HIV acquisition among young people in urban slum settings in the SEA region. Such a framework would enable governments (and others) to respond appropriately to generic and context-specific factors associated with sexual risk among young people in urban slums. Whilst a framework can be a good starting point, Vearey (2011) cautions that a framework might lead to a 'static' representation of conditions that are found to be critical in urban slum settings in the SEA region. In the light of this caution, I have realised that a comprehensive urban slum-specific combination prevention framework will not be possible to generate at the moment based on my study findings.

However, as an initial step in this direction, it is evident from my review of the literature and the findings from the two sub studies that there is need for more innovative research to develop appropriate tools to collect more detailed research data on the generic and context-specific issues in different urban slum settings in the SEA region regarding HIV risk that would then inform context-specific responses. My suggestions point to further research and

the potential for a multi-country study using a settings approach to assess risks and guide the development of appropriate interventions in urban slum settings in the SEA region. Currently, it is not possible to undertake such a multi-country study using nationally representative datasets such as the Demographic and Health Surveys given that these datasets do not have the sample size or level of disaggregation of material deprivations and sexual risk data as suggested by the findings of this thesis.

7. Study limitations

A key limitation of this thesis is that it loses attention to a more macro perspective in the explanation of structural factors associated with sexual risk in urban slums. In this regard, I caution that the interpretation of links between material disadvantage and sexual risk must begin with structural causes from a more macro perspective. The socio-economic and political context structuring material disadvantage and consumerism exist before these effects are experienced at the neighbourhood or individual levels.

Other limitations of this thesis can be categorised into three broad domains: sampling, validity and bias. Additionally, this study is exploratory and context specific.

7.1 Sampling bias and external validity

Purposive sampling was applied for the qualitative study targeting a particular group of hard-to-reach young people (sub study 2, Paper 2). A total of 12 young people were interviewed in-depth for the qualitative component of the research. However, it is normally considered that qualitative interviews should continue until saturation is met, and this was achieved before we reached a total number of 12, but we continued the interviews with some more young people to make sure an equal number of young men and women in addition to sufficient data of quality had been collected.

The qualitative study was also based on a selected group of young people in two specific urban environments in Malawi and the findings might only be representative of the sampled groups in these two settlements. Furthermore, the inclusion criteria had a strict frame, which necessitated a search for young people who met the inclusion criteria so the preconditions were already given prior to the research. It is therefore not possible to draw any wider conclusions about the general population due to this source of bias. However, this unique opportunity to reach young people in these harsh urban settings has provided important

insights on how material deprivation affects young people's decisions to engage in unsafe sex that needs to be addressed in intervention efforts to reduce risk of HIV acquisition.

7.2 Internal validity

Information and recall bias is an important component in qualitative research as well as the probability of respondents giving information that is not accurate due to social desirability where the risk of over-reporting good behaviour or under-reporting bad behaviour occurs. The risk of social desirability was present in all sub studies, not least as it targeted people's sexual behaviours, which are of a delicate nature to many people. For sub study 2, IDIs followed a guide, but the interviewer could go back and discuss issues if the interviewee contradicted himself or herself for further clarification on sensitive issues. Furthermore, self-reported data does not determine the actual or complete structure of the underlying reasons for sexual risk behaviour. However, these IDIs gave the interviewees an opportunity to shed light on the nature of their social and sexual relationships. All interviews were based on self-reported sexual behaviour and social relations, based on a homogeneous sample that were purposively selected and may therefore be difficult to generalise the findings.

The surveys (Paper I and III) included self-reported data, which are likely to be biased. The recall period was 12 months, which might affect young people's ability to remember details of sexual activities and the probability of giving inaccurate information. Also, the research assistants were trained to minimise bias and help facilitate respondents to answer questions correctly. Nonetheless, the study was based on self-reported behaviour which might be biased, not least in relation to social desirability.

7.3 Interview, language and other information bias

Recall bias, an important form of information bias that affects internal validity in quantitative studies, has been discussed in the preceding paragraph. With regards to qualitative data, the

use of in-depth interviewing aimed at exploring specific questions defined in the guides and were considered the best method to obtain new knowledge. However, this task demands skill, not least due to the sensitive issues addressed and to the nature of the research. Competence is thus central to the data collection process including: cultural awareness and knowledge, which includes self-awareness of the researcher's different background and knowledge of the cultural background of the informant and communication patterns. It further includes dealing with the recognition of cultural differences, by having respect for cultural diversity and a receptive attitude (Suh et al., 2009) during the interviews. Following the cultural competence perspective, in-depth interviews as a qualitative research technique is a unique process, especially in this study where the aim was to explore contextual factors. In that specific interview situation, several factors might influence the process. The possible factors include interviewing skills, preparedness, social status, ability to establish rapport, communication skills, desire to please, cultural and ethical issues (Birks et al., 2007). These factors were addressed in this study by undertaking extensive training in qualitative interview techniques, performing a situation analysis, and pre-testing of the data collection instruments.

8. Conclusion

This research has made use of two sub studies to contribute to the understanding of how the under-analysed components of local measures of material deprivation– insufficient housing, food insecurity, and poor access to healthcare – are associated with sexual risk among young women and young men in urban slums in Malawi and South Africa. The Malawi findings of the research contributes to the understanding of sexual risk by using multiple-item measures of insufficient housing, food insecurity and poor access to health care to conceptualise material deprivation in a multi-level model in relation to sexual risk. The key findings of this study are that (1) facing hardship in meeting basic necessities seems to underlie motivations for the making of decisions to engage in transactional sex among both young men and young women in urban slums; (2) poor health care access and a desire for fashionable goods may lead young women engaging in transactional sex; and (3) young women may be coerced to have sex for things – such as housing, food or access to healthcare – deemed necessary for survival in urban slums and unemployed young men being at higher risk of coercive sex.

Overall, the findings of this research regarding the strengths of association between various deprivations and dimensions of sexual risk illuminate gaps in understanding the differences between different settings and contexts. These findings point to future research that is needed. In order to guide the development of effective combination prevention interventions, a research priority is to develop tools to assess the generic and context-specific issues in urban slums in different SEA countries leading to young people being at higher HIV sexual risk.

8.1 Policy recommendations

The review of the literature has highlighted the absence of any policy or guidelines to respond to the high sexual risk of young people specifically in urban slum settings in Southern and eastern Africa. There is also an absence of a framework to understand and

guide the response to the multiple sexual risk factors using a combination prevention approach. This study recommends the development of combination prevention approaches that are informed by context-specific measures of material deprivation, desire for fashionable goods and other local specific sexual risk factors. This recommendation would entail the need to review existing combination HIV prevention frameworks targeting young people in order to determine whether they address the unique needs of vulnerable groups of young people living in urban slums, if they address the structural determinants of HIV and are equity-promoting. Importantly, effective implementation of such approaches must also be monitored (using appropriate slum-specific indicators). In addition, this recommendation would allow existing structural intervention efforts targeting young people, (such as cash transfers) to be evaluated and revised. Based on the findings of this research, material deprivation and consumerism are risk reduction interventions that need to be explored further, possibly through action research. Slum and gender specific components will be needed. Youth focused combination prevention strategies are needed within urban slums to deliver evidence based comprehensive response to reducing high risk of HIV acquisition.

8.2 A specific combination HIV prevention model for urban slum settings?

Based on the findings of this research, I have suggested the need for a specific combination HIV prevention model for young people in slums in the SEA region. It is proposed that this approach can assist governments in this region to engage with the unique needs of young people residing in urban slums, and therefore to reduce risk of young people in these settings. It can also assist in understanding what the gaps are regarding the differences between different urban slums and therefore what future research is needed to develop tools to assess the generic and specific settings in SEA countries regarding HIV risk. These suggestions point to the need for future research and the potential for multi country study using a settings approach to assessing risks and guiding the development of appropriate interventions.

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Material Deprivation Affects High Sexual Risk Behavior among Young People in Urban Slums, South Africa

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ABSTRACT *Young people in urban slums adopt HIV risk behaviors influenced by their neighborhood factors. Three critical factors in urban slums of Southern and Eastern Africa—the region most affected by the HIV epidemic in the world—are unmet needs of housing, food, and health care, which are associated with HIV sexual risks. Yet, there has been limited attention on how the combination of unmet needs of housing, food, and health care—i.e., material deprivation—relates to sexual risk behavior among young people in urban slums. Cross-sectional data were extracted from the LoveLife survey in South African four provinces—KwaZulu Natal, Mpumalanga, Eastern Cape, and Gauteng, to examine the association between material deprivation and sexual risk behavior among young people aged 18–23 years (263 males, 267 females) in urban slums. Adjusted logistic regression models showed that material deprivation was significantly associated with increased odds of high sexual risk taking for young men (adjusted OR=1.20; 95 % CI=1.10, 5.58) and young women (adjusted OR=1.43; 95 % CI=1.35, 3.28). Financial difficulty—a proxy for other deprivations—was the most salient influence on young women's high sexual risk taking (adjusted OR=2.11; 95 % CI=1.66, 2.70). Localized behavioral HIV prevention interventions should target young people in deprived households.*

KEYWORDS *Urban slums, Material deprivation, HIV risk behavior, Young people, South Africa*

INTRODUCTION

Southern and Eastern Africa has the highest rate of urbanization in the world and is expected to be two thirds urbanized by 2050.[1] Urbanization in this region is accompanied by rapid growth of urban slums, where approximately 60 % of the current urban population lives.[1] The rapid growth of urban slums in the region is a cause for concern because of their association with HIV.[2–7] Limitations of current interventions in the region are partly due to the failure to address the social context of HIV sexual risks, which includes poverty.[8–11]

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A vast body of literature spanning various continents shows that poverty is a key driver of HIV sexual risks in urban slums.[3,5,7,12–16] The bulk of this research has assessed broad measures of economic deprivation—such as income, employment, education or lack of access to opportunity structures—to predict the likelihood of slum residents, particularly women and girls, in sexual risk taking. While this research is valuable, increasingly attention in sub-Saharan Africa has been devoted to predicting sexual risk taking using critical aspects of urban poverty that best represents individuals' living experiences.[17–20] Greif's[17] and Burns and Snow[19] outlined several reasons for this trend. Both these authors identify that previous research is not sufficiently equipped to inform localized HIV prevention strategies. Supporting this view, two reviews of studies in Southern and Eastern Africa showed that behavioral HIV prevention interventions in the region have had weak outcomes, especially among young people.[9,11] The two reviews conclude that an emerging generation of structural interventions is needed to challenge the wider drivers of the HIV epidemic, including unmet basic needs of housing, food, and health care access. Our review of the literature confirms that, surprisingly, the combination of the three unmet basic needs—housing, food, and health care—is infrequently used in studies of disadvantage and HIV risk among young people living in urban slums. This paper uses the concept of material deprivation to examine the relationship between the three unmet basic needs—food, housing, and health care—and sexual risk behavior among young people in urban slums in South Africa.

The idea that material deprivation and health behavior are related is well-established, especially in the literature on high-income countries. Several studies on high-income countries have found a strong association between material deprivation and health behavior.[17,21–24] However, there is no consensus to date on what constitutes material deprivation and the research output on such relationships on low-income countries is relatively limited. Moreover, Burns and Snow[19] argue that commonly used constructs of deprivation in high-income countries do not adequately represent the conditions and realities of low-income countries. Acknowledging this view, Greif[17] conceptualized deprivation with local constructs of unmet basic needs of housing, health care, and food, and found a positive association with women's likelihood of engaging in sexual risk behavior (transactional sex and multiple sexual partners) in Nairobi slums, Kenya. Their effects were at least as strong as broad measures of economic deprivation. Focusing solely on women is one of the limitations of Greif's[17] study because responses to deprivation are likely to be gendered.[17,20] Thus, the extent to which Greif's[17] findings can be extrapolated to men is limited.

We extend Greif's[17] work by focusing on young men and young women in South Africa urban slums. South African slums, locally referred to as informal settlements, are home to 8.7 % of the total population aged 2 years or more.[25] A large proportion of slum residents live without access to basic services.[18,26–28] Both HIV prevalence and incidence is much higher in slum settings. One in five residents (21.6 %) are estimated to be living with HIV and just under a third of new infections nationally per year (29.1 %) occur in slum areas.[25]

Based on previous research,[17,19] we hypothesized that young people in materially deprived households in urban slums have a greater likelihood of reporting high sexual risk taking than their counterparts in non-materially deprived households. The hypothesis is based on the premise that specific social, economic, and physical characteristics of the urban environment—for example, urban slums—influence a

wide variety of health behaviors.[29–31] Although neighborhood effects cannot be directly tested in the current study (due to data limitations), we control for disadvantageous neighborhood conditions by examining only slum residents.

METHODS

Data and Sample

This paper contains findings from a cross-sectional analysis of secondary data from the 2011 LoveLife Evaluation Survey (LLES) of young people (18–23 years) in South African households of four provinces—KwaZulu Natal, Mpumalanga, Eastern Cape, and Gauteng—approved by the Human Sciences Research Council (HSRC) Research Ethics Committee (Protocol Number REC 2/16/02/11). The survey used a multi-stage disproportionate, stratified cluster sampling and was collected by HSRC. The household and interview response rates to the survey were 93.58 and 96.42 %, respectively. Our focal variables had less than 3 % missing values and sensitivity analysis showed that the exclusion of respondents with missing values resulted in almost identical findings as those reported in this paper.

In generating the analytical sample for this paper—young people in urban slums—the full LLES sample of 3,123 young people was used. A proxy indicator was used based on the type of dwelling through the item in the survey which assessed the structural integrity of the wall materials: "what type of wall does your dwelling have?" Those who responded by indicating "corrugated iron or cardboard" were considered in this paper as living in urban slums. Our proxy indicator only has face validity and based on definitions used in previous research on housing and risk behavior in the South African urban context.[19] Analyses were further restricted to unmarried black residents because they were a majority (98.1 %) in urban slums. This translated to a sample of 267 young women and 263 young men. We did not exclude respondents based on the length of stay in urban slums because the data did not have these items.

Measures

Sexual Risk Taking The dependent variable, sexual risk taking, was defined by three other variables: multiple sexual partnerships, transactional sex, and condom use during last sexual intercourse. Specifically, respondents were asked whether they used condoms at last sexual intercourse, had multiple sexual partners in the last 12 months, and exchanged sex for money or goods in the last 12 months. Variables from these measures were dichotomous, indicating whether a respondent used condoms or not, had two or more sexual partners or not, and exchanged sex for money or goods in the last 12 months or not. Given this information, a new variable called sexual risk taking was created as a three-level ordinal variable as follows.

Respondents who had not experienced sex are put in a latent class called "No sexual risk taking." Respondents who reported using condoms at last sexual intercourse, maintaining only one sexual partner and no transactional sex in the last 12 months are categorized under "Low sexual risk taking." All respondents who reported that they had not used condoms at last sexual intercourse or transactional sex are categorized under "High risk taking," irrespective of the number of sexual partners they had. Those who reported use of condoms at last sexual intercourse, but had more than one sexual partner were added to this class. The outcome

variable was coded as 0=No sexual risk, 1=Low sexual risk, and 2=High sexual risk. The steps are then replicated for female sexual risk taking. The use of sexual risk taking as a three-level ordinal variable reduces concerns of how multiple sexual risk practices might combine to influence risk.[20] We carried out separate analyses for males and females based on the assumption that sexual risk taking is somehow different for males and females. For example, the variable on transactional sex could involve the giving of cash or goods for males and receiving for females.

Material Deprivation In this study, material deprivation was defined to include three dimensions of self-assessments of food, healthcare, and housing by young people. Food and healthcare deprivations were dichotomous variables coded 0=no and 1=yes. This paper defined housing deprivation by two implicit indicators: location (by considering urban slums only) and housing quality (corrugated and cardboard walls of dwellings); one explicit indicator, number of people in a dwelling, a dichotomous variable coded 0=no crowding, 1=overcrowding. The LLES did not measure the number of rooms per dwelling. Therefore, our measure of housing deprivation is based on the assumption that the majority of urban slums in South Africa are single rooms based on previous studies.

The food deprivation measure used the following question: "In the past week, how often have you gone without food to eat?" Crowdedness was measured with an item that asked respondents, "How many persons or family members (including yourself), live in this household?" The respondent was coded as experiencing housing deprivation if this question was answered with a number of 4 or greater. Health care deprivation was measured with one item that asked respondents, "In the past week, how often have you gone without medicines or medical treatment that you needed?" Our composite material deprivation indicator combined information from housing, food and medical care to create a dichotomous measure that indicated the presence of 1 or more hardships. Lastly, a general category of deprivation was defined by self-reporting of "financial difficulty." Our measure of financial difficulty included two questions: "Did you receive any income from any source in the last month?" and "How many people in this household receive a grant?" Financial difficulty was used as a proxy for other deprivations not associated with food, housing, or medical care.

Statistical Analyses

The analyses were conducted in two parts using Stata software (version 12.0). First, descriptive statistics were conducted to provide profiles of the participants, sexual risk behaviors, and indicators of material deprivation. Second, separate multivariable logistic regression models for young men and young women were fitted to examine the association between material deprivation and sexual risk taking, adjusted for age, education, employment, and staying with parents. For these models, we first combined the two categories of sexual risk taking variables (no and low sexual risk taking) to allow examining the association between material deprivation and high sexual risk taking using logistic regression models. Then, we checked inter-correlations between the three deprivation variables. Finally, a stepwise procedure (backward elimination) was chosen to select variables to be entered into the final multivariable logistic regression model that examined an aggregate measure of material deprivation and sexual risk taking. We used $p<0.05$ to define statistical significance for all analyses and pseudo R-squared statistics to check the model fit.

RESULTS

Table 1 presents summary statistics of socio-demographic characteristics of the respondents. Of the 530 respondents, 49 % were male and 51 % female. The average age of the respondents was 20.66 years (SD=2.90) for males and 20.42 years (SD=2.87) for females. About 44 % of male respondents were between 18 and 19 years compared to 46 % for females. About 86 % of males had received secondary or higher education compared to 90 % of the females. About 75 % of males reported staying with at least a parent or relative compared to 70 % of females. About 65 % of males reported being employed (or self-employed) and 49 % of females reported being employed. Notably, in Table 1, females had higher educational attainment level ($\chi^2=13.40$, $p<0.05$) and lower level of employment than their male counterparts ($\chi^2=12.76$, $p<0.05$).

Table 2 presents the results of the descriptive statistics of self-reported sexual risk behaviors and material deprivation in a sample of 530 unmarried youth in urban slums in South Africa. With regard to condom use, 20.3 % of the youth reported that they did not use a condom during their last sexual intercourse and there was no significant gender difference detected on this issue. With regard to multiple sexual partners, 46.3 % reported that they had two or more sexual partners in the past 12 months, and males reported a higher prevalence than females (64.1 versus 28.7 %, $\chi^2=17.90$, $p<0.001$). A small percentage of the youth engaged in a transactional sex in the past 12 months (8.3 %), surprisingly with males more likely to report transactional sex (11.2 versus 5.5 %, $\chi^2=8.06$, $p<0.01$). About 41.3 % of the youth were in the high sexual risk category, with more males likely to be in the high sexual risk category (50.0 versus 33.0 %, $\chi^2=16.81$, $p<0.001$) and more females in the low sexual risk category (42.7 versus 27.3 %, $\chi^2=6.52$, $p<0.05$).

Differences of self-reported sexual risk behaviors and material deprivation between males and females are also presented in Table 2. In addition, there are

TABLE 1 Socio-demographic characteristics of the study sample ($N=530$)

Variable	Male	Female	Total	Chi-square or T tests
N	263	267	530	
Mean age (mean ± SD)	20.66±2.90	20.42±2.87	20.40±2.89	1.20
Age (years)				0.54
18–19	44.2	45.9	45.0	
20–23	55.8	54.1	55.0	
Highest educational level				13.40*
Grade 8 or less	14.5	10.5	12.5	
Grade 9 or higher	85.5	89.5	87.5	
Family structure				0.37
Mother/father/both present	74.7	66.5	70.2	
Others: parents not present	25.3	33.5	29.8	
Employment status				12.76*
Employed/self employed	64.9	49.0	57.0	
Not employed	35.1	51.0	43.0	
Household size (mean occupancy)	4.0	4.0	4.0	1.14

*$p<0.05$

TABLE 2 Self-reported sexual risk behaviors and indicators of material deprivation in a sample of 530 unmarried youth in urban slums in South Africa

	Male	Female	Total	Chi-square tests
Sexual risk behaviors				
No condom use last sexual intercourse ($n=74$)	19.5	21.3	20.3	1.37
Two or more sex partners in the past 12 months ($n=171$)	64.1	28.7	46.3	17.90***
Transactional sex in the past 12 months ($n=30$)	11.2	5.5	8.3	8.06**
Sexual risk taking				
High sexual risk taking ($n=219$)	50.0	33.0	41.3	16.81***
Low sexual risk taking ($n=186$)	27.3	42.7	35.1	6.52*
No sexual risk taking ($n=125$)	22.7	24.3	23.6	2.69
Indicators of material deprivation				
Food deprivation ($n=112$)	20.9	21.6	21.3	7.47
Medical care deprivation ($n=115$)	26.6	17.2	21.9	14.35*
Housing deprivation ($n=350$)	66.3	67.0	66.7	1.42
Material deprivation ($n=486$)	92.1	95.1	95.5	1.92
Other deprivations				
Financial difficulty ($n=491$)	86.3	91.4	89.3	5.24*

*$p<0.05$; **$p<0.01$; ***$p<0.001$

relatively low proportions of youth reporting food insecurity, as well as medical deprivation, in urban informal settlements in South Africa. However, consistent with the literature, both males and females reported high levels of housing deprivation.

Table 3 presents the results of bivariate tests of independence between high sexual risk taking and selected independent variables. Separate results are presented for males and females. There were significant associations between most independent measures and high sexual risk taking for both males and females. Individual measures of material deprivation are not included in Table 3 because they did not attract much interpretive attention here.

Table 4 presents the results of the associations between material deprivation and covariates with sexual risk taking in a multiple logistic model. The table displays two separate models for each sex. As shown in Table 4, females in materially deprived households had almost one and a half times the odds of sexual risk taking (adjusted OR=1.43; 95 % CI=1.35, 3.28) compared with females from non-deprived households. A slightly weaker association was found between material deprivation and male sexual risk taking (adjusted OR=1.20; 95 % CI=1.10, 5.58). Financial difficulty remained the most salient influence on female risk taking (adjusted OR=2.11; 95 % CI=1.66–2.70) after correcting for covariates.

DISCUSSION

This paper sets out to examine the association between material deprivation (unmet basic needs related to housing, food, and health care) and sexual risk taking by sex among young people in South African urban informal (slum) settlements. The major findings in this study are that material deprivation is significantly associated with

TABLE 3 Gender stratified results of bivariate tests of independence between selected independent variables and high sexual risk taking in urban informal settlements, South Africa (*N* = 530)

	High sexual risk taking					
	Male			Female		
	No (*N* = 132)	Yes (*N* = 131)	*p* Value	No (*N* = 179)	Yes (*N* = 88)	*p* Value
Material deprivation (%)						
No	10	8		13	7	
Yes	90	92	0.000***	87	93	0.000***
Financial difficulty (%)						
No	85	86		88	83	
Yes	15	14	0.678	12	17	0.000**
Age (years) (mean)	20	20	0.741	20	20	0.952
Family type (%)						
Mother/father/both	73	83		76	86	
Others/parents not present	27	17	0.324	24	14	0.303
Mother's education (%)						
Low	73	83		70	81	
Secondary or higher	27	17	0.405	30	19	0.671
Employed/self-employed (%)						
No	25	21		47	51	
Yes	75	79	0.100**	53	49	0.000***
Education level (%)						
Grade 8 or low	15	16		89	88	
Grade 9 or higher	85	84	0.004***	11	17	0.000**

Two-sided *t* test for means; chi-square tests for categorical variables

*$p<0.05$; **$p<0.01$

increased odds of high sexual risk taking for both young men and young women who reside in urban slums. However, financial difficulty—which was used as a proxy for other deprivations—was the most salient influence on young women's high sexual risk taking in urban slums.

Other quantitative studies among young people in Cape Town, South Africa[19,20] suggest that young people are more likely to engage in sexual risk behavior (multiple sexual partners and low condom use) if they reside in slum households characterized by a high concentration of material disadvantage—which was measured by physical housing characteristics. In the slums of Nairobi, Kenya, Greif [17] found a significant association between single-item indicators of housing, food, and medical needs and sexual risk behavior (multiple sexual partners and transactional sex). The current study found that an aggregate measure of material deprivation is associated with sexual risk taking for both young men and young women. We propose that this significant association, particularly for young men, needs further research using comprehensive measures of material deprivation.

Our results support the idea that the social context has not been adequately taken into account in understanding and respond to the HIV risk factors in slum settings. Additionally, the findings support the argument from previous studies that

TABLE 4 Association between material deprivation and covariates with high sexual risk taking in a multivariable logistic regression: separate results for males and females

	AOR [95 % CI]			
	High female sexual risk taking		High male sexual risk taking	
	Model 1	Model 2	Model 1	Model 2
Material deprivation				
Non-deprived	1.00	1.00	1.00	1.00
Deprived	1.59 [1.01–4.71]**	1.43 [1.35–3.28]*	1.30 [1.01–5.30]*	1.20 [1.10–5.58]*
Financial difficulty				
No	1.00	1.00	1.00	1.00
Yes	2.17 [1.56–2.72]**	2.11 [1.66–2.70]**	1.86 [1.66–2.70]*	1.61 [0.60–2.83]
Age (years)	1.17 [1.09–1.25]	0.89 [0.78–1.02]	1.20 [0.93–1.49]	1.15 [0.98–1.35]
Family type				
Both parents	1.00	1.00	1.00	1.00
Other/parents not present	1.79 [1.01–1.84]	1.31 [1.49–3.01]	1.15 [1.01–1.30]	1.09 [0.64–1.91]
Mother's education				
Secondary or higher	1.00	1.00	1.00	1.00
Primary	1.35 [1.05–26.22]	1.20 [1.85–4.11]	1.99 [0.58–6.85]	1.74 [0.80–5.11]
Education level				
Grade 8 or less		1.00		1.00
Grade 9 or higher		0.52 [0.38–0.69]*		0.67 [0.44–0.71]*
Employed/self-employed				
Yes		1.00		1.00
No		1.24 [1.12–9.31]		3.92 [0.76–4.86]

AOR adjusted odds ratio

*$p<0.05$, **$p<0.01$; 95 %CI=95 % confidence interval

explanations, as well as interventions, of HIV risk factors that do not engage with the social context are inadequate.[14,20] There is an urgent need for locally appropriate behavioral HIV prevention interventions to engage with housing, food, and healthcare needs among young people in urban slums.

Along with material deprivation, our study showed that financial difficulty, used in this study as a proxy for other deprivations, was the most salient influence on female risk taking. This finding contradicts the notion that deprivation, being a function of shortage in financial capital, should be a more proximate indicator of risk than income.[24,32] Disparities in findings might be a result of the lack of data for measuring financial difficulty in the LoveLife data set, an important limitation.

There were several limitations to our study. Firstly, most of the information for the focal independent and dependent variables was collected through face-to-face interviews, and it is possible that this data collection method led to overestimations or underestimations with respect to the associations observed between the independent and dependent variables. The analysis was also hampered by a relatively low proportion of females, in particular, who reported transactional sex (5.5 % for transactional sex). This study did not have statistical power to detect differences in models including interaction terms, nor

were sex and education-level stratified multivariable logistic regression models robust. Therefore, this paper is unable to test the extent to which level of education modified the relationship between measures of material deprivation and sexual risk taking in using multivariable logistic regression models. Secondly, as an exploratory cross-sectional study design, our results are unable to make any claims about the causal direction of these relationships. This limits the capacity to understand the extent to which material deprivation influences sexual risk taking. Thirdly, the present study did not have information to control for variables such as migration status, religion, length of residence, or number of children in the household. Lastly, the data in the LoveLife survey might be subject to social desirability bias, resulting in over-reporting and underreporting of our focal variables because of the mode (face-to-face interviews) that was employed to collect data.

Further research is warranted on how multiple measures of material deprivation might influence sexual risk practices among various sub-populations of young people who are in school or out of school in urban slum settings. Further research should also compare this measure of material deprivation to traditional measures of socio-economic status or conduct construct validity analysis of material deprivation. The current study did not implement this analysis because of limitations in the secondary data. Future research should also address the appropriate operationalization of sexual risk taking. Our study, like previous studies in the field of HIV sexual risks among young people [19,20,33], defined sexual risk taking by including non-use of condoms during sexual intercourse, which may not represent sexual risk taking in specific sexual relationship contexts.

Despite the limitations, the proxy measure—which only has face validity—enabled the investigation of intra-urban differences of sexual risk taking between young people in materially deprived and non-materially deprived slum households. The results affirmed the importance of analyzing disaggregated data to uncover significant relationships that are often concealed within aggregate statistics.[11]

In conclusion, the findings confirm high sexual risk taking among young people in urban slums in South Africa. The results suggest that policy makers should consider localized behavioral HIV prevention interventions to address HIV in the country. More attention should be paid to marginalized subgroups of young people residing in urban slums.

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Paper II

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The role of material deprivation and consumerism in the decisions to engage in transactional sex among young people in the urban slums of Blantyre, Malawi

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Transactional sex has been associated with a high risk of HIV acquisition and unintended pregnancy among young women in urban slums in sub-Saharan Africa. However, few studies have explored the structural drivers of transactional sex from the perspective of both genders in these settings. This paper explores how young men and women understand the factors that lead to transactional sex among their peers, and how deprivation of material resources (housing, food and health care access) and consumerism (a desire for fashionable goods) may instigate transactional sex in the urban slums of Blantyre, Malawi. Data from 5 focus group discussions and 12 in-depth interviews undertaken with a total of 60 young men and women aged 18–23 years old, conducted between December 2012 and May 2013, were analysed using anticipated and grounded codes. Housing and food deprivation influenced decisions to engage in transactional sex for both young men and women. Poor health care access and a desire for fashionable goods (such as the latest hair or clothing styles and cellular phones) influenced the decisions of young women that led to transactional sex. Interventions that engage with deprivations and consumerism are essential to reducing sexual and reproductive health risks in urban slums.

Keywords: Material deprivation; consumerism; young people; transactional sex

Introduction

Transactional sex – or the exchange of sex for goods or resources – has been associated with increased risk of HIV acquisition and unintended pregnancy among young people in sub-Saharan Africa (Dunkle et al., 2004; Luke, 2005a). Recent evidence has highlighted young people in urban slums as a marginalised group at higher risk than non-slum residents (Mberu, Mumah, Kabiru, & Brinton, 2013; Mmari & Astone, 2013). These authors argue that understanding the risks in this group of young people, and how to invest in programmes that prevent increased sexual and reproductive health (SRH) risks, requires more knowledge about the structural factors that increase their vulnerability. This paper presents findings of an exploratory qualitative study on how young people living in

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urban slums understand the factors that promote transactional sex among their peers, and how material deprivation and consumerism may lead to decisions to engage in transactional sex in Blantyre, Malawi.

Background

Existing research in the urban slums of sub-Saharan Africa highlights that the decision to engage in transactional sex is an outcome of poverty (Greif, 2012; Izugbara, Ochako, Egesa, & Tikkanen, 2013; Luke, 2005a). However, most of this research focuses on young women in relationships with older men (Luke, 2005a), and thus we are left with little published information on transactional sex from the perspective of young men in urban slums. However, what is generally known from prior research that used data from the Demographic and Health Surveys is that 7.4%–42.8% of unmarried young men, and 3.4%–18.3% of married older men, reported giving or receiving money, gifts or favours for sexual relations in the last 12 months (Luke, 2005b). The situation where transactional sex is so common might be critical in urban slums where many young people experience an acute lack of money or resources, and where such material deprivation manifests in different ways and influences young people to make different decisions to compensate. In order to effectively reduce the known risks for HIV acquisition and unintended pregnancy associated with transactional sex, a logical question to ask is 'what are the reasons young people begin to consider this behaviour, and in what ways do they lead to decisions to engage transactional sex?' To address this question, increasing attention in sub-Saharan Africa has been devoted to explaining the decisions to engage in transactional sex by using critical aspects of deprivation (insufficient housing, food insecurity and poor access to health care) that best represent the experiences of young people in urban slums (Greif, 2012; Izugbara et al., 2013; Kamndaya, Thomas, Vearey, Sartorius, & Kazembe, 2014; Kunnuji, 2014). Mberu et al. (2013) document several reasons for this trend, while also highlighting that existing research has yielded limited information for more effective SRH programmes targeting young people in urban slums. Supporting this view, Mmari and Astone (2013) have called for a new generation of structural interventions that challenge the structural drivers of SRH risks among young people in slums, including housing, food and health care access.

Housing, food and health care access are multidimensional concepts that encompass aspects of housing quality, instability and overcrowding (Aidala, Cross, Stall, Harre, & Sumartojo, 2005); availability, accessibility and utilisation of food (Ivers & Cullen, 2011) and affordability, acceptability and availability of health care (Peters et al., 2008). However, this multidimensional perspective is infrequently used in transactional sex research.

Framing transactional sex in relation to material deprivation alone might be insufficient in urban slums in sub-Saharan Africa. Along with material deprivation, our review of the literature suggests that consumerism – a desire for fashionable goods – might be an important, albeit often overlooked, driver of young people's decisions to engage in transactional sex in an urban slum context. In our opinion, it is essential to explore the roles of both material deprivation and consumerism in decisions to engage in transactional sex as to better inform effective SRH programmes in this context.

A vast body of anthropological literature has shown that transactional sex might have more to do with consumerism than with poverty (see, for example, Hunter, 2002; Leclerc-Madlala, 2003). This literature indicates that engagement in transactional sex is often motivated by the pursuit of a particular idealised lifestyle, where young women seek

older men often in pursuit of fashionable goods (Dunkle et al., 2004; Hunter, 2002; Leclerc-Madlala, 2003; Maganja, Maman, Groves, & Mbwambo, 2007; Silberschmidt & Rasch, 2001). In this regard, several authors (Hawkins, Price, & Mussá, 2009; Luke, 2005a; Poulin, 2007) have reported that young women often use transactional sex as a means to achieve their economic and social goals.

The approach used in our study to explore young people's views of the role of consumerism and material deprivation in their decisions to engage in transactional sex was to synthesise a simplified framework based on this anthropological literature. This approach is important given the profound consequences that physical, social and economic factors can have for HIV risk in urban poor settings (Galea, Freudenberg, & Vlahov, 2005). We used one strand of urban health research that focuses on the differences within urban slums (Galea et al., 2005).

Study context

Malawi is a low-income country, with 91% of its 16 million people living on less than US $2 per day (United Nations Development Programme, 2011). Approximately 5% of young women and 2% of young men aged 15–24 years were living with HIV by 2009 (National AIDS Commission, 2012). Malawi's HIV prevalence of 11% conceals rural–urban differences, where the prevalence in urban areas is nearly double that in rural areas (17.1% vs. 10.8%) (Malawi Government, 2011). Although one-fifth of the population is classified as urban, urbanisation in Malawi is linked to the increasing urbanisation of poverty, with approximately 65% of the urban population living in slums (UN-Habitat, 2011).

Much research has been undertaken on transactional sex in Malawi (Kaler, 2006; Moore, Biddlecom, & Zulu, 2007; Poulin, 2007; Swidler & Watkins, 2007; Tawfik & Watkins, 2007), with several theoretical explanations of transactional sex put forward. These explanations include a focus on financial interests (Moore et al., 2007), social and emotional ties (Poulin, 2007; Swidler & Watkins, 2007) and consumerism (Kaler, 2006; Moore et al., 2007). However, most existing research has focused on women or unmarried female adolescents in rural areas. To our knowledge, this paper is one of the first qualitative studies examining the perspectives of both young men and young women regarding the role of material deprivation and consumerism in their decisions to engage in transactional sex in urban slums in Malawi. The aim of this study was to explore how young men and young women understand the factors that promote transactional sex among their peers, and how material deprivation and consumerism may instigate transactional sex in two urban slums of Blantyre, Malawi.

Methods

Study sites

The study sites are the informal (slum) areas of Mbayani and Mtopwa in Blantyre City, Malawi. Mbayani occupies 453 hectares of land with an estimated population of 25,405. It lies to the east of Blantyre's central business district on the main road to Lilongwe. Mtopwa is one of the smallest (approximately 5 hectares of land) in Blantyre City, with about 600 households and 3789 people as of 2008 (UN-Habitat, 2011). It is located southeast of Blantyre City, in Bangwe Township. Most houses in Mtopwa and Mbayani are constructed with unfired bricks, mud walls and tin sheets or grass for roofs.

Ethical considerations

Study procedures were approved by the Human Research Ethics Committee (Medical) of University of the Witwatersrand and the National Health Sciences Research Committee in Malawi (Protocol Numbers M120658 and NHSRC 1078, respectively).

Study design

The study made use of an exploratory qualitative study design through focus group discussions (FGDs) and in-depth interviews (IDIs) held with young men and young women in Mtopwa and Mbayani. FGDs focused on how participants made sense of risky sex, while IDIs allowed participants to reflect on young people's motivations for having sex. Combining these two methods increased our understanding of structural and social drivers of transactional sex among young people in the study sites.

Data generation

Sixty young people (24 young men and 36 young women, 18–23 years of age) participated in five FGDs (2 for young men and 3 for young women), conducted between December 2012 and May 2013. Each FGD had 12 participants. Inclusion criteria for FGDs were age, schooling status, sex and self-reported multiple sexual partnering or monogamous sexual relationships. Each FGD had more individuals who self-reported multiple sexual partners than monogamous sexual relationships. Both purposive and snowball sampling were used for the selection of participants. Two local, trained research assistants (male and female) from each study site identified their friends who were willing to take part in the study as initial participants for snowball sampling. We first identified the local research assistants with the help of community leaders from the study sites. Then 3 days were spent recruiting young people from the pre-existing friendship groups of these initial participants, so that they knew each other well and were hopefully free to discuss sensitive issues in each other's presence. The two FGDs for young men were organised according to marital status (married and unmarried), while the three FGDs for young women were organised as follows: (1) married and out-of-school, (2) unmarried and out-of-school and (3) unmarried and in-school. This organisation of FGDs was based on the feedback during piloting phase of this study.

The IDIs were held with a subset of FGD participants so as to build on the rapport established during the group discussion, and to explore some of the issues that had emerged during FGDs. Approximately 2–3 interviewees were purposively sampled per FGD to represent schooling status and marital status, and to include both dominant and reserved FGD participants. A total of 12 IDIs were conducted with 6 young men and 6 young women.

The research was conducted in Chichewa, the national language of Malawi. Two trained male (aged 26 years) and female (aged 25 years) fieldworkers, experienced in qualitative data collection, facilitated the discussions. The FGD guide questions were concerned with sexual practices and norms, and the circumstances that lead young people to engage in transactional sex. For example, participants were asked the following question: 'Some young people know that if they have sex without a condom or with many different people they risk getting HIV, but still they do not protect themselves. Why is this the case?' When relevant, participants were asked to describe in detail the mechanisms by which material deprivations and consumerism could contribute to the decision to engage in transactional sex with the following question: 'Please tell us in what

way(s) do (the factors that they have mentioned) influence your decisions as young men (/young women) to have sex?' These issues were discussed in more detail with the 12 young people who participated in the IDIs. Questions from the IDI guide sought views of what respondents considered the critical issues that promote risky sex in their community, and how material deprivation and consumerism influenced their decisions to engage in transactional sex. We sought this information by asking respondents: 'What expectation do you have as a young man (/young woman) when it comes to sexual intercourse?'; 'What do you think are the reasons why some of you are having sex?'; 'What do you think are some of the reasons why some of you have multiple sexual partners?' and 'What do you do when there is (less or no food to eat) in your household?' The interview guides were flexible to accommodate emerging issues.

Data analysis

The data was transcribed and translated into English. Each transcript was summarised to identify key themes, entered into QSR International's Nvivo 9 software and coded. A pragmatic approach that combined the use of anticipated codes and grounded codes (Mason, 2006) was adopted to code the data. Grounded codes were developed from multiple reviews of the transcripts, while anticipated codes were developed from prior knowledge as well as multiple reviews of transcripts. Thereafter, codes were developed into conceptual categories, sub-themes and, finally, major themes (Table 1).

Findings and discussion

Description of the sample

The sample included 36 young women and 24 young men, equally split between the 2 study sites. The participants were aged 18–23 years, with a median age of 19 and 21 years for females and males, respectively (Table 2). A large proportion of out-of-school participants had primary education, while in-school participants were in secondary school. The mean years of completed formal schooling was approximately 7 years. The occupations of those currently out-of-school ranged from casual labouring, gardening and farming, to hawking, schooling and self-employment in informal artisan jobs. A larger proportion of women (45%) than young men (13%) were not currently earning an income. The majority of the participants had children. Monthly incomes were low (averaging approximately US$70), and the majority of participants reported being Christian.

Transactional sex – operating as exchange of sex for goods or resources in casual or committed relationships – was reported to be common among young people in the study sites. Our findings are presented according to the two key emergent themes from the data analysis: (1) the relationship between transactional sex and material deprivation and (2) the relationship between transactional sex and consumerism. Pseudonyms are used in all quotations illustrating the main findings.

Material deprivation and transactional sex

Three dimensions of material deprivation – basic unmet needs relating to housing, food and health care deprivations – were cited as reasons for young people's decisions to engage in transactional sex.

Table 1. The role of material deprivation and consumerism in the decisions to engage in transactional sex among young people in two urban slums of Blantyre, Malawi.

Codes	Categories	Sub-themes	Major themes
• No place to sleep • Live in rented house • Friend provided accommodation	Housing instability	Insufficient housing	Material deprivation
• Wall, floor and roof of dwelling with temporary materials • Poor sanitation	Housing quality		
• Sleep in overcrowded bedroom	Overcrowding		
• Worried food runs out • Skipping meals • Being at home with nothing to eat • Worried children won't eat	Availability	Food insecurity	
• Got food from friend(s) • Difficulty buying food	Accessibility and utilisation of food		
• Didn't have money for medical prescriptions • Support reatment for child, mother	Affordability	Health care access	
• Satisfaction with health facilities • Got help to access medical care • Health workers not available • Needed transport to go to health facility	Accessibility		
• Health personnel do not care about patients • Health personnel rude and abusive	Acceptability		
• Being left out • Technology • Fashionable clothing	Modern goods and lifestyle	Modernity	Consumerism
• Following heart desires • Want things quickly and easily • Lack patience to wait • Want everything at once • Want to eat 'classic' food	Aspirations	Aspirations	

Housing deprivation

For young people in- and out-of-school, housing deprivation (overcrowding, poor quality of housing and housing instability) exacerbated their difficulties in maintaining safe sexual practices. Young people were explicit about their lived experiences of housing deprivation, using phrases such as 'find a place', 'the houses are squeezed', 'renting a house', 'overcrowding', which they linked to their decisions to engage in transactional sex to meet their unmet housing needs. They also described feeling frustrated that they lived in houses with walls, floors and roofs made from temporary materials, and cited this as a reason for their motivations for transactional sex:

> When a girl lacks housing and she wants to find a place to sleep, or she does not have rent, she is mostly found in a bar as she does not have a place to live. She will have sex with a guy

Table 2. Characteristics of study participants.

Characteristic	Male (n = 24)	Female (n = 36)
Median age	21 years	19 years
Mean formal schooling	8 years	7 years
Occupation		
• None	3 (12.5%)	16 (44.5%)
• Gardening & farming	2 (0.8%)	6 (16.7%)
• Petty trading	7 (23.3%)	7 (19.4%)
• Casual labouring	8 (33.3%)	7 (19.4%)
• Artisan jobs	4 (16.7%)	0 (0%)
Religion		
• Christians	20 (83.3%)	33 (91.7%)
• Moslems	4 (16.7%)	3 (8.3%)
Duration of residence	2–23 years	2–23 years

> [in order to have a roof over her head for the night] and then does the same thing the next day. (Nasiyato, married, out-of-school, female, 22)

> Nambe: Most of us here [Area name] live in one-roomed rental houses. We share the room with relatives and sometimes friends. … Many of us need to pay (house) rent, so men get money and give it to women for sex.

> Nagama: Actually, for girls who have no place to sleep, they support themselves by having sex with men. (FGD 1, unmarried, out-of-school, female, 18–23)

A mixed-methods study on transactional sex with unmarried female adolescents in Malawi (Moore et al., 2007) found that insufficient housing influenced their decisions to engage in transactional sexual relationships with older men. To a large extent, this research is supported by our study of young people living in urban slums. Housing deprivation was mentioned frequently by the young women as a reason for becoming in involved in transactional sex. Young women also claimed that housing was a driver for young men to engage in transactional sex by seeking support from older women:

> Naje: Young men here sometimes sleep with older women, just because they want to stay [and sleep] at a decent place. Several young men get STIs in the process.

> Namila: It is because of poverty that some young men end up having sex with older women... If a young man lacks a safer sleeping place even two days, of course you would go to a woman who shows you love. (FGD 3, married, out-of-school female 18–23)

Previous research in Malawian cities has also highlighted how housing insecurity, particularly homelessness, is associated with young men's involvement in different forms of risky sexual behaviours including transactional sex (Mandalazi, Banda, & Umar, 2013). In addition to housing insecurity, food insecurity also emerged in our study as an important determinant for both young men's and young women's motivations for transactional sex.

Food insecurity

Food insecurity has been found to be acute in urban slum contexts in sub-Saharan Africa (see, for example, Greif, 2012; Vearey, Palmary, Thomas, Nunez, & Drimie, 2010). Common concerns about food insecurity were raised by the young people in our study as they talked about high food prices and a scarcity of maize, a key staple food in Malawi:

> When you go to the market there is no maize and when we go to the vendors it's at K8500 [about US$22 per 50 kg bag of maize], which we don't have. We just use sex with men so that we source food but there is still no maize at the market … You just have sex to source enough money to buy enough food for you and your children. (Nankho, unmarried, out-of-school, female, 21)

Young women described food insecurity as a 'visa' for their decisions to engage in transactional sex:

> You cannot sleep on an empty stomach when you have a 'business' (meaning vagina) that does not need capital. We think that, 'when you have sex with a particular man then we will at least have a "visa" for eating that particular day'. (Nachi, married, out-of-school female, 20)

Nankho's and Nachi's quotes are illustrative of the Ivers and Cullen (2011) definition of food insecurity that encompasses aspects of availability, accessibility and utilisation faced by young women in slums and how these aspects determine young women's decisions to become involved in transactional sex. Unlike transactional sexual encounters where young women receive gifts or resources after sex, young men talked about how the unmet needs of young women for food made it easier for them to approach young women for transactional sex. One young man said:

> With a plate of food here, you can easily get a girl. It happens here regularly. (FGD 5, unmarried, in-school male, 18–23).

> The problem in our area is that girls accept to have sex with a man with just a plate of Nsima[1]. They accept having sex for eating Nsima at someone's home. So the main issue is poverty. It cannot happen if one has food at home. (Yotamu, male, unmarried, out-of-school, 22)

Young men also told us about young men's food related involvement in transactional sex by seeking support from older women (Mandalazi et al., 2013):

> I have even witnessed it; the (young) man is my friend and he tells me how an older woman uses him for sex after giving food. (FGD 4, married and unmarried out-of-school young men aged 18–23 years)

Poor access to health care

Young women told us about various circumstances, prompted by inadequate access to public health services, which forced young women to spend their resources in private clinics:

> You go to a government hospital with a child and wait for hours on a queue. When it is your turn, they tell you there are no drugs or just give you Panadol. How can Panadol cure

> Malaria? Sometimes they tell you to go and buy medication. That's why you end up meeting a man to save [the] life of your child. (Nabiyeni, unmarried female, out-of-school, 23)
>
> Namalata: I suffer from Asthma and when I go to the hospital for an injection they tell me to go to a (private) clinic since they do not have it in stock. Since I don't have money, I just find other means to get it and pay for the injection.
>
> Interviewer: What other means do you use?
>
> Namalata: 'Uhule' (exchanging sex for money) so that I get K1000 and pay for the injection. (Married female out-of-school, 23)

Young people also told us about their seeking 'effective' medical care in the private sector. The perception that effective medical care is found in private clinics forces these young people to develop coping mechanisms to meet the greater financial costs of private medical care. A 19-year-old mother of two children told us how the need to alleviate her family's health needs routinely resulted in her engaging in transactional sex:

> Well it [consideration of having sex in exchange for care for her sick child] has happened to me a number of times, it usually happens when my child is very sick and I have no means to go to clinic [Referring to private clinic] and there is no money. Something tells me, 'Why am I rejecting the men, after all, my child will be better …' When my mother or my child is sick you ask him to help. Just know that you will have sex. Otherwise, next time he will refuse to help you. And it goes on. (Nagama, unmarried, out-of-school, female, 19)

The following dialogue with a 23-year-old married mother of three children suggests that the absence of attention from health care staff and drugs in public hospitals also drives young women into transactional sex to access private health care for their children:

> Interviewer: So what happens if you don't have money to take your child to a hospital?
>
> Nasimati: [Silence] Sometimes we borrow money from friends
>
> Interviewer: *Friends?*
>
> Nasimati: *Hmm* [Agreeing]
>
> Interviewer: Okay. What if your friend doesn't lend you their money?
>
> Nasimati: Try other means
>
> Interviewer: *Like what?*
>
> Nasimati: 'Ask' a sugar daddy. It's what most women do around here…
>
> Interviewer: Okay, but why not go to a clinic for free health care for your child?
>
> Nasimati: Most of the nurses in the public hospital are careless and don't even want to touch your sick child. I go to a public hospital only to be told that there are no drugs. They tell you to go and buy medication. (Married, female out-of-school, 22)

Although material deprivation (unmet basic needs – housing, food and health care) were cited by young women as reasons for their decision to engage in transactional sex, consumerism was also identified as an important driver of young people's decisions to

become involved in transactional sex. In these instances, young women in particular described purposefully engaging in transactional sex to satisfy their desires for fashionable goods and lifestyles. Their narratives are presented in detail in the following section.

Consumerism and transactional sex

Young people spoke about the popularity of transactional sex in their communities as a way of meeting their aspirations and desires for fashionable goods. When discussing their involvement in transactional sex in relation to consumerism, the young people mentioned a variety of items that are exchanged or purchased with proceeds from transactional sex. These items included fashionable clothing, money (often for fashionable goods or hair styles), better quality food and use of cellular phones:

> Who is going to ask you out? Nowadays men want to ask out a girl who wears clothes with a label. So, a modern girl here wants to have leggings, fishnets, cellular phone… (Ndazi, out-of-school unmarried female, 21)

As seen in existing literature (Leclerc-Madlala, 2003), from the above quote we see an indication of young women in urban slums in Malawi wanting to achieve 'modernity' through their outward appearance – not necessarily for their own identity purposes, but in order to increase their desirability for men.

> Everything is fashion nowadays. When I get a skin jean, others want to have theirs as well and will accept any man for sex, be it older, to get money for a skin jean. (Selina, out-of-school unmarried female, 20)

The above quote suggests that young women in this community will do whatever is required of them, including having sex with older men, to obtain money to purchase fashionable items of clothing. Further, in some discussions with young men, they reported taking advantage of young women's desires for fashionable goods by engaging transactional sex. These men highlighted their perceived economic advantage, which allowed them to control the terms of their sexual encounters:

> With a cellular phone here, you can easily get a girl. Girls here are easy to convince. It happens here regularly. (FGD 5, unmarried in-school male, 18–23)

Our study also showed that young women who understood how to negotiate transactional sex felt they could use it to their advantage. For example, young women spoke about 'provoking men' and understanding 'how the mind of the man works'. This issue is also highlighted in recent anthropological research (Hawkins et al., 2009; Maganja et al., 2007) stating that some young women use their sexuality as a resource for financial gains from men.

> You tell yourself that you have feelings for this (married) man and invite him to buy fishnets for you. I think that it is the older men who take care of us a lot because if they leave K500 at their home, they make sure to leave me with K500 as well. It's not just the same with young men. Older men are able to pay school fees and buy clothes for you. (Ireen, unmarried in-school female, 18)

Ireen's story above is indicative of how young women intentionally participate in transactional sex with older men in an attempt to secure fashionable goods. Additionally, young women talked about transactional sex with older men being the quickest and easiest way of accessing money to buy fashionable goods and achieve their aspirations:

> Most of us want to have things quickly and have no patience to wait. We want to have everything at once by having sex with older men. (FGD 2, unmarried female in-school, 18–23)

> What influence[s] these girls here is, wanting things to be easy in life and get what their hearts desire. (Jonasi, male, married, out-of-school, 23)

One emerging issue from the quotes provided in this paper is that views around transactional sex were predominant amongst married young women. These quotes may suggest that young unmarried women in the study community are involved in transactional sex and, therefore, in multiple, concurrent sexual partnerships. A study among Luo men in the urban slums of Nairobi, Kenya (Izugbara et al., 2013) reported similar findings of married young women having affairs with other men. Another emerging issue from the quotes in this paper is that while young women provided examples of their own practice of transactional sex, young men only described friends or acquaintances who may have engaged in this practice. This issue could indicate something about the acceptability of the practice between young women and young men in the study sites.

Conclusions

The key findings in our study are that acute economic pressure in combination with a lack of quality health care and a desire for fashion influenced the decisions of young women to engage in transactional sex. Housing and food deprivation influenced the decisions of both young men and young women to engage in transactional sex. These findings suggest that the role of deprivation of material resources and desire for fashion in transactional sex practices might be different for young women and young men based on prevailing gender norms in a community. Further research is needed to explore this issue.

While not all young people spoke about their own involvement in transactional sex, it was recognised by both genders as a common practice and expectation in the study sites. While transactional sex in non-slum settings in Malawi has been studied before (Kaler, 2006; Moore et al., 2007; Poulin, 2007; Swidler & Watkins, 2007; Tawfik & Watkins, 2007), this paper is one of the first to concurrently explore material deprivation and consumerism in relation to young people's motivations for engaging in transactional sex in urban slums. This paper makes a contribution to the literature with respect to unpacking the components of material deprivation, and offers a perspective on one critical component – acute economic shocks associated with lack of quality health care – in relation to transactional sex among young women in urban slums.

Quantitative studies undertaken in urban slums in Nigeria (Kunnuji, 2014), Kenya (Greif, 2012) and South Africa (Kamndaya et al., 2014) found significant associations between various indicators of material deprivation and sexual risk behaviours (age at first sex, multiple sexual partners, non-use of condoms and transactional sex). The qualitative approach in this study allowed us to explore the roles of multiple aspects of deprivation in greater depth than have previous quantitative studies.

However, as with all qualitative inquiry, our analysis is influenced by subjective interpretation, although every effort was made to remain true to the data. Thus, our study findings must be interpreted in light of two major limitations. First, given the sensitivity of transactional sex, it is possible that respondents would have given socially desirable answers. Second, we approached this study from a concept of vulnerability, which is a negative condition. However, existing research (Kabiru, Beguy, Ndugwa, Zulu, & Jessor, 2012) has indicated that focusing on vulnerability gives a limited set of clues for positive action. Therefore, further research should consider positive conditions (resilience) in order to know *what* to strengthen and *how* to strengthen it in urban slums.

Notwithstanding these limitations, the findings from this research have potential implications for strategies required to reduce SRH risks among young people residing in urban slums in Malawi. For example, our research indicates that some young married women are having extramarital relationships that involve transactional sex. Furthermore, material deprivation and consumerism are pull factors in decisions among these young people to engage in transactional sex. Therefore, interventions that engage with material deprivation and consumerism are essential to reduce SRH risks among young people residing in urban slums.

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Note

1. Nsima is hard porridge made from maize flour.

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Paper III

Kamndaya, M., Kazembe, LN., Vearey, J., Kabiru, CW., Thomas, L. (2015) Material deprivation and unemployment affect coercive sex among young people in the urban slums of Blantyre, Malawi: A multilevel approach. *Health & Place* **33**(2015):90-100.

Conference Proceedings

I. Kamndaya M., Vearey J., Thomas L., Kabiru CW., & Kazembe LN. Forced sexual intercourse among young people in urban slums, Malawi: An analysis of material deprivation effects and implications for interventions aimed at reducing sexual and reproductive health risks in poor urban areas. Poster presentation at the 2nd COM-NAC Joint Research Dissemination Conference on *"Reduction of disease burden in Malawi: Evidence-based public health approach"* 27-28 November 2014, Lilongwe, Malawi.

II. Longwe MB., Kamndaya M., & Christofides N. The extent and risk factors for transactional sex among young people, in urban informal settlements in Blantyre, Malawi. Oral presentation at the second COM-NAC Joint Research Dissemination Conference on *"Reduction of disease burden in Malawi: Evidence-based public health approach"* 27-28 November 2014, Lilongwe, Malawi.

III. Kamndaya M., Vearey J., Thomas L., Kabiru CW., & Kazembe LN. Forced sex among young people in urban slums, Malawi: Lessons from material deprivation effects and implications for interventions aimed at reducing sexual and reproductive health risks in poor urban areas. Oral presentation at the 18th International Conference on AIDS and STIs in Africa (ICASA), 8-13 November, 2015, Harare, Zimbabwe.

MPH Thesis

Longwe MB., Kamndaya M., & Christofides N. The extent and risk factors for transactional sex among young people in urban informal settlements in Blantyre, Malawi. MPH Thesis, **(Graduated in July 2015)**, School of Public Health, University of the Witwatersrand.

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Material deprivation and unemployment affect coercive sex among young people in the urban slums of Blantyre, Malawi: A multi-level approach

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ABSTRACT

We explore relations among material deprivation (measured by insufficient housing, food insecurity and poor healthcare access), socio-economic status (employment, income and education) and coercive sex. A binary logistic multi-level model is used in the estimation of data from a survey of 1071 young people aged 18–23 years, undertaken between June and July 2013, in the urban slums of Blantyre, Malawi. For young men, unemployment was associated with coercive sex (odds ratio [OR] = 1.77, 95% confidence interval [CI]: 1.09–3.21) while material deprivation (OR = 1.34, 95% CI: 0.75–2.39) was not. Young women in materially deprived households were more likely to report coercive sex (OR = 1.37, 95% CI: 1.07–2.22) than in non-materially deprived households. Analysis of local indicators of deprivation is critical to inform the development of effective strategies to reduce coercive sex in urban slums in Malawi.

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1. Introduction

Coercive sex – being forced by someone (partner or non-partner) to have sex when one does not want to – is increasingly visible on the public health agenda worldwide. Coercive sex represents a gross violation of young people's sexual rights and increases their risk for sexually transmitted infections, including HIV infection, and unplanned pregnancy (World Health Organization, 2013). A growing body of research in sub-Saharan Africa has highlighted the high risk for both partner and non-partner coercive sex among young people residing in growing urban poor communities – urban slums (Decker et al., 2014; Misganaw and Worku, 2013; Oduro et al., 2012). Therefore, reliable research on contextual factors that increase their vulnerability to coercive sex is required in order to inform effective strategies targeting this increasingly marginalized segment of young people. We explore relations among material deprivation, socio-economic status (SES) variables and coercive sex among young men and young women in two urban slums of Blantyre, Malawi.

Malawi is a south-east African country of about 16 million people (Population Reference Bureau [PRB], 2013), with a gross national income per capita of $350 (World Bank, 2010). It is estimated that around 70% of Malawi's urban population lives in urban slums – areas defined as lacking more than one of the following: access to safe water, adequate sanitation, sufficient living space, durability of housing, and security of tenure (UN-Habitat, 2011). Eleven percent of the Malawian population is living with HIV (urban 17.4%, rural 8.9%); HIV prevalence among young women aged 15–24 years is 2.7 times that among young men, at 5.2% and 1.9% respectively (National Statistical Office of Malawi and ICF Macro, 2011).

Blantyre is a helpful example of a currently urbanizing space, typical of other areas within sub-Saharan Africa where urban spaces are growing. The urban population in Blantyre is estimated to be 816,001, by 2013, which is an eightfold increase since 1966, with the then population at 106,641(National Statistical Office of Malawi, 2008). An estimated 60% of the urban population in Blantyre reside in urban slums where many young people may have no education or job skills (Mughogho and Kosamu, 2012; UN-Habitat, 2011). Given their limited resources and lack of

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opportunities, some young people engage in desperate survival strategies – such as exchanging sex for basic necessities including access to housing, food and healthcare (Kamndaya et al., 2015; Mandalazi et al., 2013). Blantyre City started with developments in three commercial centers – Blantyre, Mandala and Limbe – in 1876 by the Church of Scotland. With time, Mandala became integrated into Blantyre commercial centre, bringing the number of commercial centers within the city to two – Blantyre and Limbe (Mughogho and Kosamu, 2012). Against this backdrop, we selected two urban slums close to these two commercial centers (Mtopwa close to Limbe commercial centre, and Mbayani close to Blantyre commercial centre) (see, Fig. 1) in order to explore differences between the experiences of young people residing in these different locations, highlighting examples of intra-urban inequalities and the role of place on coercive sex within the city. The selection of the two urban slums is also based on the literature that suggests that Mbayani and Mtopwa are broadly typical of urban slums not only in Blantyre, but Malawi (Chipeta, 2009).

Studies undertaken in Malawi have found clustering of coercive sex within households and neighborhoods (Kathewera-Banda et al., 2005; Mason and Kennedy, 2014), but limited attention has been paid to exploring variations across neighborhoods in urban slums. Factors associated with coercive sex in Malawi include individual socioeconomic status, marital status and urban/rural residence (Conroy and Chilungo, 2014; Kathewera-Banda et al., 2005; Mason and Kennedy, 2014; Moore et al., 2012; National Statistical Office of Malawi and ICF Macro, 2011). However, neighborhood socioeconomic factors have an overarching influence on sexual violence (Fox and Benson, 2006; Hindin and Adair, 2002; Jewkes, 2002; Kiss et al., 2012; McIlwaine, 2013). For instance, limited access to resources or lack of opportunities may prompt young people to find a way to support themselves (Cunradi et al., 2000; Fox and Benson, 2006; Pearlman et al., 2003). In order to survive, some young people may resort to transactional sexual relationships that increase their vulnerability to coercive sex (Mulumeoderhwa and Harris, 2014; Sikweyiya and Jewkes, 2009; Tyler and Johnson, 2006). The social aspects of the neighborhood – for example, weak social cohesion and collective efficacy – can also impart risk of coercive sex (Frye et al., 2014; Pinchevsky and Wright, 2012). Although the possible neighborhood characteristics associated with coercive sex are considered to be multiple and diverse, measures of material deprivation have attracted a lot of research interest particularly in the growing urban poor communities in low-income countries (Chant, 2013; McIlwaine, 2013). Decker et al. (2014) and Pandey et al. (2009) have provided a helpful explanation for this interest – that residents in urban poor communities are more likely to become victims of coercive sex because of the wide range of social vulnerabilities associated with living in resource-poor settings including weak social ties, limited police protection, pervasive violence, and limited access to social and health resources. Gaining a clearer understanding of these potential relations not only contributes to the growing knowledge around the role of material conditions in coercive sex but also can be a useful guide to policy making in growing urban poor communities in sub-Saharan Africa.

2. Background

A growing body of research worldwide has documented substantial numbers of young men and young women who have experienced coercive sex in their lifetimes (Andersson et al., 2012; Erulkar, 2004; Hines, 2007; Kuyper et al., 2013; Meinck et al., 2015; Sikweyiya and Jewkes, 2009). For example, research conducted by Hines (2007) across 38 research sites in high income countries found that overall 2.3% of young women and 2.8% of young men reported having experienced coercive sex. Similarly, Andersson et al. (2012) found that overall 19.6% of young women and 21.1% of young men reported experience with coercive sex in a study across 10 countries (including Malawi) in sub-Saharan Africa. Although coercive sex is experienced by both genders, gender differences exist in young women's experiences of coercive sex and those of young men (Sikweyiya and Jewkes, 2009), supporting the idea of considering gender differences in the analysis of risk factors and prevention strategies.

Individual risk factors of coercive sex are well-established. Notably, young age at first sex (Andersson et al., 2012; Bazargan-Hejazi et al., 2013; Koenig et al., 2004; Moore et al., 2007), substance use (Conroy and Chilungo, 2014; Kabiru et al., 2010; Koenig et al., 2004; McCrann et al., 2006; Zablotska et al., 2009), and having multiple sexual partners (Bingenheimer and Reed, 2014; Moore et al., 2007; Moore et al., 2012) are associated with coercive sex. Individual SES and marriage have also been associated with coercive sex (Adudans et al., 2011; Conroy and Chilungo, 2014; Koenig et al., 2004; Ybarra et al., 2012; Zablotska et al., 2009), although the results are found to be contradictory. For example, Adudans et al. (2011), found that young women with high economic status or post-primary education in Kenya were more likely to report having experienced coercive sex, while Koenig et al. (2004) found no association between individual SES factors and coercive sex in rural Uganda. In view of these equivocal findings, the interest in research around the world on associations between socioeconomic indicators and coercive sex has grown.

2.1. Disadvantage, urban slums, and coercive sex

Structural characteristics of poor neighborhoods including disadvantage can heighten risk of sexual violence in some settings (Cunradi et al., 2000; Fox and Benson, 2006; Kiss et al., 2012; Pandey et al., 2009; Pearlman et al., 2003; Pinchevsky and Wright, 2012) in a general way that could be applied to coercive sex as well. We focus here on measures of disadvantage that have been found to be most critical in urban slums in sub-Saharan Africa – insufficient housing, food insecurity and poor access to healthcare (Kamndaya et al., 2014; Greif, 2012; Thomas et al., 2011; Vearey et al., 2010). McIlwaine (2013) notes that insufficient housing, food insecurity and poor access to healthcare, and other indicators of disadvantage intensify or attenuate the effects of individual-level factors on coercive sex particularly in urban slums. However, rigorous research is needed in urban slums in sub-Saharan Africa to substantiate McIlwaine's (2013) claim. Research conducted in high income countries has shown that indicators of disadvantage (or poverty) including socio-economic conditions, social disorganization, and other socio-structural factors reduce social cohesion, resulting in a breakdown of social networks and greater risk of sexual violence (Li et al., 2010).

Although measures of disadvantage consistently emerge as one of the determinants of sexual violence in nearly every study where they are assessed (Browning, 2002; Cunradi et al., 2000; Fox and Benson, 2006; Hindin and Adair, 2002; Khalifeh et al., 2013; Spriggs et al., 2009; Tyler and Johnson, 2006), key issues still remain regarding their measurement especially in research on low-income countries. Elaborating on this argument, Burns and Snow (2012) and Greif (2012) noted that the commonly used measures of disadvantage in existing research do not adequately reflect the realities in poor urban communities in sub-Saharan Africa. Moreover, the association between material deprivation and sexual risk is most frequently examined through the inclusion of either one dimension of deprivation (Burns and Snow, 2012) or a single deprivation-related item (Greif, 2012). It is likely that additional nuance underlying this association is not yet examined given that single-item measures of deprivations often overestimate or underestimate the

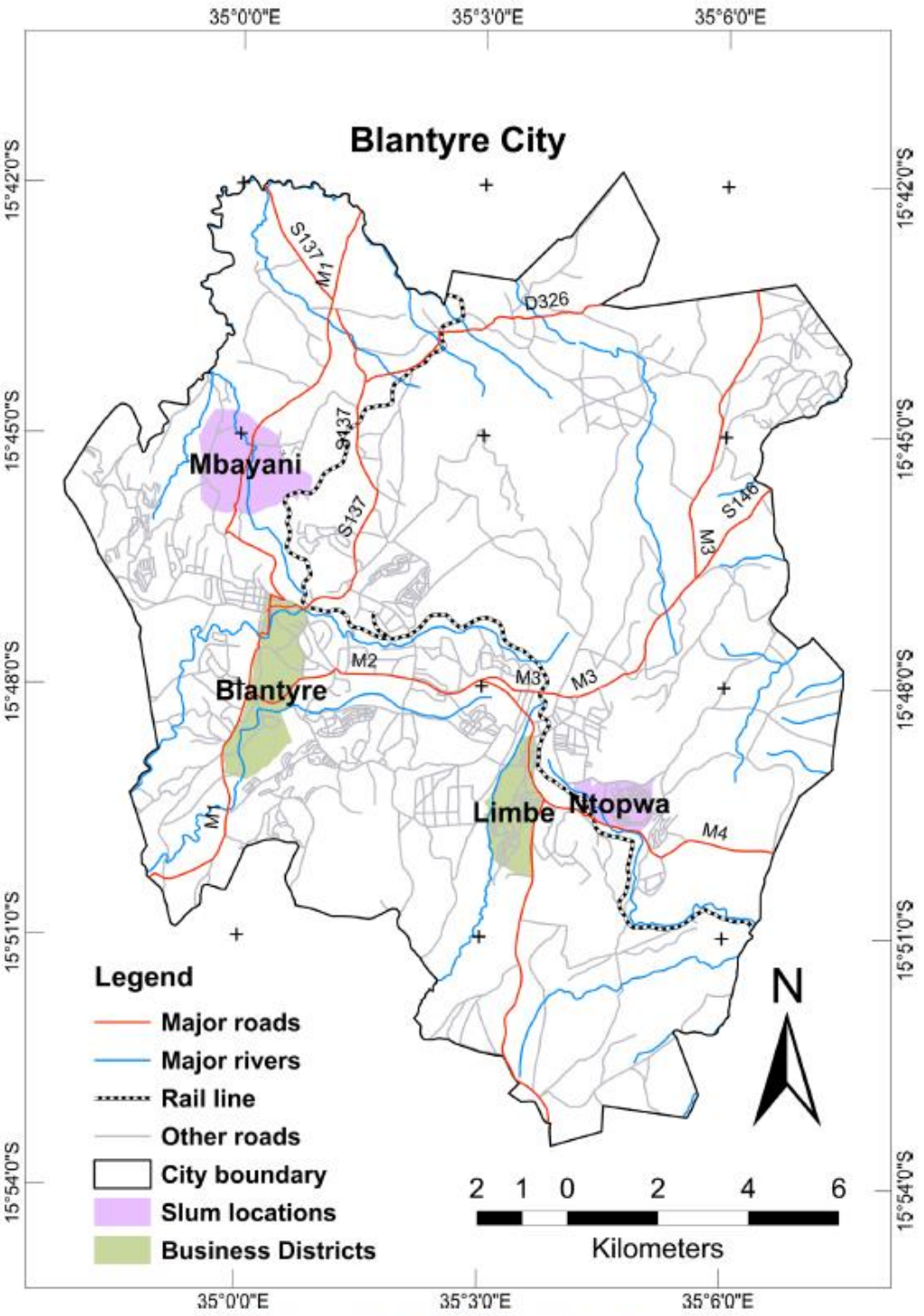


Fig. 1. Map of Blantyre City showing the two study locations.

statistical significance leading to biased results (Noble et al., 2010). In this paper, we use multiple-item measures of material deprivation – encompassing a lack of appropriate housing, food and healthcare – to assess relations among deprivation, SES and coercive sex.

2.2. A theoretical framework

Most of the existing research on relations between neighborhood characteristics and coercive sex is supported by theoretical perspectives positing that the health related behaviors of individuals are shaped not only by individual risk factors but also by attributes of places where people live (Brewster et al., 1993; Cohen et al., 2000; Cummins et al., 2007; Diez-Roux and Mair, 2010; Kawachi, 1999; Krieger and Higgins, 2002). Two approaches have been used to explain effects of place on health related behaviors. The first approach uses the idea that physical and social characteristics of a place shape health related behaviors of the whole group over and above the influence of aggregate attributes of individuals (Bernard et al., 2007; Cummins et al., 2007; Macintyre et al., 2002). The second approach, which is relevant for this study, uses the notion that geographical patterning of health outcomes is due to clustering of individuals with similar attributes (Bernard et al., 2007; Cummins et al., 2007; Macintyre et al., 2002). Accordingly, the association between place and health related behaviors is related to shared attributes among residents of a place (Bernard et al., 2007).

2.3. Study aim and hypothesis

Based on this guiding theoretical framework and our review of the literature we extend existing research by elaborating and testing hypotheses regarding the relationship between material deprivation, SES variables and coercive sex among both young men and young women residing in urban slums. Specifically, we explore whether a household-level material deprivation index affects coercive sex among young people in the two urban slums close to the two commercial centers, Blantyre and Limbe in Malawi. Accordingly, we hypothesize that the odds of coercive sex are higher amongst young people residing in materially-deprived households than non-deprived households.

3. Methods

3.1. Data

Data for this study come from a cross-sectional household survey conducted between June and July 2013 in Blantyre, Malawi. Participants were recruited through a three-stage sampling process in two purposively selected slum locations, Mbayani and Mtopwa, in Blantyre. In the first stage, 11 clusters, defined by geographic location, were selected. Households within selected clusters were systematically selected from a listed sampling frame. Every second or third household, depending on the cluster size, was selected for the survey. Eligible respondents identified in each selected household were 18–23 years old who spent the previous night in the household. One individual per household was selected using a Kish grid (Cramm et al., 2012) to ensure that all age-eligible individuals in the household stood an equal chance of being interviewed. Being a household survey, we excluded the homeless young people. Same-sex trained interviewers administered the pre-tested questionnaires in the relevant local language, Chichewa, in a private setting. The survey questionnaire collected a range of data including: demographics, household living conditions, socio-economic characteristics and sexual history. A sample size of 1123, adjusted for non-response or non-contact, was drawn to detect a between-group difference of 5% in sexual risk, with statistical significance of about 5% (α=0.05, two-tailed) and a power of more than 80% ($1-\beta$=0.80). The 5% between-group difference was chosen based on previous research (Mkandawire et al., 2011). We excluded 52 respondents from this sample due to inconsistencies in data reporting. Thus, a final sample of 1071 was used in this paper, representing a survey response rate of 92.1%. Ethics approval for the study was obtained from the University of the Witwatersrand Medical Research Ethics Committee and National Health Sciences Research Committee in Malawi (protocol numbers M120658 and 1078).

3.2. Description of variables

The outcome variable, coercive sex, was based on a binary response (1=coercive sex; 0=no coercive sex) from the item "Has anyone ever coerced or persuaded you to have sex when you did not want to?"

Material deprivation comprised three components (healthcare access, food and housing). The first component – poor access to healthcare – was measured with one item that asked young people, "Do you currently receive all the health care you think you need, or not?"

The second component, food deprivation, was measured by asking young people how often, in the last month, they worried that their household would not have enough food, how often they were not able to eat preferred foods because of a lack of resources, and whether anyone in the household went to sleep hungry. We used the responses to classify households into three groups: (1) severe food insecurity if at least one household member goes to sleep hungry or often worrying about food access or food quality; (2) some food insecurity if household members sometimes worried about food access or quality; and (3) food secure if household members experienced none of the conditions of (1) or (2).

Housing deprivation, the third component, was assessed with housing instability, quality and overcrowding. Housing instability was assessed using the following item: whether the respondent had stayed at or lived in an abandoned building for two or more days in last twelve months. Housing quality was captured as a dichotomous variable (0=temporary, 1=permanent), based on the wall, floor and roofing materials of the house; and the number of sleeping rooms. We measured overcrowding in terms of sleeping room occupancy ratio (number of people per sleeping room). Respondents in households with at least three people per sleeping room were considered as living in overcrowded houses.

We created a composite measure of material deprivation based on the three components that ranged from zero to three. Material deprivation was categorized as present if the sum was equal to zero or one and not present if the sum was equal to two or three.

We used three SES measures: household expenditure last month, household asset-based wealth, and a respondent's employment. Household monthly expenditures in Malawian Kwachas (MWK) were computed from the respondent's expenditures in the previous month. A household asset-based wealth index was created using a principal component analysis with a polychoric correlation matrix based on ownership of: radio, TV, cellular phone, bicycle, tables and chairs. We used the asset index to classify the households into tertiles – low, average and high. Employment was assessed by asking respondents their primary occupation – the work from which they earn most of their income. We created three categories from the responses: unemployed (0), self-employed (agriculture/services/trading) (1), and employed (construction/industry) (2).

Control variables[1] included age in years, school status (in-school and out-of-school), highest level of education attained in years (range

[1] We performed multiple imputations via chained equations using the *mi ice* command although the fraction of missing on each covariate was 8% or less.

0–17), duration of current residence (moved in past year, past 2–4 years, and always lived here), household structure (family with children, single with children, single/couple no children, and extended family), marital status (ever and never married), whether or not the respondent received money from their relatives and other health risk behaviors – young age at first sex, condom-use at last sex, multiple partners, age-difference with sexual partner, transactional sex and substance abuse as binary variables.

3.3. Statistical analysis

All analyses were conducted using STATA version 12. First, we present descriptive statistics of background and socio-economic characteristics of participants (Table 1), and material deprivations and risk behaviors of participants (Table 2). We used chi-square or *t*-tests for a comparison of place–place differentials (Table 3). We used bivariate logistic regression models to assess relationships between the outcome variable and each independent variable by place (Table 4). In Model 1 (Table 5), adjustments are made for the background characteristics and other risk behaviors and in Model 2 additionally for all the three SES measures. We checked for multi-collinearity among all independent variables included in Model 2 by examining the variance inflation factor, which were below the recommended cut-off of 10 (Agresti and Finlay, 2009). In Model 2, age was log-transformed to reduce kurtosis. Highest level of education was non-normal and transformed using the square root function.

3.4. Modelling framework

We apply the logit function that models the probability, Pr ($CS_i=1$), of reporting coercive sex for an individual living in a

Table 2
Prevalence of material deprivations and risk behaviors of the study participants.

Variables	Young men	Young women	Total
	N (%)	*N* (%)	*N* (%)
Material deprivations			
Housing quality			
Very low	145 (24.3)	170 (35.8)	315 (29.4)
Intermediate	186 (31.2)	179 (37.7)	365 (34.1)
High	265 (44.5)	126 (26.5)	391 (36.5)
Housing instability (yes)	124 (20.8)	63 (13.3)	187 (17.5)
Household size mean (SD)[a]	4.6 ± 2.37	4.7 ± 2.01	4.7 ± 2.24
Number of sleeping rooms mean (SD)	2.3 ± 1.03	2.1 ± 0.97	2.2 ± 1.02
Number of rooms mean (SD)	3.7 ± 1.79	3.5 ± 1.75	3.6 ± 1.78
Overcrowding (yes)	248 (41.6)	266 (56.0)	514 (48.0)
Housing deprivation (yes)	388 (65.1)	342 (72.0)	730 (68.2)
Food insecurity (FI)			
Severe FI	183 (30.7)	148 (31.2)	331 (30.9)
Some FI	116 (19.5)	68 (14.3)	184 (17.2)
Food secure	297 (49.8)	259 (54.5)	556 (51.9)
Poor access to healthcare (yes)	168 (28.2)	112 (23.6)	280 (26.1)
Material deprivation (yes)	210 (35.2)	174 (36.6)	384 (35.9)
Substance abuse and sexual history			
Substance abuse (yes)	220 (36.9)	37 (7.8)	257 (24.0)
Ever had sex (yes)	544 (91.3)	417 (87.8)	961 (89.7)
Among those who ever had sex			
Age at first sex	14.4 ± 1.88	14.4 ± 2.00	14.4 ± 1.93
Transactional sex (yes)	361 (66.4)	217 (52.0)	578 (60.2)
Partner ≥5 years older	69 (12.7)	126 (30.2)	195 (20.3)
2 or more sexual partners	268 (49.3)	78 (18.7)	346 (36.0)
No condom use at last sex	248 (45.6)	274 (65.7)	522 (54.3)
Coercive sex	86 (15.8)	185 (44.4)	271 (28.2)

[a] SD: standard deviation.

Table 1
Distribution of background and socio-economic characteristics of the study participants.

Characteristics	Young men	Young women	Total
	N (%)	*N* (%)	*N* (%)
Background characteristics			
School status			
In-school	305 (51.2)	165 (34.7)	470 (43.9)
Out-of-school	291 (48.8)	310 (65.3)	601 (56.1)
Age (years)			
18–19	298 (50.0)	228 (48.0)	526 (49.1)
20–23	298 (50.0)	247 (52.0)	545 (50.9)
Marital status			
Never married	515 (86.4)	242 (51.0)	757 (70.7)
Ever married	81 (13.6)	233 (49.0)	314 (29.3)
Duration of residence			
Moved in past year	64 (10.7)	76 (16.0)	140 (13.1)
Moved in 2–4 years	131 (22.0)	91 (19.2)	222 (20.7)
Always lived here	401 (67.3)	308 (64.8)	709 (66.2)
Socio-economic characteristics			
Household structure			
Family with children	172 (28.9)	202 (42.5)	374 (34.9)
Single with children	126 (21.1)	77 (16.2)	203 (19.0)
Single/couple no children	63 (10.6)	37 (7.8)	100 (9.3)
Extended family	235 (39.4)	159 (33.5)	394 (36.8)
Highest level of education mean (SD)[a]	6.7 ± 1.50	6.3 ± 1.68	6.5 ± 1.60
Received money from relatives last month (yes)	335 (56.2)	188 (39.6)	523 (48.8)
Household expenditure last month in 1000 MWK[b] median (IQR)[c]	25 (IQR=25)	20 (IQR=25)	23 (IQR=22)
Wealth tertile			
Low	145 (23.3)	170 (35.8)	315 (29.4)
Average	186 (31.2)	179 (37.7)	365 (34.1)
High	265 (44.5)	126 (26.5)	391 (36.5)
Primary occupation			
Unemployed	157 (26.3)	231 (48.6)	388 (36.2)
Self-employed	380 (63.8)	237 (49.9)	617 (57.6)
Employed	59 (9.9)	7 (1.5)	66 (6.2)

[a] SD=standard deviation.
[b] MWK=Malawian Kwacha.
[c] IQR=Interquartile range.

Table 3
A comparison of behavioral characteristics, socio-demographics, and material deprivations of study participants between the two urban slums.

Variables	Mbayani *N* (%)	Mtopwa *N* (%)	χ^2 or *t*-test	*p*-Value[a]
Coercive sex (yes)	239 (38.9)	142 (31.1)	7.0	< 0.01
Transactional sex in past 12 months	314 (51.1)	264 (57.8)	4.6	< 0.05
2 or more sexual partners in past 12 months	186 (30.3)	196 (42.9)	18.1	< 0.0001
Partner ≥ 5 years older	93 (15.2)	102 (22.3)	9.1	< 0.01
No condom use at last sex	336 (54.7)	296 (64.8)	10.9	< 0.01
Age at first sex mean (SD)[b]	15.7 ± 2.17	13.8 ± 2.03	14.82	< 0.0001
Substance abuse	172 (28.0)	85 (18.6)	12.7	< 0.0001
Age of respondent mean (SD)	19.8 ± 1.73	20.5 ± 2.02	− 6.40	< 0.0001
Female respondents	248 (40.4)	227 (50.0)	9.1	< 0.01
Never married respondents	540 (88.0)	217 (47.5)	207.0	< 0.0001
Duration of residence			0.95	0.621
Always lived here	399 (65.0)	310 (68.0)		
1 year or less	83 (13.5)	57 (12.5)		
2–4 years	132 (21.5)	90 (19.7)		
Household composition			12.9	< 0.05
Family, with children	209 (34.0)	165 (36.0)		
Single, with children	113 (18.4)	90 (19.7)		
Single/couple, no children	44 (7.2)	56 (12.3)		
Extended family	248 (40.4)	146 (32.0)		
Out-of-school respondents	227 (37.0)	374 (81.8)	214.2	< 0.0001
No money from relatives last month	246 (40.1)	302 (66.1)	71.0	< 0.0001
Highest level of education mean (SD)	7.1 ± 1.28	5.7 ± 1.62	16.0	< 0.0001
Expenditure last month mean (SD)	35.9 ± 25.41	20.5 ± 21.47	10.32	< 0.0001
Wealth tertiles			100.6	< 0.0001
High	110 (17.9)	205 (44.9)		
Average	223 (36.3)	142 (31.1)		
Low	281 (45.8)	110 (24.0)		
Unemployed	260 (42.4)	128 (28.1)	23.3	< 0.0001
Deprivation measures				
Housing deprivation (yes)	336 (59.6)	376 (82.3)	63.2	< 0.0001
Food deprivation (yes)	114 (18.6)	218 (47.7)	104.0	< 0.0001
Poor access to healthcare (yes)	102 (16.6)	178 (39.0)	67.7	< 0.0001
Material deprivation present	131 (21.3)	265 (58.0)	151.0	< 0.0001

[a] $p < 0.05$: significance of the Pearson's χ^2 test or *t*-test of the association between each variable of interest and urban slum location.
[b] SD: standard deviation.

household *i* nested within a neighborhood j approximated by the sampling cluster. It allows us to account for the hierarchical structure of the data. We fitted a two level random intercept model, with the individual as the first level and the neighborhood as the second level. The two-level random intercept model for individual living in household *i* nested within a neighborhood j may be represented as follows:##

$$\Pr(\mathrm{CS}_i = 1) = \text{ log it}^{-1}\left(ecstat_j \beta_{ecstat_i} + x_i^l \beta_l + \alpha_{k[i]}^{Neigh}\right)$$

$$\alpha_{k[i]}^{Neigh} \sim N(\beta_{ecstat_n} ecstat_n_j + \beta_{matdev_n} matdev_n_j + x_j^l \beta_N, \delta_{Neigh}^2)$$

The model explains that the probability, Pr(CSi=1), of reporting coercive sex for an individual *i*, depends on household economic status, $ecstat_j$, other individual-level characteristics, x_i^l and a neighborhood effect, $\alpha_{k[i]}^{Neigh}$. The neighborhood effect depends on economic status of a typical household and material deprivation, other neighborhood variables and an unexplained part. The unexplained part is assumed to be normally distributed with a homoscedastic variance and independent of regressors (Subramanian, 2004). However, we were unable to directly test neighborhood effects in the model because we are limited by the data. We also note that the number of clusters (n=11) in this paper is limited to permit meaningful analysis of neighborhood-level contextual factors, and detect significant effects on coercive sex. Thus, we introduced the household-level variables at the second level in the model.

4. Results

4.1. Descriptive results

Table 1 summarizes the sample descriptive statistics. Of the 1071 young people, 596 (55.6%) were male and 470 (43.9%) were in-school. Almost half (48.8%) of young men were out-of-school, compared with 65.3% of young women who were out of school. Participants were roughly equally distributed among the different categories for wealth and income, except for high numbers of unemployed young women (48.6%) and young men (26.3%).

Table 2 shows the prevalence of material deprivations and the sexual history of participants. Thirty-five percent of young men and 36.6% of young women reported some material deprivation. Nearly half (44.4%) of young women who ever had sex reported coercive sex, compared with 15.8% of young men.

4.2. Place–place differences of characteristics of the study participants

A summary of the behavioral, socio-demographic, and material deprivation characteristics of the study population is presented in Table 3. The focus here is on differences between the experiences of young people residing in different places in the same city; the urban slum (Mbayani) near Blantyre commercial centre and the urban slum (Mtopwa) close to Limbe commercial centre, highlighting examples of intra-urban inequalities and the role of

Table 4
A bivariate analysis of coercive sex and selected independent variables by place.

Independent variables	Unadjusted OR (95% CI)	
	Mbayani	**Mtopwa**
Transactional sex in past 12 months	4.17 (3.10–5.59)***	1.52 (1.09–2.11)*
2 or more sexual partners in past 12 months	1.56 (1.15–2.11)**	1.15 (0.82–1.61)
Partner ≥5 years older	1.26 (0.86–1.84)**	1.15 (0.76–1.73)
No condom use at last sex	3.40 (2.52–4.59)***	1.91 (1.30–2.82)**
Age at first sex	1.57 (1.43–1.73)***	1.10 (1.00–1.21)†
Substance abuse	2.52 (1.77–3.59)***	2.15 (1.26–3.68)**
Age of respondent	0.82 (0.76–0.89)***	0.99 (0.91–1.07)
Being female	2.52 (1.94–3.27)***	3.54 (2.42–5.16)***
Marital status		
Never married (REF)	1.00	1.00
Ever married	0.77 (0.50–1.18)	1.01 (0.73–1.41)
Duration of residence		
Always (REF)	1.00	1.00
1 year or less	0.78 (0.52–1.16)	0.94 (0.55–1.60)
2–4 years	0.83 (0.60–1.15)	1.35 (0.91–2.00)
Household composition		
Family, with children (REF)	1.00	1.00
Single, with children	0.85 (0.59–1.23)	0.71 (0.44–1.13)
Single/couple, no children	0.89 (0.53–1.51)	0.38 (0.19–0.77)*
Extended family	0.85 (0.63–1.14)	0.84 (0.57–1.24)
Out-of-school	1.72 (1.30–2.30)***	1.71 (1.16–2.50)**
No money from relatives last month	0.90 (0.69–1.17)	0.80 (0.57–1.13)
Highest level of education	1.04 (0.94–1.16)	0.92 (0.82–1.03)
Household expenditure last month	1.01 (1.00–1.01)**	1.00 (0.99–1.01)
Wealth tertiles		
High (REF)	1.00	1.00
Average	1.08 (0.79–1.48)	1.15 (0.71–1.84)
Low	1.57 (1.14–2.17)**	1.31 (0.84–2.02)
Unemployed	1.69 (1.30–2.18)***	1.90 (1.35–2.67)***
Deprivation measures		
Housing deprivation	1.21 (0.93–1.56)	1.24 (0.82–1.87)
Food deprivation	1.17 (0.83–1.65)	1.18 (0.84–1.64)
Poor access to healthcare	1.74 (1.16–2.60)**	0.76 (0.55–1.06)
Material deprivation present	1.51 (1.07–2.14)*	1.14 (1.01–1.60)*

REF=Reference group.
† $p<0.10$.
* $p<0.05$.
** $p<0.01$.
*** $p<0.001$.

place on these inequalities. Notably, young people residing in the urban slum near Blantyre commercial centre were significantly more likely to report coercive sex (38.9%; $n=239$ compared to 31.1%; $n=142$ of young people in the urban slum near Limbe; $\chi^2=7.0$; $p<0.01$). The other factors such as age of respondent, duration of residence and household composition were very similar between young people residing in Mbayani and Mtopwa. Young people residing in Mbayani were most likely to report living in very poor households (45.8%; $n=281$ compared to 24.0%; $n=110$ of young people in Mtopwa; $\chi^2=100.6$; $p<0.0001$). Young people residing in Mbayani were significantly more likely to report unemployment (42.4%; $n=260$ compared to 28.1%; $n=128$ of young people in the urban slum near Limbe; $\chi^2=23.3$; $p<0.0001$). However, a high proportion of young people in Mtopwa reported insufficient housing (82.3%; $n=376$), food insecurity (47.7%; $n=218$), and poor access to healthcare (39%; $n=178$).

4.3. Bivariate analysis of coercive sex and selected independent variables by place

Table 4 summarizes the result of the bivariate analyses of coercive sex and selected independent variables by place. Here we wish to highlight the role of place context in predicting experiences of coercive sex. With the exception of number of sexual partners, and age difference between partners – which were significantly related to coercive sex only in Mbayani – all risk behaviors were significantly related to coercive sex among young people residing in both Mbayani and Mtopwa. For young people in Mbayani, an older age of respondent was associated with lower odds of coercive sex (unadjusted OR=0.82, 95% CI: 0.76–0.89). Living in very poor households was significantly associated with likelihood of coercive sex in Mbayani (unadjusted OR=1.57, 95% CI: 1.14–2.17), but not in Mtopwa (unadjusted OR=1.31, 95% CI: 0.84–2.02). Unemployment was significantly associated with higher odds of reporting coercive sex in Mbayani (unadjusted OR=1.69, 95% CI: 1.30–2.18) and Mtopwa (unadjusted OR=1.90, 95% CI: 1.35–2.67). With respect to measures of material deprivation, poor access to healthcare was significantly associated with likelihood of coercive sex in Mbayani (unadjusted OR=1.74, 95% CI: 1.16–2.60), but not in Mtopwa (unadjusted OR=0.76, 95% CI: 0.55–1.06). This result is as expected considering that there was no health facility in Mbayani at the time of the study, while Mtopwa has a health facility nearby. There was a significant association between coercive sex and an aggregate measure of material deprivation in both places. In general, Table 4 indicates little difference between the two urban slums in terms of the

Table 5
Association in stratified models between material deprivation and coercive sex.

Variables	OR (95% CI)[a]			
	Young men		Young women	
	Model 1	Model 2	Model 1	Model 2
Material deprivation				
Not present (REF)	1.00	1.00	1.00	1.00
Present	1.59 (0.90–2.82)	1.34 (0.75–2.39)	1.40 (1.06–1.84)*	1.37 (1.07–2.22)*
Transactional sex	0.33 (0.19–0.57)***	0.37 (0.21–0.65)***	0.86 (0.54–1.35)	0.81 (0.52–1.28)
Partner ≥5 years older	1.29 (0.50–3.32)	1.41 (0.55–3.61)	1.05 (0.66–1.67)	1.12 (0.70–1.78)
2 or more sexual partners	1.23 (0.73–2.07)	1.41 (0.81–2.44)	1.40 (0.82–2.41)	1.38 (0.81–2.35)
No condom at last sex	4.12 (2.46–6.90)***	4.52 (2.62–7.79)***	3.11 (1.86–5.21)***	3.20 (1.91–5.35)***
Age at first sex	1.34 (1.18–1.51)***	1.38 (1.21–1.59)***	1.11 (0.99–1.96)†	1.10 (0.99–1.23)†
Substance abuse	0.70 (0.42–1.18)	0.73 (0.42–1.27)	0.93 (0.44–1.96)	0.91 (0.43–1.92)
Age of respondent	0.92 (0.79–1.07)	0.94 (0.80–1.11)	1.09 (0.96–1.24)	1.06 (0.94–1.21)
Marital status				
Never married (REF)	1.00	1.00	1.00	1.00
Ever married	1.60 (0.60–4.26)	1.69 (0.64–4.49)	3.11 (1.63–5.97)***	2.79 (1.45–5.35)***
Out-of-school	1.98 (1.06–3.71)*	1.93 (0.97–3.85)†	1.95 (1.03–3.69)**	2.06 (1.08–1.94)*
No money from relatives last month	1.04 (0.58–1.88)	1.03 (0.57–1.85)	0.98 (0.61–1.57)	0.98 (0.60–1.58)
Expenditure last month		1.01 (0.99–1.02)		0.99 (0.99–1.00)
Wealth tertile				
High (REF)		1.00		1.00
Average		0.67 (0.33–1.36)		1.01 (0.61–1.68)
Low		0.59 (0.29–1.21)		1.61(0.87–2.97)
Unemployed		1.77 (1.09–3.21)*		0.81 (0.53–1.24)
Variance component	0.17	0.18	0.17	0.17
Intra class correlation	0.08	0.09	0.08	0.08
Sample size at level 1	596	596	475	475
Number of clusters	11	11	11	11

[a] Odds ratio with 95% confidence interval.
† $p < 0.10$.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

association between measures of material deprivation and coercive sex, and the direction of association appears to be similar in the two urban slums.

4.4. Association of material deprivation and covariates with coercive sex

A look at Table 4 indicates little difference between the two urban slums in terms of the association between measures of material deprivation and coercive sex, and the direction of association appears to be similar. Thus, we considered the combination of data from the two urban slums and a material deprivation index as a variable in the multilevel model to examine the association between the place context and coercive sex. Results of the association of material deprivation and covariates with coercive sex are presented in Table 5 by gender. Among young men, when other risk behaviors, age, marital status, school status, and received money from relatives are controlled for (Model 1), material-deprivation was not significantly associated with coercive sex (OR=1.59, 95% CI: 0.90–2.82). The association between material deprivation and coercive sex remained insignificant when the three SES measures were added (Model 2) (OR=1.34, 95% CI: 0.75–2.39). However, young men who were unemployed had 77% (OR=1.77, 95% CI: 1.09–3.21) higher odds of reporting coercive sex than those who were working.

Among young women, Model 1 shows that young women who lived in materially-deprived households – net of other risk behaviors, age, marital status, duration of residence, household structure, school status, level of education and received money from relatives – were almost twice as likely to report coercive sex compared with those in non-materially deprived households (OR=1.40, 95% CI: 1.06–2.24). The association between material deprivation and coercive sex remained significant (OR=1.37, 95% CI: 1.07–2.22) when the three SES measures were added to the model (Model 2).

5. Discussion

The key findings of this study are as follows. Firstly, significant differences exist in the prevalence of coercive sex between the two urban slums in Blantyre, Malawi. Secondly, estimates from multilevel models suggest positive association between unemployment and coercive sex among young men. However, we found no association between material deprivation and coercive sex for young men in the adjusted multi-level models. This result suggests that facing hardship in meeting basic necessities does not seem to affect coercive sex for young men in urban slums. Lastly, this study has provided multi-level evidence of significant association between material deprivation and coercive sex among young women residing in two urban slums in Blantyre, Malawi. Put simply, this study has shown that some young women may be coerced to have sex for things deemed necessary for survival (such as housing, food or access to healthcare) – a notion that Tyler and Johnson (2006) described as coercive transactional sex in a qualitative study among homeless youth in the United States.

However, we found no association between unemployment and coercive sex for young women in the adjusted multi-level models. Thus, our hypothesis holds true and our results support the claim by Mdlwaine (2013) for young women.

The significant gender differences on the factors (material deprivation and unemployment) associated with coercive sex give insights to the different contexts within which coercive sex occurs for young women and young men in urban slums in Malawi. Additionally, these differences support the findings from other studies that the risk for coercive sex may differ between young men and young women, spurring researchers to improve measures of coercive sex among young men (Conroy and Chilungo, 2014; Erulkar, 2004; Jewkes et al., 2002; Moore et al., 2012; Sikweyiya and Jewkes, 2009).

Our finding that unemployment is associated with coercive sex for young men confirms those reported elsewhere (Gillham et al., 1998; Puri et al., 2010). An explanative pathway, for which there is support in the research literature, is that unemployment leads to depression, which is a risk factor for sexual violence (Puri et al., 2010), although this relationship has not been consistent for both genders. For example, while van Wijk and de Bruijn (2012) found that unemployment increased the risk for women's experience of sexual violence (but not for men), Jewkes et al. (2002) found no significant association between employment and sexual violence among women in South Africa. Many possible explanations can be given for these mixed research findings including lack of consistency in the measurement and definition of unemployment.

Our results have underscored the importance of utilizing the measures of deprivation of material resources, rather than SES indicators, in order to understand coercive sex among young women residing in urban slums. These results are similar to those found in research undertaken in high income countries where both measures of material deprivation and SES were considered in relation to partner sexual violence (Browning, 2002; Cunradi et al., 2000; Fox and Benson, 2006; Hindin and Adair, 2002; Khalifeh et al., 2013; Kiss et al., 2012; Spriggs et al., 2009). To explain why material deprivation, rather than measures of SES, is more important for explaining young women's coercive sex, it should be noted that deprivation of material resources is found to be a more proximate indicator of risk among women than income, education, and wealth (Cramm et al., 2012; Greif, 2012; Thomas et al., 2011; Vearey et al., 2010). Indeed in Malawi, narratives from focus group discussions and in-depth interviews with young people residing in urban slums add strength to the argument that whilst measures of SES have a positive influence on risk, it is essential to consider deprivation of material resources (Kamndaya et al., 2015). Additionally, our finding that material deprivation might be an important factor for young women, but not for men, conveys the notion that disadvantaged households in urban slums can exacerbate underlying gender-based power and socio-economic disparities, with young women subject to intensive gender-based sexual violence (Misganaw and Worku, 2013).

The study findings should be interpreted in light of several limitations. Firstly, the study relied on self-reporting by participants, which is subject to recall and reporting bias. Secondly, our measure of coercive sex was limited to a single question which might not capture the range of abusive sexual acts, including unwanted sexual touching or harassment, that young people may experience and that may predispose them to risky behaviors. Lastly, our study is based on cross-sectional data, making it impossible to assess causal effects.

Nevertheless, this study has contributed to an area of inquiry that has not received much attention – that of local indicators of material deprivation as important determinants of coercive sex among young people. Thus, using data from young people living in urban slums in Blantyre, Malawi, this study contributes to the extant literature in two main ways. First, by identifying individual-level factors that influence coercive sex among young people which to date has received less scholarly attention; and second, broadening the scholarship in this area by moving beyond individual risk factors to include contextual factors. A key strength of this paper is the use of local indicators of social environment and a diverse sample of young people for multi-level analysis of relations among material deprivation, SES and coercive sex in urban slums in Malawi.

6. Conclusion

We learn from this study that the joint use of local measures capturing material deprivation and SES is potentially fruitful for partitioning the effects of material deprivation and unemployment on coercive sex among young women and young men respectively. These findings have potential implications for strategies required for reducing coercive sex and its consequences (for example, HIV infection and unplanned pregnancy) among young people residing in slum settings in Malawi. For example, notwithstanding the growing evidence that cash transfer programs can reduce the risks of HIV infection and pregnancy among young people (Cluver et al., 2014), approaches for dealing with a lack of appropriate food, shelter, and health care in the growing urban slums need to be in place. Furthermore, research should pay more attention to analyses of indicators of the local social environment in order to develop locally-appropriate indicators for strategic interventions that have lasting impact for young people living in deprived neighborhoods. Future studies, using these locally-appropriate indicators, could investigate inter- and intra-place differences in relations among material deprivation, SES measures and coercive sex among young people across different locations – such as slums, medium density residential and low density high class residential locations in Malawi. Such a comparative study would increase our understanding of inter- and intra-place differentials in the associations between deprivation and coercive sex.

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Annexures

Annexure 1: Ethics clearance certificates

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Mr Mphatso S Kamndaya

CLEARANCE CERTIFICATE	M120658
PROJECT	A Multilevel Analysis of Determinants of HIV-Related Sexual Risk-Taking and Decision-Making among Youth in Urban Informall settlements in Malawi and South Africa
INVESTIGATORS	Mr Mphatso S Kamndaya.
DEPARTMENT	Centre for Health Policy/Public Health
DATE CONSIDERED	29/06/2012
DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 20/07/2012 CHAIRPERSON .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Dr Liz Thomas

DECLARATION OF INVESTIGATOR(S)
To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. I agree to a completion of a yearly progress report.

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

Telephone: + 265 789 400
Facsimile: + 265 789 431
e-mail doccentre@malawi.net
All Communications should be addressed to:
The Secretary for Health and Population



In reply please quote No. MED/4/36c
MINISTRY OF HEALTH
P.O. BOX 30377
LILONGWE 3
MALAWI

11/10/12

Mphatso Kandaya
University of Witwatersrand

Dear Sir/Madam,

RE: Protocol # 1078: A multilevel analysis of determinants of HIV-related sexual risk-taking and decision-making among youth in urban informal settlements in Malawi and South Africa

Thank you for the above titled proposal that you submitted to the National Health Sciences Research Committee (NHSRC) for review. Please be advised that the NHSRC has **reviewed** and **approved** your application to conduct the above titled study.

- **APPROVAL NUMBER** : **NHSRC # 1078**
  The above details should be used on all correspondence, consent forms and documents as appropriate.
- **APPROVAL DATE** : **11/10/2012**
- **EXPIRATION DATE** :This approval expires on **11/10/2013**
  After this date, this project may only continue upon renewal. For purposes of renewal, a progress report on a standard form obtainable from the NHSRC secretariat should be submitted one month before the expiration date for continuing review.
- **SERIOUS ADVERSE EVENT REPORTING** :All serious problems having to do with subject safety must be reported to the National Health Sciences Research Committee within 10 working days using standard forms obtainable from the NHSRC Secretariat.
- **MODIFICATIONS**: Prior NHSRC approval using standard forms obtainable from the NHSRC Secretariat is required before implementing any changes in the Protocol (including changes in the consent documents). You may not use any other consent documents besides those approved by the NHSRC.
- **TERMINATION OF STUDY**: On termination of a study, a report has to be submitted to the NHSRC using standard forms obtainable from the NHSRC Secretariat.
- **QUESTIONS**: Please contact the NHSRC on Telephone No. (01) 789314, 08588957 or by e-mail on doccentre@malawi.net
- **Other:**
  Please be reminded to send in copies of your final research results for our records as well as for the Health Research Database.

Kind regards from the NHSRC Secretariat.

.....

FOR CHAIRMAN, NATIONAL HEALTH SCIENCES RESEARCH COMMITTEE

Annexure 2: Permission letter from the loveLife national office

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po box 45 parklands 2121 south africa
talk@lovelife.org.za
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www.lovelife.org.za

Friday, 01 June 2012

Mr Mphatso Steve Kamndaya
PhD Candidate
University of Witwatersrand

To Whom it May Concern

Approval letter for PhD Research

This letter serves to confirm that loveLife's National Office in Johannesburg is aware that Mphatso Steve Kamndaya has proposed to include data from a loveLife study conducted in 2011 into his PhD analysis.

loveLife's approach to HIV prevention is based on addressing the individual, social and structural drivers of HIV infection among adolescents. The levels include the following factors: structural factors (poverty, education, marginalization and inequality), social factors (parental communication, coercion, peer pressure, expectations of womanhood and male sense of entitlement), and individual factors (HIV risk of perception, self-esteem and sense of future).

In 2011 loveLife commissioned the Human Sciences Research Council to conduct an impact assessment on loveLife. As part of this study some uni- and multivariate analysis around the individual, social and structural factors and their association with predictors for HIV infection was conducted.

loveLife, however, believed that further modeling would be useful to be able to draw stronger conclusions from the data set around the interplay of individual, social and structural factors and their association with new HIV infections.

Through cooperation with Liz Thomas from the University of Witwatersrand we learnt about Mr Mphatso Steven Kamndaya's interest in this field. As a result he submitted the analysis proposal below that we accepted.

The New loveLife Trust Reg: iTRUST 12825/07
Trustees: Mpho Makwana (Chair), Basetsana Kumalo (Deputy Chair), Given Mkhari, Mandla Sibeko, Linda Richter, Nkosinathi Biko, Theodora Steele, Shaka Sakhile Sisulu, Kholeka Winifred Mzondeki, Raenette Taljaard

Further statistical modeling and analysis of data from the loveLife study

Several studies have documented direct linear relationships between factors from the three levels and high risk sexual behaviours. However, a number of authors, guided by findings from primarily qualitative research, have hypothesized potential direct and mediated effects of structural factors on sexual risk behaviours (Eaton, Flisher, & Aarø, 2003; Latkin, Weeks, Glasman, Galletly, & Albarracin, 2010). Empirical tests of such hypothesized models are very limited, particularly in Sub-Saharan Africa, where structural factors appear to be key drivers of the epidemic in young people (Cowan & Pettifor, 2009). The loveLife data presents an opportunity to address this gap in the literature. The importance of such an analysis lies in the fact that it enables better understanding of influence of structural factors and contributes to the body of knowledge that informs development of multilevel approaches to HIV prevention, which are required to reduce HIV rates among young people in Sub-Saharan Africa (Cowan & Pettifor, 2009).

Therefore, I propose to use the data to empirically test potential direct and mediated effects of structural factors on high risk sexual behaviour of young people in South Africa using structural equation modeling (SEM). SEM is a statistical technique that enables the determination of the underlying relationship or structure among variables at different levels. It combines elements of traditional multivariate models, such as regression analysis, factor analysis and simultaneous equation modeling.

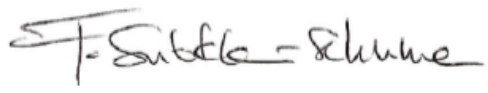
The data analysis will be undertaken using the loveLife data set from 2011 – collected by the HSRC. The analysis will take further the descriptive analysis undertaken by the HSRC in the overall report through the modeling described above. Subject to sample size, the analysis could be undertaken looking at all the sites included in the data set, as well as provincial and where possible district level data.

The findings will be reported back to loveLife using the results to highlight the strength of the various factors assessed in the model, including the loveLife interventions on specific outcomes. The findings are likely to be of value to loveLife in modification and strengthening of current interventions.

The Research and Systematic Learning Department at National Office supports the proposed research and considers the research design to be of mutual benefit.

We are looking forward to a fruitful cooperation.

Kind regards,



Friederike Subklew-Sehume
Director Research and Systematic Learning
loveLife National Office

Annexure 3: FGD guide questions

FGD Guide

Introduction [5 minutes]

Introduce study. Sign consent forms. Circulate attendance register. Invite participants to introduce themselves to the group. Explain the importance of only one person talking at a time in a clear voice. Begin recording.

Icebreaker and demographics [10 minutes]

If someone offered you a choice between getting K5,000 now for doing nothing or K1,000,000 if you successfully walked between two high buildings on a narrow plank with a 50% chance of falling off, which would you take? Why?

If you were to describe different kinds of youth living in your neighbourhood, how would you describe them? *(Prompt: quiet, party-goers, tsotsis, etc).*

How can you tell who is rich and who is poor in your community? *(Prompt: Working, kinds of houses people live in, cellphones, airtime, clothes).*

Youth Risk/Behaviours [30 minutes]

What do you understand by risk? What risks are worth taking?

How would you describe the youth in your community when it comes to taking risk? *(Prompt: Big/small risk takers; Probe: Are they at school or out of school; are their parent(s) around?)*

Why do some youth take risks? Why do some youth avoid risk? *(Probe: Why do some youth have sex for money, have sex at a young age, get tested, stick to a single partner?)*

Can you give me an example of very risky behaviours compared to not so risky behaviours? *(Prompt: Kinds of sex, age of debut, number of partners, transactional sex, forced sex, HIV testing, alcohol and drug use, and condom use, pregnancy, intergenerational sex).*

What's the difference between 'avoiding risk' (taking no risk) and 'reducing risk' (taking small risks)? *(Probe: Can you give me some examples of both?)*

What kinds of youth think they are not at risk? Why do you think the youth believe bad things won't happen to them? *(Probe: Money, wealth, trust, no sense of the future).*

How does poverty play a role in risk taking among youth? *(Probe: unemployment, poor educational achievement and living in a shack).*

How does the community, including older men and women, encourage or discourage young people to take risks?

How do friends help each other avoid risks? Take bigger risks?

Access to opportunity [15 minutes]

What kinds of things do the youth do to give them a good chance of success? *(Probe: Personal development/education)*

What is opportunity? When we talk about 'access to opportunity' what do you think we mean?

What gives people access to opportunity? What prevents people from accessing opportunity? *(Probe: Gap between the rich and poor, inequality between men and women, poverty in general).*

Do young people have more or less access to opportunity than adults? Why or why not?

How can young people improve their access to opportunities?

What kinds of youth are there in your community when it comes to taking opportunities to succeed? *(Prompt: Eager, lazy, self-starters, ambitious, depressed, and angry)*

What resources are available to the youth who want to know about reducing risk or accessing opportunity?

Conclude: *Thank participants. Sign register to receive travel money. Provide refreshments.*

Annexure 4: IDI guide questions

IDI Guide

In-depth Interview 1 (60 minutes)

Introduce yourself. Describe study. Consent forms – pleases ask participant to sign one and allow them to keep one. Sign register and give airtime.

Biography [5 min]

1. Please tell me about yourself (Prompt: age, education level, where you live, and current occupation).

Risk 1 [15 min]

2. How would you describe your attitude towards taking a chance or taking a risk? What kind of risks do you take or have you taken? (Probe for sexual risk-taking)
3. How would you describe yourself, compared to other young people in your community, when it comes to taking negative chances (or taking risks)? Why?
4. What/who influences you to take risks? (Probe: Is there a difference regarding who encourages you to take negative risks versus positive risk? Who encourages you to avoid risk? Please give me examples.)
5. Do you think about what could happen when you take these risks? Does this make a difference to your actions?
6. Do young men and young women take different or the same risks? Why do you say so?

Summary assessment of risk and opportunity [5 min]

7. What resources available in your community have you made use of in terms of accessing opportunity and reducing risk?
8. What other resources are needed in your community to help young people succeed?

Closure (5 min)

From these last two interviews, is there anything that you'd like to add to what you have already said; anything you wish you'd said differently; anything you regret having told me; anything you'd like to say that I haven't asked you about?

Thank participant for participation. Tell them how to access report results. Ask if we can phone with any follow up questions if we have them.

Annexure 5: Survey questionnaire

Survey Instrument

Consent – Hello, my name is […]. On behalf of researchers from University of the Witwatersrand, we are conducting a study about some of the issues that young people like you and your family face in relation to HIV/AIDS. Some of the questions are personal in nature and some ask about your sexual health. The interview will take about 1 hour. You have the right to refuse to take part in this interview or refuse to answer any question during the interview. Your responses will be reported in a way that protects your anonymity. Would you like to take part in the interview?
Yes____ No _____

At this point in time, I would like to read information sheet and take a few moments for you to fill out consent forms.

RESPONDENT #_____AGE_____SEX_____ SCHOOL STATUS_____ ____INTERVIEWER ID _____ INTERVIEW DATE:_____

1	**I would like to ask you about the area in which you live** How many years have you lived in this area? **RECORD ONLY ONE RESPONSE ONLY**	Between 1 and 6 months	1
		Between 6 mths and 1 year	2
		Between 1 and 4 years	3
		5 years or more	4
		Don't know	98
		Refused	99
2	How many years have you lived in this house? **RECORD ONE RESPONSE ONLY**	Between 1 and 6 months	1
		Between 6 mnths and 1 year	2
		Between 1 and 4 years	3
		5 years or more	4
		Don't know	98
		Refused	99
3	**Now I would like to ask you about the things you like about in the area you live.** What do you **LIKE** most about your community?	Enter first mentioned _____	
		Don't know	98
		Refused	99
4	**Now I would like to ask you about the things you DO NOT LIKE about your community.** What do you **DISLIKE** most about your community?	Enter first mentioned _____	
		Don't know	98
		Refused	99

SECTION 1: YOUTH EDUCATION

5	Are you currently enrolled in school?	Yes	1
		No	2
6	**IF NO,** why are you not enrolled in school?	Distance too far	1
		Don't have fees	2
		Disability	3
		No school supplies	4
		Not allowed	5
		Afraid/Embarrassed	6
		Other (specify)	
		Refused	99
7	How far are you (did you go) in school?	Primary	1
		Secondary	2
		College	3
		University	4
		Don't know	98
		Refused	99
8	How far would you like to go in school?	Satisfied with status quo	1
		Primary	2
		Secondary	3
		College	4
		University	5
		Refused	99

SECTION 2: SOCIO-DEMOGRAPHIC PROFILE

9. Now I would like to ask you about the people who live with you in your household									
Person #	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Relation to interviewee									
Age									
Sex									
Marital status									
Highest level of education									

10	What is your religious affiliation?	No religion	1
		Christian	2
		Muslim	3
		Traditional	4
		No response	99
11	What is your marital status?	Single	1
		Married/cohabiting	2
		Widowed	3
		Divorced/separated	4
		Other (specify)	
12	What is your ethnic group?	Chewa	1
		Yao	2
		Lomwe	3
		Tumbuka	4
		Sena	5
		Other (specify)	

13	**What is your primary occupation – the work from which you earn most of your income?**	Construction	1
		Trading	2
		Services	3
		Industry	4
		Agriculture	5
		Unemployed	6
		Other (specify)	
14	**Did you receive any money fom your parents/relatives last month?**	Yes	1
		No	2
15	What was your last month's household expenditure?	Enter estimated amount in MWK	

SECTION 3: HOUSEHOLD INFRASTRUCTURE (ASSETS AND HOUSING TYPE)

16	**ASSETS: I am going to read you a list. I would like you to tell me if your household owns the following things** *(Read out each item from the list and ask if the household **OWNS** the item.*			
		Item	**Yes**	**No**
	A	Working radio	1	2
	B	Working television	1	2
	C	Working cell phone	1	2
	D	Did you make a call on your cell phone previous day?	1	2
	E	Bicycle	1	2
	F	Tables/chairs	1	2
	G	Access to Internet	1	2
	H	Have you used the Internet in the last six months?	1	2

HOUSING						
17	*By observation!* Type of dwelling?			Free standing house		1
				Flat		2
				Backyard service room		3
				Backyard shack		4
				Shack in a shack settlement		5
				Hostel or boarding house		6
				Other: *Specify*		
18	Materials used to build the dwelling? *Ask for Wall, Roof & Floor*			**Wall**	**Roof**	**Floor**
		A	Mud	1	1	1
		B	Wood	2	2	2
		C	Stone/brick	3	3	3
		D	Cement	4	4	4
		E	Metal sheet/corrugated iron	5	5	5
		F	Plastic	6	6	6
		G	Other: *specify*			
19	Total number of people within dwelling?					
20	How many rooms are there in <u>this</u> household? By this I mean the household where you live.					
21	How many rooms are used for sleeping in this household?					
22	**I am also interested in some of the problems households face making ends meet.** In the past twelve months, have you stayed in a shelter, abandoned building or any other place not meant for regular housing, even for one night.			Yes	1	
				No	2	

SECTION 4: FOOD SECURITY

***Interviewer**: In the next few question I want you to think about what has happened in your **household** in the past 24 hours. Remember a **household** is a person or a group of persons who eat from the same pot and share resources, and are normally living together at least 4 nights a week. This question will be done in **TWO** steps.*

23	***Step I***		
Now I would like to ask you about the types of foods that you ate yesterday during the day and night I want you to try and remember what you ate and drank yesterday from the moment you woke up in the morning, right through until you went to bed again last night. If anyone ate or drank something during the night, we would also like to know that. Please list all the food items that you ate yesterday, starting early in the morning.		**Time of Day**	**What food and/or drink did you consume yesterday**
	A	Breakfast time	
	B	During the morning	
	C	Lunch time	
	D	During the afternoon	
	E	Supper time	
	F	After supper, and through the night	

***Step II: Interviewer**: Refer to the list of food and drinks consumed yesterday (as mentioned in Step I above) and, in the table below, circle in the box if the respondent ate one or more of the foods listed in the group.*

24	Food Group	Examples	Ate it yesterday	
			Yes	No
A	Maize products	Porridge, whole maize (corn-on-the cob)	1	2
B	Other cereals	Rice, pasta, fermented/sour porridge, bread.	1	2
C	White roots & tubers	Cassava, potato, sweet potatoes, potato (either cooked, mashed, fried, fries/chips)	1	2
D	Vitamin A-rich fruit	Yellow orange coloured fruit: mango, pawpaw	1	2
E	Other fruit	Apple, banana, guava, lemon, orange, peach, pineapple, strawberries, watermelon, wild fruit, dried fruit	1	2
F	A-rich tubers	coloured vegetables: carrot, pumpkin, orange sweet potato	1	2
G	Vegetables	Spinach, mpiru, marog, imifino	1	2
H	Other vegetables	Cabbage, green beans, green peas, mushrooms, tomato	1	2
I	Meat, poultry, fish	Beef, pork, lamb, goat, mutton, sausage, chicken, stew, fish	1	2
J	Eggs	Eggs	1	2
K	Legumes, nuts, seeds	Beans, dried peas, cowpeas, pumpkin seeds	1	2
L	Dairy	Milk, yoghurt, cheese	1	2
M	Oils & fat	Any food made with oil, margarine or butter	1	2
N	Sugars	Sugar, syrup, sweets, honey, chocolate	1	2
O	Beverages	Tea, coffee, cool drink, fruit juice, beer	1	2

25	Were there particular times in the past year when food security was poor? (eg. after losing a job, after death in the family, etc.) If, yes what were they?	Lost a job	1
		Death in the family	2
		Just arrived in Blantyre	3
		Drought	4
		Poor harvest	5
		Unreliable income	6
		Food security is always poor	7
		Other (specify)	
26	Does anyone from the household ever regularly go and eat with others because there is not enough food in the household?	Yes	1
		No	2
27	Do members of the household ever borrow food from other households?	Yes	1
		No	2
28	Does this household ever loan food to other households?	Yes	1
		No	2
29	Do people in this household use credit to get food?	Yes	1
		No	2
30	If yes, how often do people in this household use credit at the store to buy food? ***Probe for an average, record only one response***	More than once a week	1
		About once a week	2
		About every two weeks	3
		About once a month	4
		A few times a year	5
		Other: specify	
31	Are there any children in your household who are on school feeding scheme?	Yes	1
		No	2
32	In the past 12 months, were there times when members of your household went hungry because there was not enough food in the house to eat?	Yes	1
		No	2
33	Which were the months (in the last 12 months) in which you experienced a lack of food or money such that one or more members of your household had to go hungry?	Month(s)	
34	**I am also interested in some of the problems households face making ends meet**. In the past twelve months, did you receive free food or meals?	No	1
		Yes	2

SECTION 5: ACCESS TO HEALTH CARE

Now I would like to ask you information concerning health and health services in your area			
35	How far is it from where you live to the nearest health facility?	Less than 1km	1
		Between 1 and 5km	2
		More than 5km	3
		Don't know	98
		Refused	99
36	Have you ever been ill in the last 4 weeks?	Yes	1
		No	2
		Don't know	98
		Refused	99
37	What kind of illness did you suffer from?	Malaria	1
		Diarrhoea	2
		Pneumonia	3
		Skin conditions	4
		Headache	5
		Tuberculosis	6
		Heart disease	7
		Fever	8
		Cancer	9
		Other (specify)	97
		Don't know	98
		Refused	99
38	Where did you go to seek treatment for your illness?	Did not go	1
		Health centre	2
		Mobile clinic	3
		Hospital	4
		Comm. Health worker	5
		Traditional healer	6
		Other (specify)	97
		Don't know	98
		Refused	99
39	**IF RESPONDENT DID NOT SEEK TREATMENT ASK** Why did you not seek treatment for your illness? **PROBE**	Cost too high	1
		Distance too far	2
		Used drugs from past treatment	3
		Guardian not available	4
		Permission not given	5
		Other (specify)	97
		Don't know	98
		Refused	99
40	**IF RESPONDENT SOUGHT TREATMENT ASK** How long after onset of **[ILLNESS NAME]**, did you visit the hospital or clinic?	Less than 24 hours	1
		Betwn 24 and 48 hours	2
		More than 48 hours	3
		Don't know	98
		Refused	99
41	In the past twelve months, was there anyone in your household who needed to see a doctor or go to the hospital but could not because of the cost?	Yes	1
		No	2

SECTION 6: YOUTH SEXUAL BEHAVIOUR AND DECISION MAKING

Now, I need to ask you some questions about your sexual activity an decision making			
42	How old were you when you first had sexual intercourse **(if ever?)**	Age in years	
		Never	1
		Don't remember	98
		No response	99
43	**IF PERSON EVER HAD SEX, ASK** The **first time** you had sexual intercourse, was a condom used?	Yes	1
		No	2
		Refused	99
44	**IF NO**, why was a condom not used?	Did not have one	1
		Partner refused	2
		Afraid or embarrassed	3
		Other (specify)	
		Don't know	98
		Refused	99
45	Has anyone ever coerced or persuaded you to have sex when you did not want to?	Yes	1
		No	2
		Don't know	98
		Refused	99
46	**IF PERSON HAD SEX, ASK** When did you last have sex?	Days ago	1
		Two weeks ago	2
		Betn 1 mon–6 mon	3
		Between 6 mon–1yr	4
		More than one year	5
		Don't know	98
		Refused	99
47	The **last time** you had sex, was a condom used?	Yes	1
		No	2
		Refused	99
48	**IF CONDOM WAS USED,** who made the decision to use a condom?	Myself	1
		My partner	2
		Joint decision	3
		No response	99

49	**IF NO CONDOM WAS USED,** why was a condom not used?	Did not have one		1
		Partner refused		2
		Afraid or embarrassed		3
		Other (specify)		4
		Don't know		98
		Refused		99
50	Did you willingly agree to have sexual intercourse with this person?	Yes		1
		No		2
51	Do you know of a place where a person can get condoms?	Yes		1
		No		2
52	Where is that? CIRCLE AS MENTIONED	Hospital		1
		Health centre		2
		Mobile clinic		3
		Shop/Grocery		4
		Fieldworker		5
		Private doctor		6
		MACRO		7
		Banja La Mtsogolo		8
		Other (specify)		
		No response		99
53	Have you ever become involved with someone because s/he provided you with or you expected that s/he would provide you with:	Food items?	Yes	1
			No	2
		Clothing items (leggings, fishnets, dresstops)?	Yes	1
			No	2
		Transport or money for transport?	Yes	1
			No	2
		Your own school or residence fees? (if in school)	Yes	1
			No	2
		Place to stay?	Yes	1
			No	2
		Cash?	Yes	1
			No	2
54	Have you ever had sex in exchange for the items mentioned above?		Yes	1
			No	2
55	Have you ever had sex ***with the intention to*** **receive** gifts or money in return?		Yes	1
			No	2

56	When was the last time you had sex with someone because s/he gave you or you expected that s/he would give you money or something else?	M M Y Y Y Y	
57	**What forms of materials (cash or goods) were exchanged from the last partner you had sexual intercourse with?**	Enter first two items	
		No response	99
58	How old were you when you first had sex in exchange for something material?	Age in years	
		Cant remember	98
		No response	99
59	How old is your regular sexual partner?	Age in years	
		No Response	99
60	How many partners have you had sex with in the last 12 months?	Number	
		No response	99
61	Of the people, you have had sexual intercourse with, how many were PAYING PARTNERS?	Number	
		No response	99
62	Of the people, you have had sexual intercourse with, how many were NON-PAYING PARTNERS?	Number	
		No response	99

SECTION 7: SOCIAL SUPPORT

63 Which of the following sources have you personally found useful for information about HIV?AIDS services?

	Not applicable	Very useful	Useful	Neutral	Not useful
Teachers	1	2	3	4	5
Friends	1	2	3	4	5
Relatives	1	2	3	4	5
Medical personnel	1	2	3	4	5
TV/radio programmes	1	2	3	4	5
Print media	1	2	3	4	5
Books	1	2	3	4	5
Posters	1	2	3	4	5
Billboards	1	2	3	4	5
Drama	1	2	3	4	5
Internet	1	2	3	4	5

64	**I have a strong network of family that support me**	Strongly agree	1
		Agree	2
		Disagree	3
		Strongly disagree	4
		Don't know	5

65	**I have a strong network of friends that support me**	Strongly agree	1
		Agree	2
		Disagree	3
		Strongly disagree	4
		Don't know	5

SECTION 8: PERCEIVED PEER PRESSURE

66	How much pressure do you get from your friends to have sexual intercourse, would you say…?	No pressure at all	1
		Not much pressure	2
		Some pressure	3
		A lot of pressure	4
67	I feel pressure from friends to do things I do not want to	Very often	1
		Often	2
		Rarely	3
		Never	4
		Don't know	5
		Refused	

SECTION 9: SUBSTANCE ABUSE

68	Do you drink alcohol?	Yes	1
		No	2
69	**IF YES**, how often do you get drunk	Very often	1
		Sometimes	2
		Other specify	
		Refused	99
70	Do you currently smoke cigarettes?	Yes	1
		No	2
71	Do you currently use psychoactive (behaviour affecting) drugs	Yes	1
		No	2
72	**IF YES**, how often do you use psychoactive (behaviour affecting) drugs?	Very often	1
		Sometimes	2
		Other (specify)	
		Refused	99

SECTION 10: PSYCHOSOCIAL STRESS

73	*Are there any negative **critical life events** that have occurred to you over the past 12 months?*		Yes	1
			No	2
74	What are some of these **critical life events**? PROBE IF THE RESPONDENT EXPERIENCED ANY OF THE FOLLOWING:		Yes	No
		Separation from spouse due to marital difficulties	1	2
		Breakup of any other close relationship	1	2
		Loss of job (*Ganyu*)	1	2
		A major financial crisis	1	2
		Being the victim of a serious physical attack or assault	1	2
		Being robbed or having one's home burglarized	1	2
		Death of anyone close	1	2
		Serious illness or injury in family	1	2
		Having someone very close with a serious illness, injury, physical attack, or assault	1	2
75	***Are you under stress or worried about any of these events right now?***		Yes	1
			No	2

END OF QUESTIONNAIRE

Annexure 6: A report from "Turnitin" software

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