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Aim and Scope

The Southern African Journal of Demography is an interdisciplinary peer-reviewed forum for disseminating original, theoretical and applied research articles in demography, and broadly defined interactions between demography and population issues that are of relevance to Southern Africa. Quantitative and qualitative articles that enhance knowledge of the demography and its interaction with population issues in the Southern Africa region are considered.

Articles may cover pure demography (fertility, mortality and migration), interactions between demographic phenomena and family dynamics, urbanization, education, labour market, poverty, reproductive health including HIV/AIDS, and environmental issues with relevance to Southern Africa. Articles dealing with population issues and development problems in Southern Africa are also encouraged.

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Access to Health Care Services by refugees in Southern Africa: A Review of Literature

by

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ABSTRACT

This study was conducted in order to understand the dynamics of each country in Southern Africa by documenting barriers facing refugees in accessing health care services and aiming to make policy recommendations based on findings. A desktop search was conducted through which papers using both qualitative and quantitative methods were gathered for analysis. A total of sixty-four (n=64) papers were generated, out of which only twenty-two (n=22) were considered for analysis. NVIVO software was used for analysis as it allowed the coding and grouping of findings under themes. The emerging themes included: Availability, Affordability, and Acceptability. These results suggest that access to formal health care services remains a challenge for refugees in Southern Africa. If identified barriers are not addressed, they will continue to affect the health of both citizens and refugees negatively.

Key words:

Refugees, health care services, health-seeking behaviour, Southern Africa, refugees' rights and policies

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1. Introduction

The number of refugees in the world continues to grow at a rapid pace, with a total of 45.2 million worldwide, most of whom are war-related (UNHCR 2013). Southern Africa alone hosts 449,000 forced migrants, amongst whom 145,000 are refugees (162,670 in June 2013), 245,000 asylum-seekers, and some 55,000 internally displaced persons (UNHCR, 2013). Most of the refugees in the Southern Africa region originate from Rwanda, Burundi, DRC, Pakistan, Bangladesh and Somalia (Williams & Peberday, 2007; UNHCR, 2013). Coming from war zones and having witnessed different types of crimes; many refugees suffer mental health related problems and are in need of counselling and psycho-social services. Little evidence exists as to whether such services are provided to refugees in the Southern Africa region. This study therefore seeks to understand the challenges faced by refugees in accessing health care services (HCS) in the region.

For the purpose of this paper, HCS is defined as "services provided to people or communities by agents of health services or professions for the purpose of promoting, maintaining, monitoring, or restoring health" (Farlex Partner Medical Dictionary, 2012). To this end, a lot has been done to address the inequality in access to HCS, but unfortunately, the gap widens continuously. Moreover, only a few studies have been conducted with focus on barriers facing refugees in accessing health care services. Many authors have studied entire groups of migrants, comprising refugees, asylum seekers, documented and undocumented migrants and others. These strata of migrants are challenged differently, and the most vulnerable group are refugees (MacLachlan et al., 2008; Landau, 2007).

Objective: To understand the dynamics of each specific country in the region by documenting the barriers facing refugees in accessing formal HCS and to make policy recommendations based on the findings.

2. Literature review

A refugee's claim to health care services is secured by international human rights law and protocols.¹ Unfortunately, reports suggest that this is not always observed in Southern African countries. This paper investigates these findings through a review of the health status of refugees and the current status of the provision of health care services in Southern Africa.

Health status of refugees and legal framework

Health system scholars have argued that access is an instrumental or intermediate goal of health systems (Schneider et al., 2006; Gulliford et al., 2002). Access to HCS is thus only important if it leads to improved population health promotion, satisfaction, disease prevention and patient satisfaction. Otherwise, utilization of health care is more relevant.

There are also studies that identify themselves within the histo-critical perspective (Davey, 2012; Ferris, 2011). They offer opportunities to view refugees from the lens of suffered violence from native countries, and abuses suffered in host countries. Cohon (1981) reviewed refugee symptomatology and treatment methods and indicates that the intensity of stress resulting from forced migration manifests in symptoms such as delusions of persecution, disturbing dreams, poor sleep, states of confusion, somatic complaints, feelings of insecurity, isolation, resentment, guilt, inadequacy, bereavement, tension, fatigue, restlessness, and detachment. These symptoms suggest mental health problems that impact on the physical health of refugees (Ibid). Some scholars suggest that health professionals should not only concentrate on the past but also on the present and the future well-being of refugees (Kohli & Mather, 2003; Richman, 1998b). Others (Dohrenwend, 1961; Gillian, 2003; Murthy, 2006; Marsella, et al., 1996; Wessells & Monteiro, 2004) argue that second language stress adds a burden apart from traumas of war and mental disorders of refugeeship.

¹ See these agreements and protocols in the Universal Declaration of Human Rights (UN, 1948); the OAU Convention Governing the Specific Aspects of Refugee Problems in Africa (OAU, 1969); the Protocol Relating to the Status of Refugees (UN, 1967); the Convention Relating to the Status of Refugees (UN, 1951).

Thus, non-nationality has a bearing on the social and support service system, such as HCS for refugees.

There is yet again a literature thread that can best be described as falling within the "conservative approach". In this approach, the main advocates argue on the basis of traditional understanding of 'citizenship'. They posit that refugees are denied health care services in order to save resources for nationals (Rosenkranz, 2013; Schwartz et al., 2001). This strand is somehow opposed to the aspect of human rights that ought to be accorded to refugees. Landau (2005) notes for example, that "South African citizens and politicians regularly rely on nativist discourses that make one's rights to the city contingent on one's national origins (P12)". Scientifically, this approach has been criticized for taking too narrow an approach, as health problems such as infectious diseases suffered by refugees may easily increase the incidences of diseases in the host population (Bruns & Spiegel, 2003). Conceivably, many but not all health practitioners associate forced migration with health-care seeking, and still some officials regard the refugees as 'asylum shoppers'.

The provision of the laws for refugees in the Southern African countries is yet another challenge for their access and utilization of the health care services. Rutinwa (2002) points out that the currently failed laws and refugee policies are rooted back in the pre-1990s. Rutinwa categorizes the refugee policies/laws in three generations, namely the treatment of matters relating to refugees as an integral part of immigration policy and law without a need for a separate refugee-specific law. The second generation consisted of the refugee control laws that operated alongside immigration laws to regulate selected aspects of refugee protection, and the third generation was characterized by comprehensive refugee legislation governing all aspects of refugee protection in accordance with the relevant international legal instruments (Rutinwa, 2002; Hathaway, 2001; Oucho & Ama, 2009). All these types of refugees' laws did not provide for refugees specifically, but treated them as part of the immigrants at large. Consequently, refugees were then treated as aliens or a prohibited population group. To date, not much has changed from the way in which refugees were treated back in the 1990s. Faris (1999) warned that:

"The problem of the refugee is totally unrelated to immigration law and to the law relating to ordinary aliens. To classify the refugee as an ordinary alien evades the problem. Immigration law is intended to cope with the admission of individuals and not a mass influx of people" (1999, P18).

The author continues to argue that applying ordinary migration laws to refugees resulted in labelling all potential refugees as illegal immigrants (Faris, 1999). The above view of refugees as illegal immigrants has negative implications for accessing health care services in countries where these policies have not been revised. Moreover, the general assembly resolutions hosted by the leaders of the countries in the Southern Africa region in 1992 and 1996 respectively, focused on other issues of forced migrants, including their resettlement, safe return into their countries of origin, safety, etc., but nowhere could any mention be found that related to health care access as a priority.

Current status of provision of health care services in Southern Africa

The WHO reported in 2012 that the Southern Africa region was facing serious health challenges, including losing clinicians to continents with a stable economy and high pay, social and economic weakening, deficient rules, deteriorating health systems and the lack of human resources and supply of medications (WHO, 2012). According to the WHO (2012), Lesotho, Malawi, Mozambique, Zambia, Zimbabwe and Swaziland were the most affected countries by the above-mentioned health challenges. Findings in this paper suggest that all the above countries host refugees who are in need of health care services (UNHCR, 2013). This is an alarming situation, whereby the health sectors of the countries in the region are already over-burdened, yet expected to cater for both the local community and the refugees. This may result in refugees finding it hard to access the services which some of the locals are unable to access accordingly. However, it cannot be assumed that because states lack the capacity to meet the needs of their entire population, they have no responsibility for ensuring an acceptable level of health and health care for refugee communities (Belvedere et al., 2001; Hevens and Brand, 1997; Hathaway, 2001).

In addition to these challenges, there is an anti-foreign attitude in Southern Africa (which has seen an influx of refugees for decades) that has resulted in a structural exclusion – the impact of which has not been analysed in HCS. All these situations mask the harsh reality of worsening health care facilities for refugees; yet access barriers to HCS continue to persist (Crisp & Kiragu, 2010; Crush & Tawodzera, 2014). The refugee experiences demonstrate the complexity of unmet health and medical needs, and highlight the need for access to health services aimed at supporting this population group in a way that is sensitive to their specific health needs.

3. Theoretical and conceptual framework

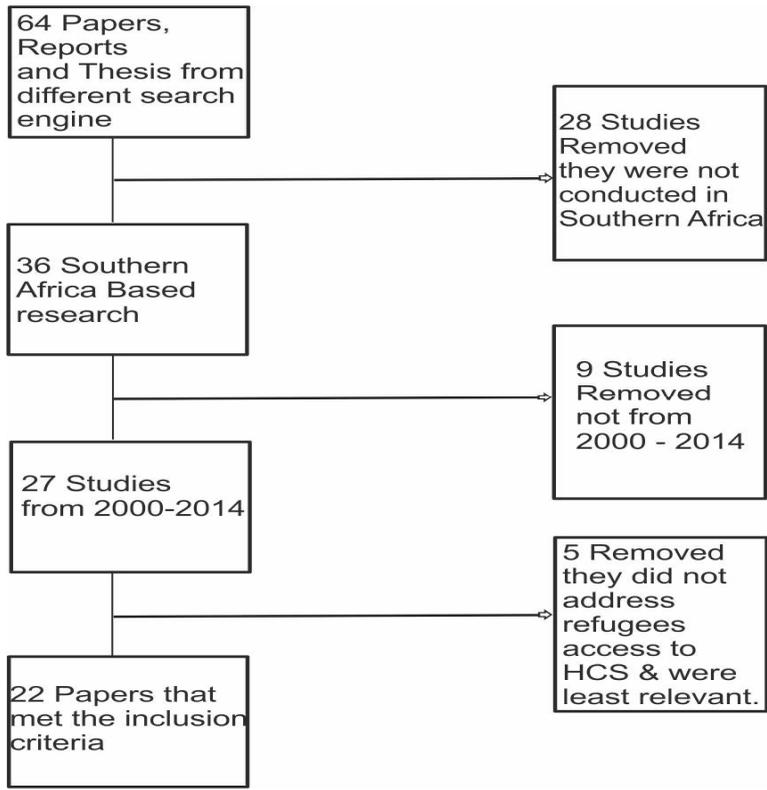
This paper adopts a conceptual framework and uses the theoretical grounds regarding access to health care services as a specifically desirable value as the basis for both the theory and argument presented herein. Penchansky and Thomas (1981) describe access using five dimensions of care, which describe the degree-of-fit between patients and the health system – availability, acceptability, accessibility, affordability and accommodation. The Researching Equity in Access to Healthcare (REACH) study, adopted an 'A' conceptual framework for access (availability, acceptability and affordability), which views access as a dynamic process of interaction between health system (supply-side) and individual (demand-side) issues (Donebedian, 1973). A decentralized integrated health care system has been found to improve uptake of treatment, adherence and retention in care, and increases utilization of health care services (Wallrauch et al., 2010; Legido-Quigley et al., 2010; Coetzee et al., 2004). Some patients may have to overcome more hurdles than others in order to access health care and for continued utilization to be sustained. Patients' expressed demands and expectations, which constituted acceptability, affordability and availability of services; have to be met by the health system for continued uptake of treatment and retention in care. The health system should be able to satisfy the patients' demands although it may or may not be able to immediately alter the availability/physical hurdles that patients (and refugees in this specific context) face. The challenges faced at each level of care may vary for different types of refugees with different health care needs. Although most of the refugees are already utilizing care, understanding the barriers they face in the process and the determinants of hurdles in utilization is

important in shedding more light on the proximate challenges possibly faced by those in need who do not access or utilize care. In addition, this should assist in pointing to areas in which policymakers need to improve to increase accessibility to HCS by refugees (Andersen, 1995; Coetzee et al., 2004; Donebedian, 1973).

4. Methodology

The study was a desktop research. It included key words like 'Integrating health care services for Southern African refugees', 'Refugees' access to health care in Southern Africa', 'Refugees' health-seeking behaviour', 'Refugee policies in Southern Africa', 'Refugees' right to health care', and 'Health policy and social protection'. The search engine consisted of Jstor, EBSCOHost, Google Scholar, governmental organizations, NGOs and the Department of Health websites. All papers meeting the eligibility criteria were then read in order to identify other reports and potential literature relevant to the topic. In total, 64 papers, theses and reports were identified for this study. Only 22 met the criteria for selection after the process depicted in the figure hereunder.

Figure 1: Flow chart showing sample selection



Of the total 22 papers analysed, 3 used mixed methods (qualitative and quantitative) and 15 used the qualitative method. Most of the qualitative literature was evidence-based reporting on the views of key informants on the subject and based on focus group discussions. The last 4 papers used quantitative methodology with an average sample of 250–6000 participants. In total, 16 manuscripts were categorized as contributing strong evidence to the literature on access to health care services in Southern African countries. The study included the review carried out in 14 Southern African countries of which three were excluded due to the lack of availability of data and lack of relevant information on the topic.

Table 1

Author(s)	Titles of papers	Methodologies	Summary of Findings	Publishers
Nkosi, NG 2004	Influences of Xenophobia on accessing health care for refugees and asylum seekers in Johannesburg-South Africa	A mixed of qualitative and quantitative study of 60 refugees, 6 HCWs and 15 South Africans in the control group in South Africa	The author concludes that xenophobic tendencies of HCWs are linked to language barriers, socio-economic and legal status of asylum seekers. The latter suffer due to the lengthy asylum determination procedures, which affect their health status, and the high hospital fees that asylum seekers are expected to pay. Inadequate access to health care services was also linked to lack of information on how the HC system works	University of the Witwatersrand: PhD Thesis Published Online
Campbell, Eugene K 2003	Attitudes of Botswana citizens towards immigrants: signs of Xenophobia?	A quantitative study with a sample size of 781 participants (347 males & 434 females) in Botswana	Negative attitude toward refugees. All refugees are being viewed by citizens as illegal migrants, and the latter propose that the country replaces the border fencing by electric fence to avoid migration flow in Botswana. The xenophobic signs towards immigrants hinder them from accessing social and health services	Blackwell Publishing- [International Migration Vol. 41 (4) 2003]
Carasso, BS et al. 2012	'Health Worker Perspectives on User Fee Removal in Zambia'	A mixture of the qualitative and quantitative study method of 20 facilities and data from the National Health Management Information System in Zambia	Increased take-up of services by the poor and the minority after fee removal at some facilities. A recommendation is made to increase the number of staff while advocating for user fee removal at remaining site and be concerned about the burden that increased demand is likely to place on the already over-stretched health care workers	Human Resources for Health

Author(s)	Titles of papers	Methodologies	Summary of Findings	Publishers
Munyewende et al. 2013	Exploring perceptions of HIV risk and health services access among Zimbabwean migrant women in Johannesburg: A gap in health policy in South Africa	A qualitative study from a 2005 exploratory study and analysis of the DOH strategic plan and 15 interviews with Zimbabwean women living in Johannesburg RSA	The study refers to migrants as economic refugees and asylum seekers including documented and undocumented migrants. They identify access barriers including the migrants' perceptions of relatively low HIV risk, severe constrained financial circumstances, uncertain legal status and experience of unresponsive health workers. They recommend that migrant health rights be placed on South Africa's policy agenda	Journal of Public Health Policy
Apalata et al. 2007	Refugees' perceptions of their health status & quality of health care services in Durban, South Africa: A community-based survey	A mixture of the qualitative (sample size 52) and quantitative study (sample size 250) method, conducted in Durban South Africa	13 themes were generated, grouped as strong, medium and weak. They included discrimination and xenophobic attitudes towards refugees, language barriers increased vulnerability of refugee children, problems with refugee permits and promotion of self-medication among refugees. Lack of systems, structure and appropriate organizations in helping refugees were noted, including illness brought by refugee newcomers	Health System Trust
Mujawamaria Console, 2013	Living with Xenophobia: understanding the lived experiences of Burundian and Rwandese refugees in South Africa	A qualitative descriptive approach study of 10 Rwandan and Burundian refugees living in Durban South Africa	Findings revealed that the refugees are re-traumatized in South Africa due to the experiences of xenophobia which was documented as a main barrier to their access to socio-economic services, including: health care services, proper residential areas, conducting economic activities and failure to integrate in the community	Masters of Social Work Dissertation available on UKZN online library

Author(s)	Titles of papers	Methodologies	Summary of Findings	Publishers
Idemudia, ES, Williams JK and Wyatt GE 2013	Migration challenges among Zimbabwean refugees before, during and post arrival in South Africa	A qualitative study of 20 Zimbabwean refugees (10 male & 10 female) who participated in the FGDs conducted in Limpopo South Africa	A summarized finding suggests that the already stressed and traumatized refugees are faced with a second wave of challenges of documentation, unemployment and other socio-economic challenges which contribute to an aggravated health situation; yet their access to health care is reported to be negative	Journal of Injury and Violence and Research
Adongo Jonathan 2007	Access to social services for non-citizens and the portability of social benefits within the Southern African Development Community	A qualitative report on Social Services for Non-citizens in SADC region. submitted to the World Bank	Refugees access health care services from a clinic based in their camp while undocumented non-citizens are not eligible for state-provided health care and when needed, they must pay for it	World Bank
SPII and OSISA, 2012	Access to Socio-Economic Rights for Non-Nationals in the Southern African Development Community	A qualitative study that consisted of desktop scoping, interviews with UNHCR representatives and focus group discussions with refugees, and asylum seekers in each country within SADC	Access to social protection, right to health care and education for refugees and asylum seekers in SADC is pretty perilous. Refugees and asylum seekers face discrimination, lack of drugs and equipment, reception of inferior services with high pay in some countries (Zambia). They opt for private HCS and their access to HIV/AIDS services	Open Society Initiative for Southern Africa

Author(s)	Titles of papers	Methodologies	Summary of Findings	Publishers
Katy, L and Jeff, C 2011	In harm's way: the irregular movement of migrants to Southern Africa from the Horn and Great Lakes regions. New issues in refugee research	A qualitative and critical review of literature on issues surrounding migration from other African Countries to Southern Africa region	While the study did not specifically address issues around refugees and access to health care, it documented the challenges and risks faced by refugees when not provided with health and psychosocial services in receiving countries. The authors pointed to the problem of discrimination and failure to integrate. These may hinder access to health care services	Research paper no. 200. United Nations High Commissioner for Refugees, Geneva, Switzerland.
Vearey, J & Nunez, L 2011	Towards Improving forced migrants access to health and psychosocial rights in urban South Africa	A qualitative report of a migration issue brief summarizing the state of the art research and intended to inform discussions and debates surrounding human mobility in Southern Africa	The policy brief reveals that forced migrants/refugees in South Africa are assured a range of rights including the protection of their health and psychosocial wellbeing, but these are not always upheld. The refugees therefore are forced to become self-sufficient and to cover all their costs including that of health care services	CSVR in collaboration with ACMS and the University of Witwatersrand
UNHCR 2013	Health Care Services for Refugees in Tongogara Refugees Camp	A qualitative report of the situation of camp-based refugees in Zimbabwe	The report concluded that refugees in Zimbabwe receive basic free health care services at a camp-based clinic and that serious cases are referred to the main public hospital in town	UNHCR- Annual Report
Landau, LB and Jacobsen, K 2007	'Refugees in the New Johannesburg	A mixed method of Qualitative and quantitative study of 737 respondents in Johannesburg South Africa	A concluding summary suggests that migrants in Johannesburg are harassed by police and immigration officers. The authors recommend that access to preventive health care by migrants and refugees need to be improved	Forced Migration Review

Author(s)	Titles of papers	Methodologies	Summary of Findings	Publishers
Makhema, M 2009	Social Protection for Refugees and Asylum Seekers in the Southern African Development Community (SADC)	Qualitative study of refugees in SADC region	The study focused on case studies of Botswana and South Africa, and concluded that social protection of refugees is lacking due to barriers in accessing basic human needs	World bank
Palmary, L 2004	Refugees, Safety and Xenophobia in South African Cities: The role of local government	A qualitative study conducting interviews with key informant from the city of Cape Town, a review of refugee-related service provision policies and FGD with 40 refugees and asylum seekers	Refugees reported barriers to conduct informal trading, eviction from houses and difficulties in accessing government subsidised and private housing and barriers to local government work. They blamed xenophobic practices as drivers of these barriers, which also prevent refugees from accessing health care services	Centre for the Study of Violence and Reconciliation (CSVR)
Wachira Mukundi George 2014	Migrants' Right to Health in Southern Africa	A qualitative study of Migrants' right to health in Southern Africa region	The study concludes that some countries in the SADC region limits the right to health care to their citizens, while a few others include the migrants	SIDA- International Organization for Migration
Muyembe, M 2007	'Access to Social Services for Non-citizens and the Portability of Social Benefits within the Southern African Development Community (SADC).' Zambia Country Report	A qualitative descriptive report of access to social services by refugees in Zambia	Health care services for refugees are covered by the UNHCR. However, a fee is charged for citizens to access it except children <5 years, pregnant women and older people. This translates that refugees whom the UNHCR does not cover, will have to pay a fee for the same service if they do not fall under the specific age group	Zambian Ministry of Labour and Social Security

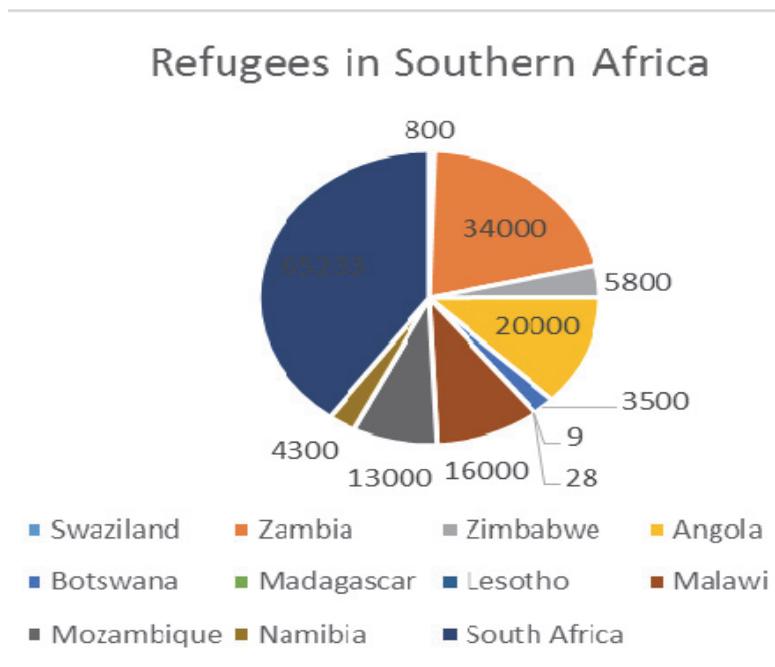
Author(s)	Titles of papers	Methodologies	Summary of Findings	Publishers
Oucho and Ama, 2009	'Immigrants' and Refugees' Unmet Reproductive Health Demands in Botswana: Perceptions of public health care providers'	A quantitative study that targeted 4667 participants and a sample study was later determined to 851 allocated to 23 districts in Botswana	ARVs and PMTCT programmes are not accessible for refugees. The latter are charged a fee for other health care services. The study recommends that the Botswana government improve the availability of reproductive health services to immigrants and refugees	Journal of South African Family Practice
Steinberg, J 2005	'A mixed reception; Mozambican and Congolese Refugees in South Africa: Monograph No 117,	A qualitative report of the situation of DRC and Mozambique refugees in South Africa	The lack of documentation acts as a barrier to refugees in accessing both health care services and other social grants provided by the government to those who have already qualified for permanent residency	Institute for Security Studies ISS monograph series
CoRMSA 2011	Protecting Refugees, Asylum Seekers and Migrants in South Africa during 2010	A qualitative report of the general situation and experiences of refugees services in South Africa.	The report at page 125 reveals that refugees do not have access to formal health care services in South Africa. It further documents that although undocumented migrants face the greatest challenges in accessing public health care services, those with documentation also experience problems in accessing basic health care, including antiretroviral treatment (ART)	Consortium for Refugees and Migrants in South Africa (CoRMSA)
Vearey, J et al. 2010	Urban Health in Johannesburg: The Importance of Place in Understanding Intra-urban Inequalities in a Context of Migration and HIV	A quantitative study using cross-sectional survey on 1533 individuals comprising of migrants and non-migrants in Johannesburg South Africa	The results show that migrants, including refugees, face challenges in accessing health care services and other social services due to discrimination and policies against migrants	Health and Place,

Author(s)	Titles of papers	Methodologies	Summary of Findings	Publishers
Collinson, MA 2010	Striving against adversity: the dynamics of migration, health and poverty in rural South Africa	A quantitative study using the 2005 surveillance data from 70527 people living in the Agincourt sub district of the Bushbuckridge district of Mpumalanga province of South Africa	The study examined the link between migration and health with specific focus on HIV. The author recommends that health policies have to consider forced migrants and that health services need to adapt to a reality of high levels of migration	Global Health Action

Some of the papers in the table above address issues of refugees while others refer to migration in general. Despite their titles, the papers addressed refugee issues as one stratum of migrants and their challenges in accessing health care services. Hence, some papers do not reflect refugees in their titles, but refer to them as 'forced migrants', 'asylum seekers' and 'undocumented migrants' throughout the content.

Against this backdrop, only countries hosting refugees were included in this study, namely Angola, Botswana, Lesotho, Madagascar, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe. The distribution of refugees within these countries is graphically portrayed in Figure 2 below.

Figure 2: Refugees in Southern Africa



Source: *UNHCR Refugee Count at June 2013*. <http://www.unhcr.org/statistics.html>

Figure 2 shows South Africa as having the highest number of refugees, while Madagascar hosts the smallest number in the region. The reasons for such disproportion are explained in the data analysis section. Furthermore, only the 11 countries above were selected for inclusion in the study because they are the only ones hosting refugees in the region.

5. Data analysis

NVIVO software was used to analyse the data, which allowed easy generation and classification of themes. Prior to the analysis, an excel spread sheet was used to record specific extracted information that included details on the study population, the methodologies of the studies, the context, country in the region, publishing journal and the year of publication. The rationale across the diverse studies was reviewed and a list of barriers was drawn. The most dominant barriers that emerged are reflected in the figure hereunder.

5.1 Emerging barriers

Figure 3: Interconnected barriers to accessing HCS by refugees



The barriers in Figure 3 were identified in countries where refugees live in the city. These interconnected barriers do not affect Zimbabwe, where refugees are camp-based and receive their treatment in the camp (UNHCR, 2013). However, other countries like Malawi, Mozambique, Namibia and Botswana host refugees in

camps but they do not provide health care services within the camps like Zimbabwe does. These refugees face either discrimination, xenophobia, language and cultural barriers, or the lack of policies that favour them in the host country.

6. Findings and discussions

The findings in this paper are consistent with those of many authors who have conducted studies on refugees living in the Southern African region. As described by the following themes, some countries continue to face problems in accessing HCS due to affordability, accessibility, and availability. There was, however, a lack of data for many countries under each specific theme. Moreover, more than 7 countries in sub-Saharan Africa did not have information related to refugees and health. As shown in Table 1 above, 11 studies (50%) were conducted in South Africa alone, and 6 papers were based on research conducted in all countries of the SADC and Southern African region. The other 5 included Zambia (2), Botswana (2) and Zimbabwe (1). The limited number of studies per country hosting refugees translated into a lack of information about refugees' access to health care services in the rest of the region. This explains the lack of information for some countries under each theme hereunder.

Availability

While data from other countries in the region could not be found through the search, findings from South Africa, Namibia and Malawi reveal a degree of coverage of accessibility greater than the other 9 countries. In Botswana, refugees cannot access health care services due to economic, geographic, cultural, linguistic and administrative barriers. amongst others (SPII & OSISA, 2012 p31). Out of the 22 papers reviewed, 7 (representing 31.8% of the literature) showed that health care services are available in Botswana but that refugees face language barriers and discrimination in health facilities. Hence, health care is only available to the nationals and not to refugees (Campbell, 2003; Makhema, 2007; Oucho & Ama, 2009; Williams and Crush, 2004).

Similarly, in Lesotho, the report suggests that refugees do sometimes face discrimination from health practitioners in public hospitals for being refugees. Many other barriers and challenges, including identification papers, language problems, and cultural problems were identified. Another challenge is the limited institutional capacity and partnerships among stakeholders (MIDSA, 2009). Likewise, in Swaziland, challenges in providing refugees with access to health care include the lack of data on migration for programming targeted interventions (Ibid). In Malawi, two problems that hampered utilization of health care services by refugees included insufficient staffing, and drugs in hospitals (SPII and OSISA, 2012).

In Angola, refugees access HCS in the same way as nationals do. No documentation is required to access health services. Despite the challenges in the health system, indications show that refugees have access to health facilities (Chigavazira et al., 2012). As is the case in Angola, the statutory body of Botswana does not have discriminatory tendencies in its HCS to refugees on the basis of non-nationality. However, the policy in Botswana requires that refugees are first registered and confined to a refugee camp before accessing health care. This is despite the possibility that refugees may have arrived in the country already exhibiting signs and symptoms of an illness. Waiting for the long process of registration and placement in a camp could therefore result in the deterioration of their health. Further research revealed that refugees are not included in the government's programme for free ARV provision and PMTCT care in Botswana (Chigavazira et al., 2012; Makhema, 2007; Oucho & Ama, 2009).

Affordability

Refugees are economically disempowered and consequently, affording health care services can become a challenge. Some countries in the region still charge refugees for utilization of HCS, regardless of their economic conditions. According to Mutembe (2007, p.11), "Under Zambian law, refugees have equal rights with citizens... In the past Zambian citizens had free access to health care, but now fees are charged to both refugees and the citizens". According to Carasso et al. (2012), only a few refugees can afford the fees for HCS. The authors noted that Zambia is experiencing an overburdened health care system due to the removal of user fees for

primary health care services. The situation in Botswana was described as similar to that of Zambia. Oucho and Ama (2009) conducted a quantitative study among refugees and asylum seekers, which revealed that refugees do not have access to reproductive health care services. They identified a specific age group of citizens (18–55 years, excluding pregnant women) who are charged a fee to access specific health care services, and which refugees also have to pay, regardless of their economic disempowerment.

Influenced by South Africa, the constitution of Mozambique is another milestone that guarantees the right to health care for all citizens, including refugees (Chigavazira et al., 2012, p55). Regardless of the constitution guaranteeing refugees the right to HCS, they still face challenges in accessing said services. The most cited challenge is the fact that the refugees in the country are camp-based, and cannot afford transport to public hospitals situated in the main cities (Ibid). The same applies to refugees in Malawi, where they have to travel a distance from the refugee camp to the health care centre (Chigavazira et al., 2012; Katy & Jeff, 2011; McDonald, 2001; Steinberg, 2005).

Acceptability

Anti-foreign attitudes in South Africa remain very high and impact negatively on the acceptability to utilization of HCS by refugees (SAMP, 2011). Specific to the case of South Africa and Namibia, findings have shown that non-acceptability to HCS is associated with discrimination and xenophobia. These have made it increasingly difficult to access health care services. There are many reasons for this, as the literature has shown, with one of these being the psychological fear of being attacked or excluded. As a result, many refugees resort to avoidance of medical and HCS (Crush et al., 2005; Nkosi, 2004; Oucho and Ama, 2009; Vaerey, 2010).

SAMP conducted a study in 2011 to investigate the South African health system's medical xenophobia. The study found that medical xenophobia existed and manifested itself through different ways, namely (1) the requirement that refugee patients produce identification documentation and proof of residence status before receiving treatment; (2) health professionals refusing to communicate with patients in English or allow the use of translators;

(3) treatment is sometimes accompanied with xenophobic statements, insults and other verbal abuse; (4) non-South African patients are required to wait until all South African patients have received medical attention, even if they have been waiting longer for treatment; and (5) refugees and asylum seekers have such difficulty accessing ARV for HIV in public hospitals that many are forced to rely on NGO treatment programmes (Crush & Tawodzera, 2014; Odhiambo 2012; SAMP 2011). These are signs of denied access to health care services.

The report reveals that in Lesotho and Swaziland, stigma and discrimination towards STIs, HIV and AIDS bring about fear to utilize HCS (MIDSA, 2009). In some instances, Zambia experiences language barriers resulting in refugees' receiving unfriendly service and experiencing feelings of unacceptability (MIDSA, 2009). Acceptability remains a challenge, although refugees may geographically access public hospitals. For example, a refugee, according to the Namibian Constitution, is 'a person who has been granted refugee status in terms of section 13(4)(a) 212.' This means that he/she becomes a refugee upon application. The implication is that sheltering of refugees whose applications have been approved is not as such a burden for Namibia, but the capacity shortages in HCS are (Allotey et al., 2012).

In a qualitative study conducted in Namibia, respondents reported good public health facilities, among which are reproductive health care, hospitals, HIV and AIDS education and prevention for refugees (Chigavazira et al., 2012). However, there are incidences where the country failed to treat refugees fairly and their basic rights were denied. According to Hathaway (2005), this was in order to prevent other refugees from arriving. According to the UNHCR (2013), refugees in Zimbabwe live in a camp where they access and utilize free health care services provided by the organization called Christian Care. On the contrary, Madagascar could not be included in the analysis because it hosts in total only nine refugees (UNHCR, 2013) and during our search, no literature was found documenting refugees and health-care seeking in Madagascar.

7. Conclusion

Access to health care services remains a challenge to refugees in Southern Africa. Ultimately, the importance of access to health care for all form of refugees is acknowledged widely, but limitations in the availability of resources prevent the full realization of this right. The state is therefore required to commit to the delivery of a set of services while also providing the fall-back that it meets its obligation in the context of available resources. Although the approach followed in this paper is not appropriate to generalise the findings for the whole region, it is, however, worthwhile to note that there are interconnections of barriers across countries hosting refugees in Southern Africa. Challenges of availability and affordability of drugs as well as the acceptability of the refugee individual by the health care workers and the community were the dominant barriers identified. Some other barriers specific to each country that were identified included but were not limited to language and cultural barriers, discrimination, policy and its implementation, health care workers xenophobia, and refugee documentation.

All countries in the region have the UN recommendations for refugees, but the adherence remains questionable. This report suggests that in order to address inaccessibility and poor utilization of HCS, planners in Southern Africa should involve local refugee communities in the planning and delivery of services. They should also develop coordinated actions between districts and agencies for some services, while recognizing the resource demands on practices with large numbers of refugees in the region, information and training on refugees' rights and the services available for this group should be provided for health care workers and support staff, such as receptionists and doorkeepers. In order to address the refugee health problems accordingly, all the countries in the region should review the policy and the UN Refugee Act binding the region.

Further research is encouraged in the region, especially in countries where data could not be found about refugees' situation. These countries include Swaziland, Lesotho, Mozambique, Namibia, Angola, Madagascar and Malawi.

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HIV/AIDS Epidemic in Malaysia: Trend Analysis from 1986–2011

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ABSTRACT

The prevalence and spread of Human immunodeficiency Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS) constitute a threat to population health and survival worldwide. The trend and severity of HIV/AIDS cases in Malaysia are on the increase, especially among women. This study aimed at finding out the trend of the HIV/AIDS epidemic for both the sexes and to explore the HIV vulnerability of women over time. Data were obtained from 'Global AIDS Response Progress Report 2012' under the Ministry of Health, Malaysia. To analyse the data, univariate, bivariate and polynomial regression model were used as the statistical tools. The reported cases of HIV and AIDS, and deaths due AIDS are increasing significantly with time. The fifth degree polynomials were found useful for fitting models in all the cases and almost all the curves explained more than 95% of the variation. While the infection among

males is showing a significant decline beginning 2003 (reported HIV were 6 349 cases in 2002; 6 083 cases in 2003, and 2 744 cases in 2011), the female infection rate is showing the opposite trend (reported HIV were 629 cases in 2002; 673 cases in 2003, and 735 cases in 2011). Women are increasingly getting infected with HIV and constitute around 21% of newly infected persons nationwide in 2011 compared to being barely 5% ten years ago. More research is needed in this area. The findings suggested that effective policies and programmes should target the major risk factors and reduce the spread of HIV/AIDS in Malaysia.

Key words:

HIV/AIDS, Risk factors, Polynomial regression model, Malaysia

1. Introduction

Human Immunodeficiency Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS) remains a global health problem and has proven to be one of the most destructive epidemics over the last three decades (UNAIDS, 2013). A cure for HIV, the disease that causes AIDS, is yet to be found and as a result more people are being infected daily and about 30 million people have died of AIDS-related causes since the beginning of the epidemic. While HIV cases have been reported all over the world, 97% of the infected persons reside in the low- and middle-income countries, including Malaysia (UNICEF and MOH, 2008). HIV affects mostly a number of people in their productive years where their services are gradually needed for the development and growth of a nation (UNAIDS, 2011). As a result of the striking effect of the disease on population health, global efforts viz. Anti-retroviral Therapy, Prevention of Mother-to-Child Transmission, Needle and Syringe Exchange Programme, etc. have been mounted to address the HIV/AIDS epidemic, particularly in the last decade (Mondal and Shitan, 2013a).

Halting and reversing the spread of HIV and AIDS by 2015 as one of the eight Millennium Development Goals (MDGs), shows the determination of world leaders in addressing HIV and AIDS issues (UNAIDS, 2013). Malaysia is a culturally diverse country with a population of 28 million and is one of the fastest growing economies in South-east Asia. However, this country is now facing an alarming increase in HIV/AIDS cases (UNICEF and MOH, 2008). HIV/AIDS was first detected in Malaysia in 1986 (MOH, 2011b). Since then, the country has been experiencing an increasing number of reported cases of HIV/AIDS. In the meantime, Malaysia was declared as the fifth fastest increasing infection rate in the Asia-Pacific region (WHO, 2013). Since the first case of HIV made its unveiling in this country 25 years ago until December 2011, the number of people living with HIV (PLHIV) is estimated at 81 000 (MOH, 2012). By the end of 2011, Malaysia had a cumulative figure of 94 841 HIV, 17 686 AIDS and 14 986 death cases due to AIDS, thus giving a reported PLHIV of 79 855 (Appendix A). The epidemic in this country is still concentrated within the most-at-risk populations especially among intravenous drug users (IDUs), sex workers (SW), and the transgender (TG) population (Mondal and Shitan, 2013b). The annual number of new HIV cases reported by the Ministry of Health

(MOH) has been on a steady decline from a peak of 6 978 in 2002. In 2011, there were 3 479 new cases reported to the MOH, approximately half of what was reported in 2002 with an average of nine new cases each day (MOH, 2012). The notification rate of HIV also continues to experience a decrease from 28,40 in 2002 to 23,40 in 2005 and to 12,20 cases per 100 000 population in 2011 (MOH, 2014). The HIV epidemic in Malaysia predominantly affects males as they constitute 90% of cumulative HIV cases of whom the majority are IDUs (MOH, 2012). In the earlier phase of the epidemic in Malaysia, the IDUs population was the key driving factor (UNGASS, 2010). This trend has ultimately changed over time from only one sexual transmission for every nine IDUs in 1990 to two sexual transmissions for every eight IDUs in 2000, and five sexual transmissions for every five IDUs in 2010 (MOH, 2012). In the course of time, the sexual transmission has superseded IDUs as the main driving factor for the epidemic, with a ratio of six sexual transmissions for every four IDUs reported in 2011. In contrast, not less than 26% of reported infections are amongst young people aged between 13–29 years old (MOH, 2012).

In Malaysia, the HIV/AIDS epidemic is quite heterogeneous in its dynamics and scope (UNGASS, 2010). The rise in the number of women being infected with HIV is an indication that the disease has gone beyond affecting just drug users and SW (Mondal and Shitan, 2013c). However, IDUs cases were uncommon amongst females. This trend has changed over time. From the year 2003, the HIV infection among males is showing a decline trend, but the infection among females is on the rise. It is identified that amongst men, 48% of infection occurred via IDUs and 47% through sexual mode (MOH, 2012). On the other hand, most HIV infections amongst women occurred mainly through heterosexual transmission (WHO, 2005), and it reached about 87% in 2011 (MOH, 2012). In 2011, women and girls are increasingly getting HIV infections and they constitute around 21% of newly-infected persons nationwide, compared to barely 5% ten years ago (MOH, 2012). Importantly, the young women (20–29 years) in Malaysia are at greater risk of acquiring sexually transmitted diseases (STDs), particularly HIV, than other age groups (Wong et al 2008).

The existing drastic situation of the HIV/AIDS epidemic and its adverse effects on population health were not clearly explained in the past studies (Mondal and Shitan, 2013b; Ghailan et al 2010; Hasanah et al 2010; Kamarulzaman, 2009; Anwar and Sulaiman, 2008; Wong et al 2008; Vicknasingam et al 2007; Mazlan et al 2007; Mazlan et al 2006; Marek et al 2006; Ng and Kamal, 2006; Fauziah et al 2003; Zulkifli and Wong, 2002; Huang, 1999; Choon et al 1997). The previous studies on HIV and AIDS issues were done based on purposive sampling of populations such as drug users, healthcare workers, and adolescents and these results cannot be generalised to the population as a whole. For example, Samsuddin et al (2011) explored the pattern and depth of social and health risk problems that may address the social drivers of HIV/AIDS in a fishing community in the East Coast of Peninsular Malaysia. Hasanah et al (2010) determined the socio-demographic, clinical and psychological factors influencing the quality of life in patients with HIV infection and AIDS. Naing et al (2010) assessed knowledge of and attitudes toward HIV/AIDS among a community in a semi-urban setting in Malaysia, determined factors affecting perceptions toward people living with HIV in the community, and provided baseline information for planning preventive measures against HIV/AIDS. On the other hand, few published studies are available on the knowledge, attitudes, and beliefs about HIV/AIDS among the general population in Malaysia. For example, Rampal et al (2010) determined the knowledge and attitudes and sexual behaviour related to HIV/AIDS among adolescents. Wong et al (2008) conducted a study to assess the knowledge, attitudes, and beliefs about HIV/AIDS among the Malaysian public. Gulifeiya and Rahmah (2008) conducted a cross-sectional study amongst nurses in the Hospital University Kebangsaan, Malaysia with the objective of determining their knowledge and attitudes regarding HIV/AIDS and Universal Precautions. Zulkifli and Wong (2002) described the findings on knowledge and attitudes related to HIV/AIDS among Malaysian youths from a survey conducted in Peninsular Malaysia. However, research on the trend analysis emphasising women's HIV vulnerability remains scarce in Malaysia. The polynomial regression model can be useful to create a standard curve for interpolation, or to create a smooth curve for graphing. Any problem of analysis of variance or covariance can be recast into a multiple regression (Draper and Smith, 1981; Freund and Little, 1981). This type of regression analysis offers a way of generalising the analysis of

covariance to nonlinear situations. Therefore, the specific objectives of this study are to find out the trends of HIV and AIDS prevalence and AIDS deaths through polynomials regression models from 1986–2011 by sexes over time, and to investigate the HIV vulnerability of women in Malaysia.

2. Data and Methods

Data on the reported cases of HIV and AIDS, and AIDS-related deaths by sexes from the years 1986–2011 were obtained from the MOH, Malaysia are presented in Table 1. The population was stratified into two based on its sex composition. Therefore, this shows that the distribution of HIV and AIDS reported cases, and AIDS-related deaths have been examined by sexes in Malaysia over the years. The data has been used for univariate analysis to carry out the description of the variables and their attributes on data in list; bivariate analysis, to find the correlations among the variables; and polynomial regression analysis to model the trend of HIV and AIDS reported cases and deaths associated with AIDS from the years 1986–2011. The polynomial model is the Taylor series expansion of the unknown function. The polynomial regression models are very useful in situations where the analyst knows that curvilinear effects are present in the true response function. These models are also useful as approximating functions to unknown and possible very complex nonlinear relationship.

Time t in years is considered as the independent variable. The dependent variables are: ${}_kX_1$ = reported HIV cases, ${}_kX_2$ = reported AIDS cases and ${}_kX_3$ = AIDS death cases for males and females (for males, $k=1$ and 2 if otherwise). Sex differential was established using Microsoft Excel 2007 (Microsoft, 2007). Polynomial regression analysis was used to determine the yearly trend in the number of infected persons (HIV and AIDS) and deaths (AIDS). The underlying model corresponding to each variable was as follows:

$${}_kX_j = \beta_0 + \beta_1 t_i + \beta_2 t_i^2 + \beta_3 t_i^3 + \dots + \beta_p t_i^p + e_i \quad (1)$$

where ' t_i ' ($i = 1986, 1987, \dots, 2011$) is the time in year, ' ${}_kX_j$ ', ($j = 1, 2, 3; k = \text{male, female}$) is the number of infected persons of HIV; infected persons of AIDS; and AIDS-related deaths, and ' e_i ' is the error terms. The forward selection procedure was applied to determine the appropriate order of the polynomial model. Statistical analyses were performed using SPSS Version 20 (IBM SPSS Inc., Chicago, IL).

3. Results

Univariate Analysis

Background statistics of predictor and response variables explained the urgent threats for Malaysia as presented in Table 2. In the table, the data explained the maximum and minimum values for all the cases under study as well as their means, medians, standard error mean, and standard deviations to explore the main features of data of Malaysia.

Table 2: Descriptive statistics of dependent variable

Mean	Male	Female	Total
HIV	32832,58±1943,31	365,15±304,83	3647,73±2016,51
AIDS	600,50±499,17	79,73±76,82	680,23±440,64
AIDS death	520,88±440,43	55,50±54,11	576,39±389,53
Median			
HIV	3508,00±1943,31	338,50±304,83	3808,00±2016,51
AIDS	708,50±499,17	71,50±76,82	808,00±440,64
AIDS death	625,50±440,43	42,00±54,11	688,50±389,53
Range			
HIV	[2-6349]	[0-875]	[2-6978]
AIDS	[0-1620]	[0-222]	[0-1842]
AIDS death	[0-1227]	[0-154]	[0-1374]

Bivariate Analysis

The correlation coefficients (r) were derived to examine the direction, strength and significance of linear relationships between the variables included in the study as shown in Table 3.

Table 3: Correlation between the variables that were examined

	Time(t)	$M X_1$	$F X_1$	$T X_1$	$M X_2$	$F X_2$	$T X_2$	$M X_3$	$F X_3$	$T X_3$
Time(t)	1	0,63**	0,94**	0,70**	0,83**	0,93**	0,85**	0,86**	0,90**	0,87**
$M X_1$		1	0,69**	0,99**	0,77**	0,60**	0,76**	0,76**	0,59**	0,75**
$F X_1$			1	0,76**	0,91**	0,98**	0,93**	0,94**	0,97**	0,95**
$T X_1$				1	0,82**	0,68**	0,81**	0,82**	0,66**	0,80**
$M X_2$					1	0,90**	0,99**	0,94**	0,85**	0,94**
$F X_2$						1	0,92**	0,91**	0,97**	0,92**
$T X_2$							1	0,95**	0,87**	0,95**
$M X_3$								1	0,92**	0,99**
$F X_3$									1	0,94**
$T X_3$										1

Note:** Correlation is significant at the 0,01 level (2-tailed).

$M X_1$ = reported HIV cases of male, $F X_1$ = reported HIV cases of female, $T X_1$ = reported total HIV cases;

$M X_2$ = reported AIDS cases of male, $F X_2$ = reported AIDS cases of female, $T X_2$ = reported total AIDS cases;

$M X_3$ = reported male deaths due to AIDS, $F X_3$ = reported female deaths due to AIDS, $T X_3$ = reported total deaths due to AIDS

Table 3 clearly explained the significant similar relationships between the reported HIV and AIDS cases, and deaths due to AIDS for both the sexes over the years. All other variables are also significantly correlated with each other.

Polynomial Regression Analysis

When the polynomial regression of degree ‘*p*’ for the different values (*p* = 1, 2, 3, 4, and 5) were fitted on the numbers of HIV, AIDS and death associated with AIDS by years, it was found that the polynomials of degree five gave the best fitted models for both the male and female populations (Figs. 1–4). These figures also show that 93,00% ($R^2 = 0,93$) for male HIV cases, 97% ($R^2 = 0,97$) for female HIV cases, 90% ($R^2 = 0,90$) for male AIDS cases, 94,00% ($R^2 = 0,94$) for female AIDS cases, 96,00% ($R^2 = 0,96$) for male AIDS death cases, 96,00% ($R^2 = 0,95$) for female AIDS death cases, 94,00% ($R^2 = 0,94$) for total HIV cases, 91,00% ($R^2 = 0,91$) for total AIDS cases, and 96,00% ($R^2 = 0,96$) for total AIDS deaths, could explain the yearly variation when the fifth-degree polynomial model was applied. All the parameters of the fitted models were statistically significant ($p < 0,05$).

Figure 1: Reported HIV cases of males and females from 1986–2011 in Malaysia

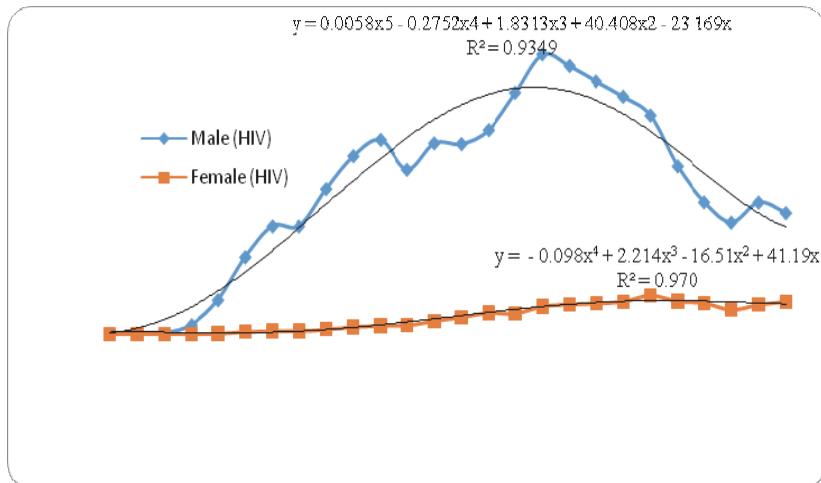


Figure 2: Reported AIDS cases of males and females from 1986–2011 in Malaysia

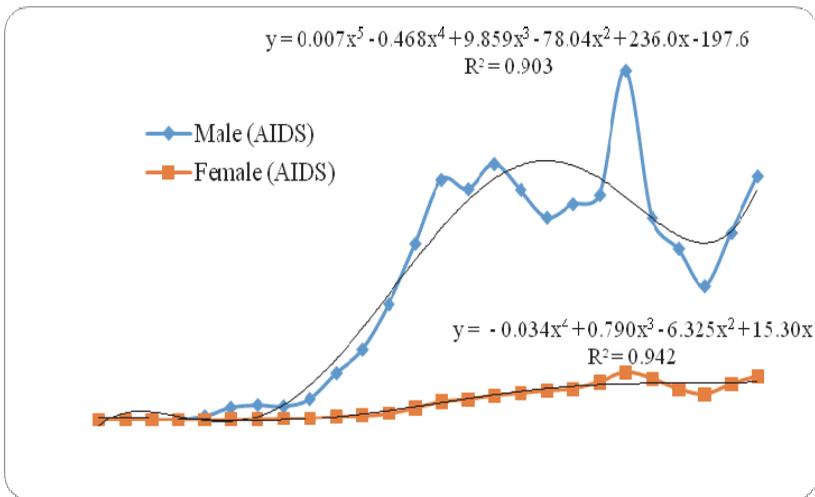


Figure 3: Reported deaths due to AIDS of males and females from 1986–2011 in Malaysia

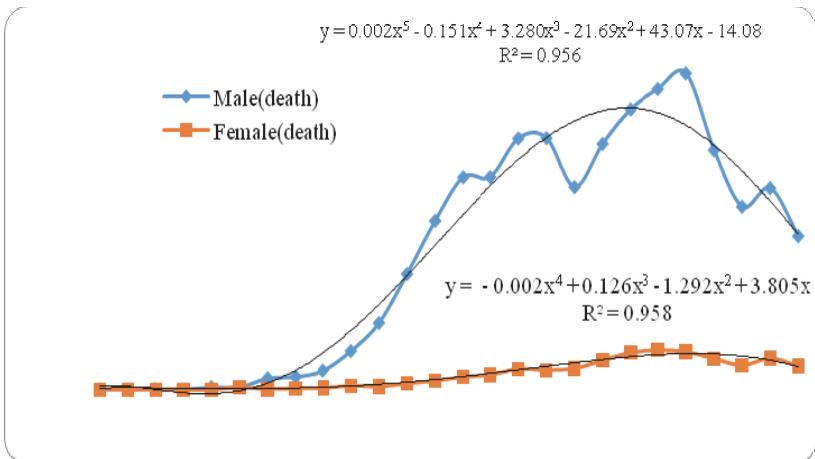
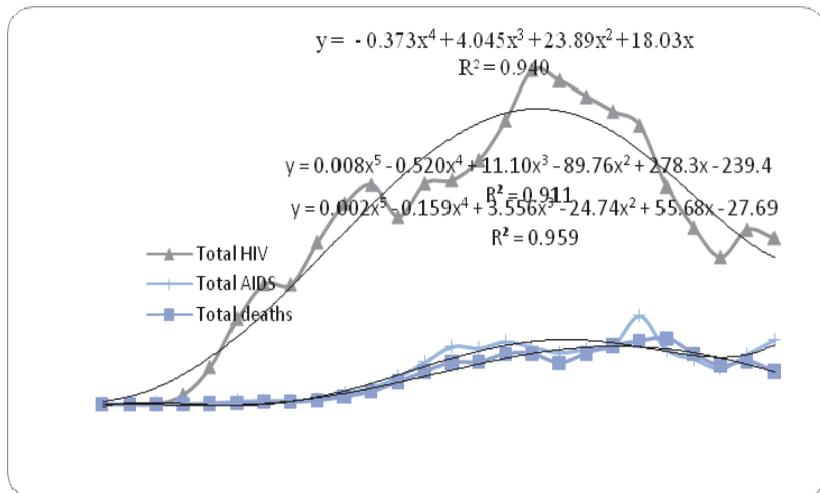


Figure 4: Reported total HIV, AIDS and AIDS death cases from 1986–2011 in Malaysia



4. Discussion

The above results clearly identified some important findings. Firstly, the reported HIV (2 527 and 553 cases in 2009; 2 744 and 735 cases in 2011 for male and female respectively), AIDS (622 and 119 cases in 2009; 1 131 and 203 cases in 2011 for male and female respectively) and AIDS death (710 and 95 cases in 2009; 782 and 122 cases in 2010 for male and female respectively) cases are gradually increasing. Secondly, the gaps between the HIV and AIDS infection cases among males and females steadily reducing; that is, the epidemic is shifting from males to females. The first HIV case made its debut since 1986, and the HIV epidemic has become one of the most serious health and development challenges in Malaysia. In the initial stage of the HIV epidemic in Malaysia was obsessed by IDUs and sexual transmission occurring among most at risk populations (MOH, 2012). From the beginning of the epidemic, especially IDUs population is playing as the main determined factor. Until now, the epidemic continues in the larger part within relatively confined male IDUs. Females may be more likely to engage in injection and sex risk behaviour than males. Among the IDUs not in

treatment, recent injecting with a sex partner was more common among females, and this was often an injection given to the female by the male after the male had already injected. Both receptive and distributive injection equipment sharing were more common among female than male IDUs in this country. The drastic situations like heterosexual behaviours of male IDUs, were found among female IDUs, which increased the more risk of their HIV infection and transmission. It was estimated that there are about 170 000 IDUs in Malaysia (MOH, 2011b). The worrisome matter is that the high-risk group, IDUs population forms the productive segment of the population in this country. The majority of the HIV infected IDUs are heterosexual with implications for the risk of exposure of women. Another limitation is that, the HIV case detection in Malaysia, the HIV surveillance system which is based on the notification of newly diagnosed HIV infection and screening in sub-populations only. The rising trend of infection has started to decline constantly in 2004, and had reached 39,00% in 2011; signaling a rise in the proportion of sexually transmitted HIV (MOH, 2011a). Overlapping of the main risk behaviours, namely IDUs and SW are also being observed. There are a number of reasons why female IDUs may engage in more risk behaviour. Females may be more stigmatised for their drug use, and stigmatisation may lead to more risk behaviour. For example, women may avoid using syringe exchanges out of fear that they will be recognised within their community as an injection drug user, leading to eviction or loss of child custody. Clearly, the men who were infected through drug use and unprotected sexual intercourse with SW would infect more women in the future. The findings of this trend study clearly identified the women's HIV vulnerability that has grown over time.

This study has its own limitations. The models of HIV/AIDS epidemic on demographic parameters are mostly based on mathematical models like Demproj, Estimation and Projection Package (EPP), Asian Epidemic Model (AEM), AIDS Impact Model, polynomial regression model and others (Johnson and Dorrington, 2006). The present study found out the descriptive statistics, correlation analysis, and polynomial regression model only to determine the trend and relationships of the reported cases of HIV and AIDS and deaths due to AIDS with time. This study did not find out the trends by age groups or by occupations or by high risk groups.

5. Conclusion

The study has tried to identify the trends of reported cases of HIV, AIDS and deaths due to AIDS by sexes in Malaysia from the years 1986–2011. Significant differences were observed for all the predictors by sexes over time. The correlation analysis was conducted to establish relationships between the reported HIV and AIDS cases and deaths due to AIDS with time. The polynomial models of HIV and AIDS, and AIDS deaths by sexes in years showed the trends and found gaps. The gaps were gradually reduced, which means that the reported HIV and AIDS cases and AIDS related death cases of females are gradually increasing compared with their counterpart. The results identified that Malaysian HIV/AIDS epidemic has slowly shifted from male to female population. The rising prevalence of HIV infection among females in Malaysia supports the need for quick interventions to reduce the number of cases. Further research is needed to identify the determinant factors for which the women are more HIV infected.

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Contribution of Authors: All authors have contributed to the conceptualisation, conduct, and analysis of this research, and all authors have participated in the manuscript drafting, editing, and revising. All authors have approved the final version of this manuscript.

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Appendix A: An overview of the HIV epidemic in Malaysia from 1986–2011

Indicator	Number
Cumulative number of reported HIV infections since first detection in 1986	94 841
Cumulative number of reported AIDS since 1986	17 686
Cumulative number of reported deaths related to HIV/AIDS since 1986	14 986
Estimated number of people living with HIV	81 000
Total number of people living with HIV	79 855
New HIV infections detected in 2011	3 479
Notification rate of HIV (per 100 000) in 2011	12,18
Women reported with HIV in 2011	735
Cumulative number of women reported with HIV as of December 2011	9 494
Children aged below 13 with HIV in 2011	65
Cumulative number of children < 13 years with HIV as of December 2011	974
Estimated number of people living with HIV eligible for treatment	37 306
Number of people living with HIV receiving ART as of December 2011	14 002
Estimated number of adults (15–49 years) with HIV	64 562

Source: MOH, 2012.

Childbearing among Young People in South Africa: Findings from the National Income Dynamics Study

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ABSTRACT

In South Africa, the high incidence of early childbearing among the youth remains one of the major challenges facing the country. The overwhelming majority of early childbearing occurs outside marriage, and most of these are not planned. The implications of early childbearing are likely to be severe. It is therefore important to understand the factors influencing childbearing among young people in South Africa. The aim of this paper is to identify the extent and determinants of childbearing among people, aged 15–24 years, in South Africa. The data for the study comes from the 2008 National Income Dynamics Study (NIDS). The sample consists of 2 623 females aged 15–24 years. More than one-third (36,6%) of females aged 15–24 years have given birth. Of the four main population groups, 40% of coloured females have given birth, followed by 37% of African females aged 15–24 years. A significant association has been identified between place of residence and early childbearing for females aged 15–24 years. Socio-economic status is an important determinant of early childbearing for females aged 15–24 years. The results suggest that females living in lower-wealth households are six times more likely to experience early childbearing compared with females living in higher-wealth households.

Key words:

Fertility, young people, South Africa, social context

1. Introduction

Early childbearing is highly prevalent throughout the world. Over the past several decades, there has been a steady decline in the total fertility rate globally, but the rate of early childbearing remains high. It is estimated that 11% of all births worldwide occur to girls aged 15 to 19 years, resulting in 16 million girls giving birth each year (Heine, 2008). Since the 1970s, South African women, on average, have been having fewer children, but the fertility rates of young women remain relatively high (Panday et al., 2009). In the South African context, researchers have noted a double-spiked fertility pattern – one that peaks during adolescent years and the other peaking around the late 20s and early 30s, suggesting that early childbearing does not imply continuous or rapid subsequent childbearing (Kaufman, De Wet and Stadler, 2001). It has been suggested that this may be representative of trends that show low contraceptive use and low prevalence of abortion before the first pregnancy; however, thereafter, levels of contraception increase (Kaufman, De Wet and Stadler, 2001). Menendez and colleagues (2011) observe that the proportion of births to young people has decreased over time. In 1984, 30% of young women had given birth by the age of 20 years; this has dropped to 23% in 2008. This decrease has been experienced by most of the provinces in South Africa, with the exception of KwaZulu-Natal (Menendez et al., 2011).

Numerous studies in South Africa and elsewhere in Africa are finding that young people are increasingly engaging in sexual activity at an early age. A review of current studies suggests that at least half of young people in South Africa are sexually active at age 16, and probably 80% are by the age of 18 (Eaton et al., 2003). Kowaleski-Jones and Mott (1998) explain that sexual exploration without adequate sexual and reproductive health information and resources increases exposure to unprotected sexual behaviour. Outcomes associated with such behaviour include the acquisition of sexually transmitted infections (STIs) (including the human immunodeficiency virus (HIV)) and unplanned pregnancies.

Early childbearing has been linked with a number of long and short-term negative outcomes for not only the young female, but also for her child and for the country as a whole (Senior and Chenhall, 2008). Physiologically, young mothers under the age of 20 years are at higher risk of anemia, premature labour and pre-eclampsia as compared to mothers aged 20 years and older. Adding to this list of pregnancy complications are poor dietary habits and poor nutrition (Grover and Sandhu, 2009). Woldemicael (2005) adds that the lack of prenatal medical care increases the risk of pregnancy complications, with older females being more likely to seek prenatal medical care than younger females. Economically, the young female is further disadvantaged because education is essential in order to secure future employment (Panday et al., 2009).

According to the South African Schools Act (1996), young females are allowed to return to school post-pregnancy; however, in many cases only a third of young mothers re-enter the education system (Grant and Hallman, 2008). Willan (2013) reports that although South Africa has progressive sexual and reproductive rights policies, many young people are unaware that these rights exist. In many cases, school governing bodies, principals and teachers influence the implementation of these policies. For example, one of the pregnant adolescents interviewed indicated that she returned to school after childbirth because her teacher informed her of her right to do so. However, two other pregnant adolescents, who were unaware of their rights, were pressured to leave school by their teachers and principal during their pregnancy (Willan, 2013). As a result, these females' educational achievements and future economic stability are compromised, making it increasingly difficult to escape the poverty trap inherent in many South African communities. Research indicates that the effects of early childbearing on educational achievements and economic progress remain negative and significant later in life, even after controlling for pre-existing socio-economic conditions (Panday et al., 2009).

Health problems, the increasing responsibility of parenthood and the lack of education and skills compromise the labour force earnings of young mothers, thus forcing her to remain in poverty (McDevitt et al., 1996). This has far-reaching consequences for the state and economy because not only is the mother unable to

actively participate in the economy, they are also increasingly dependent on social grants (Panday et al., 2009). Adding to the social and economic consequences of early childbearing is the absence of fathers. Young mothers are often left to provide financially and emotionally for the child as young fathers often deny paternity in an attempt to negate financial and social responsibilities (Kaufman, De Wet and Stadler, 2001). For example, Jewkes, Morrell and Christofides (2009) explain that even in cases where conception is coerced, paternity is often denied. In some cases, paternity is formally accepted but not accompanied by financial or practical support for the mother of child (Jewkes, Morrell and Christofides, 2009). However, it is acknowledged that in some situations, a father's absence is out of his control. Studies explain that their socio-economic situation is often no different to that of young mothers. Young fathers are also more likely to belong to lower socio-economic status households, have low educational achievements and aspirations, and in most cases do not have the financial resources to care for the child and mother (Panday et al., 2009; Zwang and Garenne, 2008). Furthermore, Bhana et al. (2008) report that South African laws on teenage pregnancy, for example the South African Schools Act (1996), maintain the gendered norm of women being the primary care provider for children as these laws mainly apply to mothers and not to fathers.

Research suggests that early childbearing is associated with a number of negative outcomes. Early childbearing may have negative implications for national efforts to reduce population growth, as early childbearing has been associated with increased fertility over a woman's reproductive lifetime (McDevitt et al., 1996). In this context, it is important to understand the extent and determinants of childbearing among females aged 15–24 years in South Africa. Understanding the determinants of early childbearing is important for policy formulation and implementation, especially in the context of a high HIV prevalence and high levels of poverty. Understanding the social context of early childbearing is important in order to effectively respond to the challenge of high fertility among young people. In addition, this area of research has mostly been addressed using qualitative research methods. This paper addresses this gap by using nationally representative secondary data from the National Income Dynamics Study to understand the socio-economic context of early childbearing.

2. Data and methods

NIDS data

This paper analyzes data from the first wave of the National Income Dynamics Study (NIDS), which was collected in 2008 and forms the baseline for the study. NIDS is South Africa's first nationally representative panel study. The purpose of the study is to track changes in the well-being of the population with the aim of highlighting coping strategies used in response to negative and positive household shocks. The survey used a combination of household and individual questionnaires that collect information on a wide range of topics such as migration, fertility and mortality, income, expenditure, and consumption of households over time. Information is also collected on the health status of household members in the form of anthropometric measures. Other themes addressed in the study include vulnerability and social capital, health and education, transition from school to work, and events and characteristics that shape the years from youth to adulthood. NIDS employed a stratified, two-stage cluster sample design for the baseline, which resulted in a total of 7 305 households and 28 255 individuals in the survey (Leibbrandt, Woolard and De Villiers, 2009).

Data analysis techniques

This study conducts secondary analysis on the baseline wave of the NIDS dataset. Analysis is done to identify the levels of early childbearing and possible determinants of childbearing among young people in South Africa. Key to identifying the determinants of early childbearing is to understand the context in which it occurs. More so, due to the fluid and constantly changing nature of society, there could never be a single identifiable determinant of early childbearing. Rather, a number of interlinking factors that foster environments in which risky sexual behaviour occurs are addressed. Therefore, this study proposes a number of possible determinants of childbearing among young people. It is important to acknowledge that a linear relationship does not exist between poverty and childbearing among young people. Studies

have extensively explored poverty as a cause and consequence of early childbearing, especially in developing regions (see Eaton et al., 2003; Hallman, 2005; Harrison, Cleland and Frohlich, 2008; Kaufman and Stavrou, 2004; Wood and Jewkes, 1997; Varga, 1997). This study focuses on poverty as a determinant of childbearing among young people, where socio-economic status is used as a proxy for poverty. However, the possibility of reverse causality is acknowledged where the costs associated with early childbearing could possibly lead to poverty. This study employs robust analysis methods; however, addressing the issue of reverse causality is beyond the scope of the paper. In addition, past research has identified a correlation between socio-economic status and childbearing; therefore, this paper focuses on poverty as a possible determinant of childbearing among young people.

Data analysis is done using the quantitative software package, STATA version 12. The analysis is restricted to women aged 15–24 years at the time of data collection. Women outside this age range are excluded from the analysis because of difficulties associated with retrospective data. Analysis is done on weighted data so that the results obtained are representative of the entire population. The analysis is presented in three parts. Part one presents descriptive statistics that explore the sample characteristics. The second part consists of bivariate analysis where chi-square tests identify whether statistically significant associations exist between females aged 15–24 years, who have experienced childbearing, and various socio-demographic and economic factors. The third part focuses on regression analysis where the relationship between early childbearing and the identified independent variables is tested. Logistic regression analysis is an appropriate method of analysis, as the dependent variable being investigated is a discrete variable with a binary response option – either 'yes' or 'no'. Hosmer and Lemeshow (2000) suggest that logistic regression analysis is adopted when one aims to investigate or describe the relationship between an outcome variable and a set of explanatory variables.

Part three includes bivariate logistic regression analysis where the unadjusted odds of experiencing childbearing for females aged 15–24 years are discussed. This is followed by multivariate logistic regression analysis where the adjusted odds of experiencing early childbearing are explored. In keeping with the standard used in social science research, all tests were done at the 95% level of confidence ($p < 0,05$).

Measures

In order to determine the prevalence of early childbearing, respondents were asked the following question: "Have you ever given birth?" This question was asked to individuals aged 15 years and older in the adult questionnaire, located under section C1: Children ever born. This question was the main source of information about early childbearing. Drawing from this, the dependent variable being investigated is "ever given birth". The sensitive nature of childbearing often yields errors in reporting; therefore, data pertaining to childbearing and births needs to be scrutinized thoroughly and logic needs to be applied during its use. More specifically, data on childbearing among young people may have a greater degree of errors due to the young age of the sample. One of the limitations of the question asked in the NIDS questionnaire revolves around survivorship of the child. It is possible that if the child has died, the mother is more likely to report 'no' to the question of whether she has ever given birth. However, the questionnaire asks a series of filter questions in the aim of eliminating possible errors in reporting of data. Specific to the problem of misreporting based on the survivorship of the child, the questionnaire asks three different questions – see questions C1.7, C1.8 and C2.5 in the NIDS adult questionnaire. These questions aim to filter out possible misreporting of data; however, it is acknowledged that the possibility of errors exists. Another limitation with the question centres on the possibility that younger, unmarried females are more likely to indicate that they have not given birth when they actually have. This may be the case in communities where pre-marital fertility, especially among younger people, is deemed undesirable. The questionnaire attempts to minimize the possibility of this error by asking four filter questions – see questions C1.9, C1.11, C1.12 and C1.13 in the NIDS adult questionnaire. More so, the NIDS 2009/09 Discussion

Paper contains a comparison of the fertility data contained in the 2008 wave of NIDS and the 2007 Community Survey, where to a large extent, the results aligned with one another with a few explainable anomalies (see Moultrie and Dorrington, 2009). At this juncture, it is also worth pointing out that the NIDS questionnaire did not collect information on contraceptive use. Other studies focus on contraception as the primary factor in determining childbearing, but it is not possible for this study given the data limitations.

Studies suggest that a number of socio-economic and demographic characteristics influence early childbearing including age, population group, marital status, orphan status, employment, and socio-economic status. In many cases, the determinants of early childbearing are context based and therefore are likely to vary. The following independent variables are tested as proposed determinants of childbearing among young people in a South African context. Age is an important variable as it identifies ages at which young people are most vulnerable and likely to experience early childbearing. The variable used to measure the age of the respondent is a derived variable that is recorded in the dataset as: *r_best_age_yrs*. Using this information, a dummy variable is created where 1 represents females aged 15–24 years and 0 represents other. In order to capture the levels of childbearing at different age groups, analysis is also done on females aged 15–19 and 20–24 years. This is important as females aged 15–19 years encounter different social pressures compared to females aged 20–24 years.

Although South Africa has been a democracy for 20 years and efforts are made to redress past inequalities, population group remains an important factor when attempting to understand social trends. Population group is especially important when understanding fertility trends, as the family planning programme was used as a tool to control the growth of the African population in the apartheid era. The variable is derived using the following question: B3 – What population group would you describe yourself as belonging to? The response options are 1 = African, 2 = Coloured, 3 = Indian and 4 = White. These response options are maintained in the bivariate analysis and are created into individual dummy variables, where 1 represents the racial classification and 0 other, for the logistic regression analysis.

Place of residence impacts access to health resources and information, and is therefore a significant independent variable. A report by the World Health Organization revealed that place of residence has an influence on the age at which young people begin childbearing (McIntyre, 2006). Studies also suggest that various pull factors may cause young people to migrate into larger cities, which influences levels of early childbearing within urban areas (Panday et al., 2009; McDevitt et al., 1996). In order to capture this trend, a derived variable called *hhgeo* is used where the response options include: 1 = rural formal areas, 2 = tribal authority areas, 3 = urban formal areas and 4 = urban informal areas. Similar to the population group variable, these classifications are used in the analysis, and individual dummy variables are created for the logistic regression analysis.

Marriage commonly represents the onset of exposure to the risk of childbearing for women. Although marriage is delayed in South Africa (mean age at marriage is 29 years), it remains an important factor when understanding trends in childbearing (Kaufman, De Wet and Stradler, 2001; Palamuleni, Kalule-Sabiti and Makiwane, 2007). Various studies probe the statistical robustness and entertain discussions on the possible explanations of South Africa's high mean age at marriage (See Garenne et al., 2001; Gustafsson and Worku, 2006; Harwood-Lejeune, 2000; Hosegood, McGrath and Moultrie, 2009; Palamuleni, 2010). In this study, marriage is understood as a demographic factor that has the possibility of influencing childbearing among young people. The results obtained in the analysis converge with the country's current marriage trends. Marital status is analyzed using data provided in question: B5 – What is your marital status? The response options are: 1 = married, 2 = living with partner, 3 = widow/widower, 4 = divorced/separated and 5 = never married. For analysis purposes, the response options are collapsed to capture broadly those females who are married or living with a partner and not currently married. The number of females who are divorced and widowed is minimal because of the young ages of the sample. Therefore, the divorced and widowed responses are combined with the never married response option to produce a not currently married category. Females who are married or living with a partner are collapsed into one category. For the logistic regression analysis, this variable is converted into a dummy variable where 1 represents

females who are married or living with a partner and 0 represents those females who are not currently married. A possible limitation with the use of this variable is that it does not distinguish between customary and civil rights marriages and therefore does not take into account the procedures involved in a customary marriage. For example, the time lapse between the initiation and completion of *ilobola* payment and then the actual wedding ceremony, which only occurs after the payment of *ilobola*. In these cases, it is common for the couple to cohabit whilst *ilobola* is being paid. It is easy to perceive how such data can be misreported as the couple are technically not married as yet, and therefore cannot report that they are married, but *ilobola* payment has been initiated. However, the option of selecting 'living with a partner' is available as a response option to the question 'what is your marital status?' The inclusion of this response option aims to reduce the number of misreported cases and to minimize any bias caused by misreported data. In addition, due to the young ages of the sample, it is expected that the majority of the sample reported that they are not currently married, especially in light of the high mean age at marriage in South Africa.

In South Africa, young children are often forced to assume parental roles due to the untimely death of their parents, in most cases as a result of the massive HIV pandemic throughout the country (Case and Ardington, 2006; Lewis, 2003). Therefore, orphan status is a significant variable to measure the effect that the loss of a parent/s has on early childbearing. The orphan status variable is derived using the following two questions: D3 – In what year did your mother/father die? D4 – Did your mother/father die before you were 15 years old? The variable is derived by subtracting the year of death provided in question D3 from 2008 to produce the number of years ago the parent died. This is then subtracted from the respondent's current age to determine the age of the respondent when her parent died. If the age is below 16 years, the respondent is classified as an orphan. This data is combined with the data from question D4 to produce the orphan status variable. A filter was provided in the questionnaire, which restricted response to question D4 if a response was provided for question D3. Therefore, respondents were not counted twice. The orphan status variable is set up to capture trends associated with double, maternal and paternal orphans. An individual is classified as a maternal orphan if

her mother died before she turned 15 years old. Similarly, a respondent is classified as a paternal orphan if her father died before she turned 15 years old. In situations where both of the respondent's parents died before she turned 15 years old, the respondent is classified as a double orphan (Case, Paxson and Ableidinger, 2004). A common problem that arises when collecting data from young people is the 'adoption effect'. This occurs when respondents who lost their parents at a young age, indicate that their biological parent/s are alive, when they are in fact referring to their foster or adoptive parents. This bias results in an underreporting of orphanhood (Timeaus, 1986). The data on orphan status must be interpreted in light of concerns raised by demographers who argue that information obtained from young people is not very reliable (Blacker, 1977).

Given the young sample size, a variable capturing whether the respondent is enrolled in an institution would yield greater results compared to measuring the respondents' highest level of education achieved. The question used to collect this data asks: H24 – Are you currently enrolled? Captured through this variable is the proportion of the sample that was enrolled in an educational institution, either school or tertiary education, at the time of enumeration. Using this variable, analysis is done for females aged 15–19 and 20–24 years.

Part of the aim of this study is to identify possible socio-economic determinants of childbearing among young people. Therefore, a variable that captures socio-economic status is essential for the analysis. To measure the effect that socio-economic status has on early childbearing, a relative household wealth index is used. This index is used because the majority of females aged 15–24 years in South Africa are unemployed, not married and live with parents or grandparents. As a result, the wealth status of the household is not influenced by the respondent (Hallman, 2005). More so, the index measures socio-economic position which "refers to the holding of assets, the income these assets produce, and the consumption that such income permits" (Hallman, 2005:39). As mentioned, this study focuses on the effects that socio-economic status has on the odds of experiencing childbearing among young people. NIDS contains a comprehensive household asset list that captures the ownership

of 27 possible items. The question, located in Section F (Durable Goods) asks: Does the household own at least one asset? It includes the binary response option of 'yes' or 'no' for each asset. The asset list includes a wide range of items from a radio, computer, electric stove and sewing machine to a motor boat, lounge suite, washing machine and private motor vehicle. The last 5 assets on the list are not included in the analysis as they are not owned by any of the households. These assets are: donkey cart or ox cart, plough, tractor, wheelbarrow and grinding mill. The variable is constructed by first summing the number of assets owned by the household. K-median clustering is then used to determine ranges of asset ownership. The K-median clustering is set up to categorize five ranges that correspond closely to wealth quintiles. Households that own 0–3 assets are classified as low-wealth households, and those that own 4 assets are classified as low-middle-wealth households. Middle-wealth households are categorized as owning 5–6 assets, high-middle-wealth households own 7–11 assets and high-wealth households own 12–22 assets. This linear and flexible method of determining socio-economic status allows for the analysis of early childbearing by wealth level. The disadvantage associated with simply summing the number of assets owned by the household is that costly and inexpensive assets are given the same weight. However, this method has been shown to be reliable and is used in a number of studies (see Hatloy et al., 2000; Hallman, 2005; Mete, 2005; Bollen, Glanville and Stecklov, 2007).

3. Results

Sample characteristics

Table 1 presents the distribution of the sample by population group, marital status, place of residence, orphan status and socio-economic status. The data shows that 37% of females aged 15–24 years have experienced childbearing. Of the four population groups, African females make up the majority of the sample population (88,58%) and Indian females, the minority (1,38%). Coloured females constitute 6,8 % of the sample while white females constitute 3,25%. Analysis of the marital status of the sample population reveal that 5% of females aged 15–24 years reported that they were married and 6% reported that they were

living with a partner, while almost 90% of the sample reported that they were never married. The low percentage of divorced and widowed females is a function of the young age of the sample population. Table 1 also presents information on the distribution of the sample population by place of residence. Approximately 45% of females aged 15–24 years live in urban formal areas, 13% live in urban informal areas and 5% live in rural formal areas. Tribal authority areas are areas that are governed by a chief, and permission to live on land in these areas is provided by the chief. The data shows that 37% of the sample reported that they live in tribal authority areas.

Table 1: Distribution of sample characteristics for females aged 15–24 years

<i>Population Group</i>	<i>%</i>
African	88,58
Coloured	6,80
Indian	1,38
White	3,25
<i>Marital Status</i>	
Married	4,54
Living with Partner	5,93
Widow	0,02
Divorced	0,00
Never Married	89,51
<i>Place of Residence</i>	
Rural formal	4,70
Tribal authority area	37,19
Urban formal	45,29
Urban informal	12,82
<i>Orphan status*</i>	
Non-orphan	63,36
Maternal orphan	7,40
Paternal orphan	16,36
Double orphan	2,85

Table 1: Distribution of sample characteristics for females aged 15–24 years (concluded)

Population Group	%
Enrolled in an institution	
15 – 19 years	76,13
20 – 24 years	23,87
15 – 24 years	51,87
Socio-Economic Status	
Low Wealth	27,30
Low-Middle Wealth	9,95
Middle Wealth	19,52
High-Middle Wealth	33,54
High Wealth	9,70
Ever given birth	36,56
N	2623

Source: NIDS, 2008.

Note: Data are weighted; *These categories are not mutually exclusive and do not equal to 100%

The results also highlight that 63% of females aged 15–24 years are non-orphans while 3% reported that they are double orphans. Approximately 7% of the respondents are classified as maternal orphans and 16% are paternal orphans. The distribution of the sample that was enrolled in an institution (either at school or a tertiary institution) at the time of enumeration is also presented in Table 1. The results show that 52% of the sample was enrolled in an institution at the time of enumeration. Furthermore, 76% of females aged 15–19 years and 24% of females aged 20–24 years were enrolled in an institution at the time of data collection. The socio-economic status variable captures the wealth status of the household in which the respondent belongs. It is derived by categorizing the number of assets in the household and therefore does not represent individual wealth but rather, household wealth. The data indicates that 27% of the sample belongs to low-wealth households and 10% to low-middle-wealth households. An estimated 20% live in middle-wealth households, 34% in high-middle-wealth households and 10% in high-wealth households.

The extent of childbearing among young people

This section is focused on identifying the extent of childbearing among young people aged 15–24 years, in South Africa. Chi-square analysis is used to determine whether a significant association exists between the identified independent variables and the dependent variable. This bivariate analysis is done on females aged 15–24 years at the time of enumeration. The sample is split into females who have experienced childbearing at the time of enumeration compared to those who have not. The median age of childbearing for females aged 15–24 years is age 22. Presented in Table 2 are the percentages of females who have experienced childbearing, by selected characteristics: age, population group, place of residence, marital status, orphan status, socio-economic status and whether they were enrolled in an institution at the time of enumeration.

Data on adolescent fertility yield a steady decline in pregnancies and births since the 1980s. Data from the South African Demographic and Health Surveys estimate that there were 124 births per 1 000 women aged 15–19 years in the period 1987–1989, 81 births in 1998 and 54 births 2003 (Jewkes, Morrell and Christofides, 2009). Furthermore, in 1998, 35% of females reported that they had been pregnant by the age of 19 years and in 2003, 27% reported that they had been pregnant (Jewkes, Morrell and Christofides, 2009). Finding similar results, the analysis highlights a significant association between age and early childbearing, where 16% of females aged 15–19 years have given birth. The results also show that 57% of females aged 20–24 years have given birth. Table 2 shows that 37% of African females aged 15–24 years have given birth. Similarly, 40% of coloured females and 22% of white females aged 15–24 years have experienced a birth. Approximately 25% of Indian females aged 15–24 years have given birth; however, this percentage must be interpreted with caution as the sample size of Indian females who have given birth, is small. The results presented in Table 2 also identify a statistically significant association between marital status and childbearing for females aged 15–24 years. The analysis shows that 73% of females who are married or living with a partner have experienced childbearing and 32% of females who are not married have experienced childbearing.

A significant association has also been noted for place of residence and childbearing for females aged 15–24 years. The results indicate that females who live in rural formal areas are more likely to experience childbearing (52%), while females who live in urban formal areas are least likely to experience childbearing (34%). The data also shows that 37% of females who live in tribal authority areas and 41% who live in urban informal areas have experienced childbearing. Orphan status is analyzed according to the following four categories: non-orphan, maternal orphan, paternal orphan and double orphan. The results show that 34% of the sample reported that they are non-orphans, while 22% reported that they are double orphans. Approximately 40% of females aged 15–24 years are maternal orphans and 33% are paternal orphans.

Although South African law allows pregnant females to remain in school throughout their pregnancy and return to school after birth, a large number of females drop out of school. Data shows that in 2002, 12% of adolescents reported pregnancy as the main reason for them not being in an educational institution. This rose to 17% in 2004, then declined to 14% in 2009. This amounts to 66 000 learners in 2002, 86 000 in 2004 and 71 000 in 2006 (Lehohla, 2007). Similar results are presented in Table 2. The analysis shows a statistically significant association between being enrolled in an institution at the time of enumeration and childbearing for females aged 15–24 years. The data represents females who were enrolled in either a school or tertiary education institution at the time of enumeration. Of all females in the sample, 16% who were enrolled in an institution at the time of enumeration have given birth. Similarly, 9% of females aged 15–19 years and 36% of females aged 20–24 years who were enrolled in an institution at the time of enumeration have experienced childbearing.

Table 2: Percentage of females aged 15–24 years who have experienced childbearing by socio-demographic and economic characteristics

Age*	Ever Given Birth
15–19	15,81
20–24	57,49
Population Group	
African	37,04
Coloured	39,85
Indian	24,87
White	21,58
Marital Status*	
Married or living with partner	72,64
Not currently married	32,37
Place of Residence*	
Rural Formal	52,34
Tribal Authority Areas	36,72
Urban Formal	33,66
Urban Informal	40,52
Orphan status	
Non-orphan	34,22
Maternal orphan	39,96
Paternal orphan	33,49
Double orphan	21,61
Enrolled in an institution*	
15–19 years	9,33
20–24 years	36,23
15–24 years	15,75
Socio-Economic Status*	
Low Wealth	42,52
Low-Middle Wealth	40,07
Middle Wealth	36,34
High-Middle Wealth	37,95
High Wealth	11,80
n	991

Source: NIDS, 2008

Note: Data are weighted; * Significant at $p < 0,05$

The socio-economic status variable represents household wealth of females aged 15–24 years. A statistically significant association has been identified between socio-economic status and childbearing for females aged 15–24 years. The results highlight that 43% of females who live in low-wealth households, and 40% who live in low-middle-wealth households, have experienced childbearing. Of those females who live in middle-wealth households, 36% have given birth. Approximately 38% of females who live in high-middle-wealth households and 12% who live in high-wealth households have also given birth. These results suggest that socio-economic status is a possible predictor of childbearing among females aged 15–24.

Determinants of childbearing among young people

Using logistic regression analysis, this section aims to investigate more rigorously the possible predictors of early childbearing for females aged 15–24 years. Bivariate and multivariate analysis is conducted. Presented in Table 3 are the unadjusted and adjusted odds of experiencing early childbearing by selected socio-demographic and economic characteristics for females aged 15–24 years. The unadjusted odds ratios present the effect of each independent variable on the odds of experiencing childbearing for females aged 15–24 years without controls. Similarly, the adjusted odds ratios highlight the effect of each independent variable on the odds of experiencing childbearing for females aged 15–24 years, after adding controls. The 95% confidence levels are presented in parenthesis. Similar to the descriptive and chi-square analysis, the independent variables that are regressed against the outcome variable, "ever given birth" include age, population group, marital status, place of residence, orphan status, whether the respondent is enrolled in an institution, and socio-economic status.

The data presented in Table 3 highlights a statistically significant, negative relationship between age and early childbearing. The results show that females aged 15–19 years are significantly less likely to experience early childbearing compared to females aged 20–24 years. It is interesting to note that the analysis did not yield a statistically significant relationship between population group and early childbearing. The unadjusted and

adjusted odds reveal that coloured females are more likely to experience early childbearing compared to white females aged 15–24 years. Also noteworthy is the change in the odds of experiencing childbearing for African and Indian females once controls are added. The investigation into the effect that marital status has on early childbearing reveals that marital status is a significant predictor of early childbearing for females aged 15–24 years. Due to its small sample sizes, the widowed and divorced categories are combined with the 'never married' category to form the 'not currently married' category. The unadjusted (0,18) and adjusted (0,40) odds ratios highlight that females who are not currently married, are less likely to experience early childbearing compared to females who are married or living with a partner.

Table 3: The odds of experiencing early childbearing by selected socio-demographic and economic characteristics for females aged 15–24 years

Characteristic	Unadjusted odds ratio	Adjusted odds ratio
Age		
15–19	0,14* (0,11-0,18)	0,24* (0,18-033,)
20–24 (ref)	1,00	1,00
Population Group		
African	2,14 (0,69-6,64)	0,83 (0,29-2,41)
Coloured	2,41 (0,72-8,06)	1,33 (0,40-4,39)
Indian	1,20 (0,23-6,27)	0,45 (0,09-2,29)
White (ref)	1,00	1,00
Marital Status		
Not currently married	0,18* (0,12-0,28)	0,40* (0,24-0,67)
Married or living with partner (ref)	1,00	1,00
Place of Residence		
Rural Formal	2,16* (1,42-3,30)	2,20* (1,22-3,96)
Tribal Authority Areas	1,14 (0,90-1,46)	1,47* (1,07-2,02)
Urban Informal	1,34 (0,88-2,05)	1,28 (0,75-2,19)
Urban Formal (ref)	1,00	1,00
Orphan status		
Maternal orphan	1,11 (0,66-1,87)	0,93 (0,46-1,87)
Paternal orphan	0,84 (0,61-1,17)	1,01 (0,68-1,48)
Double orphan	0,49 (0,19-1,27)	0,53 (0,19-1,47)
Non-orphan (ref)	1,00	1,00

Table 3: The odds of experiencing early childbearing by selected socio-demographic and economic characteristics for females aged 15–24 years (concluded)

Characteristic	Unadjusted odds ratio	Adjusted odds ratio
Enrolled		
Enrolled in an institution	0,13 (0,10-0,17)*	0,28* (0,21-0,39)
Not enrolled in an institution (ref)	1,00	1,00
Socio-Economic Status		
Low Wealth	5,53* (3,38-9,04)	5,59* (2,77-11,29)
Low-middle Wealth	5,00* (2,83-8,83)	4,39* (1,99-9,67)
Middle Wealth	4,27* (2,54-7,17)	3,91* (1,90-8,01)
High-Middle Wealth	4,57* (2,79-7,49)	4,94* (2,47-9,87)
High Wealth (ref)	1,00	1,00
n	2623	2586

Source: NIDS, 2008

Note: Data are weighted; Ref = reference group; Confidence intervals in parenthesis;

*Significant at $p > 0,05$

The results presented in Table 3 also suggest that females who live in rural formal areas are significantly more likely to experience early childbearing compared to females aged 15–24 years who live in urban formal areas. It is interesting to note that when controls are added, the odds of experiencing childbearing for females who live in tribal authority areas increase and the relationship becomes statistically significant (1,14 and 1,47, respectively). Overall, the results show that females who live in urban formal areas are least likely to experience early childbearing. Also included in Table 3 are the odds of experiencing childbearing for females aged 15–24 years according to the different orphanhood classifications. Orphan status was not found to be a significant predictor of childbearing for females aged 15–24 years. The results show that double orphans are less likely to experience early childbearing compared to non-orphans. Once controls were added, the relationship between being a maternal orphan and experiencing early childbearing becomes negative where maternal orphans are found to be less likely to experience early childbearing (0,93) compared to non-orphans. The reverse is noted for paternal orphans where the adjusted odds reveal that paternal orphans are more likely to experience early childbearing (1,01) compared to non-orphans.

Included in the logistic regression analysis are the odds of experiencing early childbearing for females aged 15–24 years who were enrolled in an institution at the time of enumeration. This data represents females who were either enrolled in school or at a tertiary educational institution at the time of enumeration. The analysis highlights that not being enrolled in an institution is a predictor of childbearing for females aged 15–24 years. The results show that females who were enrolled in an institution at the time of enumeration were significantly less likely to experience early childbearing (unadjusted – 0,13 and adjusted – 0,28) compared to females who were not enrolled in an institution. Also presented in Table 3 are the odds of experiencing childbearing for females who belong to different socio-economic status households. As discussed, the socio-economic status variable represents household wealth and not individual wealth. Indicated in the analysis is that females aged 15–24 years who belong to low-wealth households have the highest odds of experiencing childbearing (unadjusted odds – 5,53 and adjusted odds – 5,59). The results show that females who belong to low-wealth households are more likely to experience childbearing compared to females who live in high-wealth households. It is interesting to note that when controls are added, females who belong to high-middle-wealth households have higher odds of experiencing childbearing (4,94) compared to females who belong to low-middle-wealth households (4,39). The odds of experiencing early childbearing for females who live in middle-wealth households decrease when controls are added (4,27 – 3,91, respectively). Overall, the results suggest that socio-economic status is a statistically significant predictor of early childbearing for females aged 15–24 years.

4. Discussion and conclusion

The main findings from this study highlight that socio-economic status is a possible predictor of childbearing among young people. The results found that females aged 15–24 years who belong to a household other than a high-wealth household are likely to experience childbearing. This is of concern, as many young South Africans grow up in a context of high unemployment and poverty. Jewkes, Morrell and Christofides (2009) argue that young people's social environment and their access to quality sexual and reproductive health services are influenced by their socio-economic

status. These contexts of poverty and unemployment are characterized by high levels of coerced early sexual debut, gender inequality and sexual violence and transactional sex. Females growing up in these social environments face a number of challenges, and are often found in compromising, vulnerable situations. Due to high levels of gender inequality, they are also unable to successfully negotiate the use of contraception during sex. Various studies have found similar results that suggest that violence has become a norm in South African communities as it is perceived as a 'show of love' (see Eaton et al., 2003; Hallman, 2005; Harrison, Cleland and Frohlich, 2008; Kaufman and Stavrou, 2004; Wood and Jewkes, 1997; Varga, 1997). In addition, Jewkes, Morrell and Christofides (2009) argue that a gender hierarchy is prominent in South African society, resulting in women having very little power. These inequalities reduce young females' ability to negotiate the timing and context in which sexual interaction occurs, resulting in a poor understanding that their body and sexuality are their own which they ultimately should have control over (Jewkes, Morrell and Christofides, 2009).

Studies suggest that the presence of both parents is vital to young people, as each parent satisfies different needs and plays different roles in the development of their children (Case and Ardington, 2006; Evans and Miguel, 2007; Lloyd and Blanc, 1996; Lloyd and Desai, 1992). This study, however, found no significant association between early childbearing and orphan status. A possible reason for this could be explained by the strong familial ties and social networks present in many South African communities. It is highly likely that the parental responsibilities are assumed by extended family and/or friends, which mitigate for the absence of either parent or in the case of double orphans, both parents. In support of this, various studies have highlighted that a by-product of the HIV/AIDS epidemic is the establishment of households where support to younger generations is provided by older generations, in most cases grandparents support grandchildren (Makiwane, 2010; Zimmer and Dayton, 2005). In their study, Makiwane, Schneider and Gopane (2004) found that 46% of people aged 60 years and older, care for young people aged between 6 and 18 years.

Past research highlights that marriage is a determinant of fertility as it represents the onset of females' exposure to the risk of childbearing (Palamuleni, Kalule-Sabiti and Makiwane, 2007). In support of this notion, this paper found that females aged 15–24 years who were not married had lower odds of experiencing childbearing compared to females who were married or living with a partner. However, it is important to note that although marriage is traditionally understood as a precursor to fertility, this trend is fast changing. Current research has identified an increase in non-marital fertility among middle-aged females. Jewkes, Morrell and Christofides (2009) concur, adding that, for decades, African women have been marrying late (median age at marriage 28 years) with almost all of their pregnancies being premarital pregnancies. Population group remains an important factor when understanding social trends in a South African context. The findings of this paper report that coloured and African females aged 15–24 years exhibit higher levels of childbearing and are more likely to experience childbearing compared to white and Indian females of the same age. Data from the 1998 and 2003 Demographic and Health Surveys highlight similar trends. Jewkes, Morrell and Christofides (2009) explain that the data from these surveys displayed marked social patterning of adolescent fertility according to race, educational attainment, place of residence, and age. The paper highlights that factors such as race, age, place of residence and educational attainment are "markers for high-risk groups and indicative of sets of social dynamics that influence the consequences and risk of pregnancy" (Jewkes, Morrell and Christofides, 2009:678). Similar results were found by Panday and colleagues (2009) who suggest that, to a large extent, African and coloured communities are riddled with high levels of poverty, which could explain high levels of fertility among young people in these two population groups. This finding and substantiation provides further support for the notion that socio-economic status is a potential determinant of early childbearing among young South Africans.

The aim of this paper was to highlight the current levels of childbearing among females aged 15–24 years and to identify possible socio-demographic and economic factors associated with childbearing among young females. As discussed, the paper found that coloured and African females exhibit higher levels of childbearing compared to Indian and white females aged 15–24 years. Age and marital status have been identified as likely predictors of childbearing among females aged 15–24 years. One of the main findings of the study focuses on socio-economic status, measured as household wealth, as a major determinant of childbearing among young South Africans. The dataset used limits analysis of critical issues such as gender inequality, transactional sex and coerced, early sexual debut; therefore, these issues are discussed as possible determinants of childbearing among young people. As a result, further empirical analysis on the subject matter is required. The study also highlights that the possible determinants of childbearing among young people and the size of its effect are context based. Research and interventions that are focused on these topics will initiate discussions and draw attention to creating a safer environment for the development of young South Africans. The findings of this study have implications for all young South Africans, as the dataset used is nationally representative. It is recommended that these findings are taken into consideration when developing policy and interventions aimed at curbing national levels of childbearing among young people and addressing the Millennium Development Goals.

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Gender-based violence as a new proximate determinant of fertility in sub-Saharan Africa

by

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ABSTRACT

Fertility remains at high level in sub-Saharan Africa (SSA) despite different programmes and policies aimed at achieving considerable fertility reduction in the region. This suggests the presence of preponderance of factors sustaining a high fertility regime in SSA. Hence, this paper investigates whether women's experience of domestic violence is one of those factors influencing high fertility behaviour in SSA. We used data from the Demographic and Health Survey (DHS) of three countries selected on the basis of geographical differences, the high level of fertility, and the availability of nationally representative and comparable data – 2012 Gabon DHS, 2008 Nigeria DHS and 2007 Zambia DHS. Weighted samples of 2 940 currently married women in Gabon, 15 852 in Nigeria and 3 253 in Zambia were analysed. Descriptive and inferential statistics, including independent t-test and Poisson regression were employed in data analysis. Findings support our hypothesis that fertility is higher among women who had experienced domestic violence than those who did not. Results from Poisson regression showed that higher fertility is associated with experience of any form of violence in two of the three selected countries, even after controlling for

background variables. The study concluded that policies and programmes targeted at regulating the persistently high fertility in sub-Saharan Africa should give special attention to societal values and norms on gender inequality that fuel violence against women in sub-Saharan Africa.

Key words:

Gender-based violence; women; gender inequality; proximate determinant; fertility change; sub-Saharan Africa

1. Introduction

Sub-Saharan Africa is the only region of the world where fertility decline appears to be moving at a slow pace, with women averaging five to six children in their lifetimes (United Nations Population Division, 2008). This is why fertility regulation has remained an important issue of concern for many sub-Saharan African countries (SSA) (Gage, 1995; Kishor & Neitzel, 1996). The governments of many sub-Saharan African countries have embarked on policies and programmes supporting family planning and contraceptive use. For example, the 1998 Nigerian National Policy on Population was reviewed and launched in 2004 with the target of reducing the national population growth rate from 3,2% to 2% or lower by 2015. Besides, the revised Nigerian National Policy on Population was aimed at reducing the total fertility rate by at least 0,6 children every five years, by encouraging child spacing through the use of family planning. The revised policy also aimed at increasing the contraceptive prevalence rate for modern methods by at least two percentage points per year through the use of family planning (National Population Commission & ICF Macro, 2009).

Although there has been a decline in TFR through those programmes and policies in some countries, the fertility level still remains high and the population growth rate remains unacceptably high by world standards. For instance, evidence from the most recent Demographic Health Survey (DHS) data for SSA obtained from MEASURE DHS STATcompiler shows that at least 22 countries have a total fertility rate (TFR) of 5,0 or higher, while 8 countries have a TFR of at least 6,0. In the last two DHSs, 17 countries have experienced fertility decline, while fertility has increased in 7 countries, and the TFR has remained constant in one country.

Specifically, although the population of Gabon is one of the smallest in sub-Saharan Africa, and this country has been experiencing fertility decline over time, the decline has been minimal. In 2010, the population was estimated at about 1,5 million inhabitants. For well over 30 years, the population was very unevenly distributed between its territorial entities and by residence setting. Half (50%) of the population lives in the single province of the estuary which includes Libreville, the capital of Gabon, which comprises more than 40% of the Gabonese population. In addition,

eight out of ten people live in urban areas. The TFR was 4,3 children per woman (Direction Générale de la Statistique (DGS) & International., 2013).

In Nigeria, the TFR declined from 6,3 in 1982 to 5,8 in 1991 and 5,7 in 2008 (National Population Commission & ICF Macro, 2009). In addition to the high fertility rate, unplanned pregnancies are common in Nigeria. According to the Nigeria Demographic and Health Survey (NDHS) 2008, overall, 4 per cent of births are unwanted, while 7 per cent are mistimed (wanted later). If all unwanted births were prevented, women would have an average of 5,3 children, compared with the actual average of 5,7 children (National Population Commission & ICF Macro, 2009).

The population of Zambia, estimated at 12,2 million in 2009, is growing at an average annual rate of 2,4 per cent. The population is projected to reach 15,5 million by 2015. The fertility level in Zambia has remained at a high level, with a slight decline in the TFR from 6,5 in 1992 to 6,2 in 2007. On average, rural women are having three children more than urban women (7,5 and 4,3 children, respectively). Women who have no formal education and women in the lowest wealth quintile on average are having more than 8 children. Overall, 16 per cent of births are unwanted, while 26 per cent are mistimed (wanted later). If all unwanted births were prevented, women would have an average of 5,2 children, compared with the actual average of 6,2 children (Central Statistical Office (CSO), 2009). Moreover, previous studies have identified determinants of high fertility in sub-Saharan Africa.

Such factors include early and universal marriage (Feyisetan & Bamiwuye, 1998); sex preference and high social values placed on childbearing in which case Ebibola & Omideyi (1988) reported that children, especially males, are cherished as a means of perpetuating the family name; the institution of polygyny which Makinwa-Adebusoye and Ebibola (1992), and Feyisetan and Bamiwuye (1998) reported as promoting competition for childbearing among co-wives; recourse to traditional contraceptive methods such as postpartum abstinence and withdrawal (Feyisetan & Bamiwuye, 1998); and poor and inconsistent use of modern contraceptives (Bankole, 1995).

Other studies have also documented associations between women's decision-making autonomy and the number of children ever born (Michelle J. Hindin, 2000; Odimegwu & Adedini, 2014). Lutz et.al (2007) and Jejeebhoy (1995) identified education as raising the opportunity cost of childbearing and affecting preferences for timing and outcomes. Infant mortality and the existing number of children have also been reported as a determinant of fertility in sub-Saharan Africa. According to Pearce (2001), where childhood mortality is high, the next child or two children may be considered inadequate.

Bongaarts (1990) classified the various fertility determinants into direct and indirect factors. The direct determinants are also known as proximate determinants. The indirect determinants are socioeconomic characteristics that influence fertility through changes in proximate (direct) determinants. In Caldwell's (2001) study of fertility determinants, he proposed three propositions for attainment of fertility decline: conscious choice, decline in fertility being viewed as advantageous, and availability of effective methods for fertility reduction.

Moreover, recent evidences have further established the effects of various direct and indirect determinants of fertility on fertility levels and behaviours (Bongaarts, 2009; Keizer, 2010; Odimegwu & Adedini, 2014). Johnson et al (2011) noted that there has been a mixture of both a downward trajectory and a stall in fertility levels in SSA. The authors argue that there have been changes in the proximate and non-proximate determinants of fertility levels in the region. Thus, this gives credence to the need to examine new possible determinants of fertility change in the region. Hence, this study aims to investigate the potential influence of gender-based violence as a new proximate determinant of fertility change in sub-Saharan Africa.

Although literature has documented the growing recognition of the high prevalence and concern for consequences of domestic violence in sub-Saharan Africa (Krug, Dalhberg, Mercy, Zwi, & Lozano, 2002; McCloskey, Williams, & Larsen, 2005; Measure DHS, 2005; Oyediran & Isiugo-Abanihe, 2005), limited research has been done in developing countries to explain the effects of domestic violence on fertility. Evidence has shown that domestic violence may limit the ability of women to fulfil their reproductive intentions

because of the restrictive effect on women's access to modern contraceptives (Stephenson, Koenig, Acharya, & Roy, 2008). Studies have shown that women's experience of domestic violence has the potential to constrain one of the direct determinants of fertility. For instance, women's choice of contraceptive use can be constrained through limiting contraceptive choices, restricting access to health services and reducing a woman's ability to negotiate sex. Women's experience of violence or the threat of violence has been established as a factor limiting women's ability to control when and whether to have sexual relations (Cripe et al., 2008; Okemgbo., Omideyi., & Odimegwu., 2002). Where having many children is a sign of male virility, a wife's desire to use family planning may be interpreted as an affront to her husband's masculinity (Odimegwu, Pallikadavath, & Adedini, 2013). Women who are afraid to raise the issue of contraception for fear that their partners might respond violently, tend to use no contraception or to rely on methods that can be concealed from their partner (Gazmararian, Petersen, Spitz, Goodwin, & Marks, 2000; Miller et al., 2010). To this end, we hypothesize that women's experience of domestic violence is significantly associated with higher levels of fertility.

2. Literature Review

The Council of Europe defines violence against women as 'all acts of gender-based violence that result in, or are likely to result in, physical, sexual, psychological or economic harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or in private life' (CAHVIO, 2011). The World Health Organization (2005) defines domestic violence as "the range of sexually, psychologically and physically coercive acts used against adult and adolescent women by current or former male intimate partners".

Notwithstanding the studies that have documented the growing recognition of high prevalence and concern for consequences of domestic violence in sub-Saharan Africa, research is scant when it comes down to explaining the association between domestic violence and fertility. Literature research also showed that studies on the relationship between domestic violence and fertility are scarce in developed nations. As noted earlier, the few available studies show that domestic violence may limit women's reproductive

choices due to restricted access to modern contraceptives (Krug et al., 2002; Stephenson et al., 2008). Evidence abounds that there is a high prevalence of gender-based violence (GBV) globally and particularly in sub-Saharan Africa. Hindin et al. (2008) found a wide variation across countries in the prevalence of physical or sexual violence experienced by women and perpetrated by their current husband/partner – from 75% in Bangladesh to 16% in the Dominican Republic. The highest reported rates of physical violence were in Bangladesh (71%), Bolivia (52%), and Zambia (45%). The lowest reported rates were in Haiti (12%) and the Dominican Republic (15%). The highest rates of sexual violence were reported in Bangladesh (26%), Kenya (15%), and Bolivia (14%), whereas the lowest rates were reported in Moldova (3%), the Dominican Republic (5%), and Zambia (6%).

In the three countries studied in this paper, the prevalence of gender-based violence varies considerably, with Zambia and Gabon having the highest reported level of GBV compared to Nigeria. For instance, in Gabon, more than half of the women of reproductive age (52%) reported to have experienced physical violence since age 15, while 21% reported experiences of sexual violence (Direction Générale de la Statistique & ICF International, 2013). Among the victims of GBV, about 60% never sought help. According to the 2013 NDHS report (NPC and ICF Macro, 2014), 28% of women of reproductive age had experienced physical violence since age 15, and 7% had experienced sexual violence at least once. In addition, about 45% of women who reported experience of violence neither sought any help nor informed anyone about their experience. In Zambia, about half of the women aged 15–49 (47%) had experienced physical violence since age 15, 22% of those aged 25–39 had experienced sexual violence, and the majority of these victims of violence never informed anyone about their experience (Central Statistical Office et al., 2009). In all three of these countries, and based on the alarming statistics on women's experience of violence, little progress has been achieved in addressing the menace, despite the grave consequences that GBV has on health outcomes (Adedini et al., 2014).

Studies have also documented a strong association between domestic violence and serious, adverse health outcomes affecting women and their children (Krug et al., 2002; Stephenson, M.A. Koenig, & Ahmed, 2006). This shows that women are not the only victims of ill health and related repercussions associated with domestic violence. According to Kishor and Johnson (2006), women who suffer violence in pregnancy are likely to give birth to children with poor health outcomes and are also more likely to have unwanted births. In addition, studies have associated high bride price with violence. According to Kaye (2006), in a community where bride price payment is awesomely high, there is a tendency for the male partner to initiate violence against the woman in order to gain total control, such that the woman becomes helpless and insecure even when decisions are to be made as regards sex, health and fertility issues.

Oyediran and Isiugo-Abanihe (2005) reported an interconnection between spousal age difference, intimate partner violence and fertility-related outcomes, and observed that the larger the spousal age difference, the more difficult it may be for the wives to express views contrary to their husbands', and where this happens, it engenders intimate partner violence. The inability of women to express themselves in so many marital issues, let alone taking decisions as regards fertility, opens them to the risk of unwanted and uncontrolled births.

There are several other reasons why fertility of women who had experienced violence may be higher than those who were never abused. For example, an abused woman is more likely to discontinue contraceptive use, or might be afraid of usage and thus use sexual intercourse as a strategy to guard against violence from her husband (Ajala & Isiugo-Abanihe, 2006). This is because the woman turning down the husband's sexual advances is one of the most reported causes of domestic violence (Odimegwu et al., 2013).

Although many studies have established various non-proximate determinants of fertility (such as socio-economic and demographic characteristics) and proximate determinants of fertility (such as the proportion of married women among the total number of women, contraceptive use, prevalence of induced abortion, postpartum infecundability, and sterility (Bongaarts, 1990; Stover,

1998), recent evidence suggests a change in proximate and non-proximate determinants of fertility levels in sub-Saharan Africa (Johnson et al., 2011). As noted earlier, this gives credence to the need to investigate and identify new possible determinants of fertility change in the region. Meanwhile, evidence has indicated worse reproductive health indicators for women experiencing gender-based violence compared to those who had no experience of violence (Miller et al., 2010). Also, having many children may be a good strategy for women to guide against domestic violence, particularly in strong patriarchal societies (Morgan. & Niraula., 1995). Hence, it is hypothesized that women's experience of domestic violence is significantly associated with higher levels of fertility. This hypothesis is based on the premise that women who experience violence are less likely to use modern contraceptives. To this end, this study aims to contribute to the literature by examining the influence of gender-based violence as a new proximate determinant of fertility change in sub-Saharan Africa.

3. Data and Method

We used data from recent nationally representative Demographic and Health Surveys of three countries in sub-Saharan Africa – 2012 Gabon DHS, 2008 Nigeria DHS and 2007 Zambia DHS. The three countries were selected on the basis of geographical differences and availability of comparable data in the domestic violence module in each country's survey. Gabon represents Middle Africa; Zambia represents Southern Africa, while Nigeria represents Western Africa. As part of the inclusion criteria, each of the countries has a total fertility rate of at least 4,0 in the most recent survey. Secondly, the wanted total fertility rate (WTFR) for each country is less than the actual TFR. One of the countries has experienced a decline in the TFR between the last two DHS surveys, one has a constant TFR, and one has experienced an increase in the TFR in between the last two surveys. None of the countries from East Africa fulfilled all our inclusion criteria. Each of the surveys collected nationally representative data on domestic violence on 'ever married' women in the reproductive age group 15–49.

3.1 Sampling design and sample size

The DHS is designed to allow reliable estimation of most variables for a variety of health and demographic analyses at the various domains of interest. This study is a cross-sectional and population-based study using data from MEASURE DHS for the three selected countries. Details of the sampling design can be found in the final report of the DHS of each country. DHS interviews only one eligible woman in each household, thus a weighted sample of 2 940 currently married women in Gabon, 15 852 in Nigeria and 3 253 in Zambia constitute our samples. Specially constructed weights for each country, based on the domestic violence variables, were used to ensure that the domestic violence subsample was nationally representative (MEASURE DHS, 2008).

3.2 Explanatory variable

Our explanatory variable is ever-experience of domestic violence from spouse/partner.

The DHS captured ever-experience of domestic violence in different dimensions, using the domestic violence module and a significantly shortened and modified Conflict Tactics Scale (CTS) (Straus, 1990).

Specifically, there is evidence of physical spousal violence if there is a “yes” answer to any of the following seven questions:

Does (did) your (last) husband/partner ever do any of the following things to you?

- a) *Push you, shake you, or throw something at you?*
- b) *Slap you?*
- c) *Twist your arm or pull your hair?*
- d) *Punch you with his fist or with something that could hurt you?*
- e) *Kick you, drag you, or beat you up?*
- f) *Try to choke you or burn you on purpose?*
- g) *Threaten or attack you with a knife, gun, or any other weapon?*

A woman is said to have experienced sexual violence if she answers “yes” to any of the following two questions:

Does (did) your (last) husband/partner ever do any of the following things to you:

- a) physically force you to have sexual intercourse with him even when you did not want to?*
- b) force you to perform any sexual acts you did not want to?*

There is evidence of emotional violence if there is at least a “yes” answer to any of the following three questions:

Does (did) your (last) husband/partner ever do any of the following things to you?

- a) say or do something to humiliate you in front of others?*
- b) threaten to hurt or harm you or someone close to you?*
- c) insult you or make you feel bad about yourself?*

Slapping, arm twisting, throwing things, pushing, and shoving were considered moderately severe physical violence, while hitting with a fist or something else, kicking, dragging or beating, choking or burning on purpose, and threatening to use or actually using a weapon (such as a gun, knife, or other object) were considered as severe physical violence.

Thus, ‘ever-experience of domestic violence’ is measured in the following dimensions:

- i) Ever-experience of any act of physical violence
- ii) Ever-experience of any act of sexual violence
- iii) Ever-experience of any act of emotional violence
- iv) Ever-experience of severe physical violence
- v) Ever-experience of moderately severe physical violence
- vi) Ever-experience of any act of physical, sexual or emotional violence

3.3 Outcome variable

Data on fertility-related indicators were collected in the DHS in several ways. The outcome variable for this study is the number of children ever born (CEB). To capture this variable in the DHS, each woman was asked a series of questions on the number of sons and daughters currently living with her, the number living elsewhere, and the number who were born alive and later died. Given that the CEB is a count variable, Poisson regression analysis was employed to model the relationship between CEB (a count outcome measure) and the selected independent variables.

3.4 Control variables

Five variables were used as control variables in the multivariate analyses. These are variables that have been found common to analysis of fertility outcomes (Kishor and Johnson, 2006): age of the respondent, highest education (no formal education, primary, and secondary or more); age at marriage; household characteristics – residence (rural or urban) and household wealth status. For the wealth status, the DHS Wealth Quintile Index was collapsed into three, with the first two quintiles (poorest and poorer) representing the “poor”, the third quintile representing the “middle”, and the last two quintiles (richer and richest) representing the “rich”.

3.5 Data analysis

We analysed data for the three countries separately, taking into account the complex survey design of the DHS by incorporating domestic violence sampling weights which adjust for the probability of selection into the domestic violence module and for nonresponse. The analysis also adjusted the standard errors for the multistage clustered sample design, using Stata’s ‘SVY’ suite of commands (Stata Corporation, 2011).

Both descriptive and multivariate analytical methods were used with appropriate tests of statistical significance. Firstly, we generated a Table of total fertility rates (TFR), the mean total children ever born (CEB), and wanted total fertility rates (WTFR) in the last two DHSs, using MEASURE DHS STATcompiler (ICF International, 2012). We also examined the percentage distribution of currently married women, age 15–49, by background/household characteristics and experience of different forms of violence. To compare fertility of women who have experienced violence with that of women who have not, we presented mean number of children ever born according to experience of violence for the three countries and used an independent t-test procedure to show whether any observed difference is statistically significant at 5% level.

Finally, we obtained three models of Poisson regression analysis; firstly to obtain the relationship between selected background variables and total children ever born (Model 1). In doing this, we created dummies for our categorical variables in order not to violate the assumption of linearity in our regression model for the age variable, which is numeric; we also included in our regression model the square of age. In Model 2, we presented the unadjusted effect of experience of any form of violence on number of children ever born, and the unadjusted effect of any act of physical violence on fertility, while Model 3 shows the simultaneous effects of the background/household variables and the experience of any form of violence on fertility, measured by total number of children ever born. This is our adjusted effect of any form of violence on number of births. The Poisson regression method is preferred to the multiple linear regression method because our outcome variable is a count data and not continuous.

Thus, a random variable Y can be said to have a Poisson distribution with parameter μ if it takes non-negative integer values $y=0,1,2,3,\dots$, with probability:

$$\Pr[Y=y] = \frac{e^{-\mu} \mu^y}{y!} \dots\dots\dots (1)$$

for $\mu > 0$. The mean and variance of the distribution can be shown to be

$$E(Y) = \text{var}(Y) = \mu \dots\dots\dots (2)$$

Where $E(Y)$ (mean), and $\text{var}(Y)$ (variance) of the Poisson distribution are assumed to be equal.

4. Results

Table 1 presents some measures of fertility, specifically the total fertility rate (TFR), the mean number of children ever born, and the wanted total fertility rate for the last DHSs conducted in Gabon, Nigeria and Ghana. Gabon witnessed a decline in the TFR between 2000 and 2012; Nigeria's TFR remained constant at 5,7 between 2003 and 2008 with a slight decrease in mean children ever born, while the fertility rate increased in Zambia in the last two surveys, from a TFR of 5,9 to a TFR of 6,2. The wanted fertility rate measures the potential demographic impact of avoiding unwanted births. A birth is considered wanted if the number of living children at the time of conception was smaller than the ideal number of children reported by the respondent. The wanted total fertility rate (WTFR) for all countries is lower than the TFR in all the surveys, indicating the extent to which women are able to achieve their reproductive intention. It will be interesting to find out the relationship between women's experience of violence and fertility behaviour in different geographical areas and different fertility settings of declining, constant and increasing TFRs.

Table 1: Total fertility rate, mean number of children ever born and wanted total fertility rate in the two recent DHS surveys in Gabon, Nigeria and Zambia

Country/ Measures	Total fertility rate and proportion of women pregnant			Mean number of children ever born to women aged 40-49			Wanted fertility rate		
	Fertility rate: Total fertility rate			Fertility rate: Mean children ever born (40-49)			Wanted fertility rate: Wanted total fertility rate		
	Total	Residence		Total	Residence		Total	Residence	
	Urban	Rural		Urban	Rural		Urban	Rural	
Gabon									
2000 DHS	4,2	3,8	6,0	6,0	5,9	6,2	3,0	2,7	4,1
2012 DHS	4,1	3,9	6,1	5,0	4,8	5,8	3,2	3,0	4,6
Nigeria									
2003 DHS	5,7	4,9	6,1	6,8	6,2	7,1	5,3	4,6	5,7
2008 DHS	5,7	4,7	6,3	6,5	5,7	6,9	5,3	4,4	5,8
Zambia									
2001-02 DHS	5,9	4,3	6,9	7,1	6,8	7,3	4,9	3,4	5,8
2007 DHS	6,2	4,3	7,5	6,5	6,0	6,8	5,2	3,6	6,3

Source: Computed using the MEASURE DHS Statcompiler

Table 2 presents information on the background characteristics of the currently married women who answered questions from the DHS domestic violence module. The background characteristics include respondent current age, education, age at marriage, wealth status and current work status as at the time of the most recent DHS in the three countries. Information on household characteristics of respondents shows that Zambia and Nigeria have nearly the same characteristics in terms of the proportion of women in rural and urban areas. In Gabon, the bulk of the women were from urban areas (89,6%) as compared with those from rural areas (13,1%).

Data on the extent of experience of violence as reported by currently married women show that, as far as the experience of physical, sexual or emotional violence (any of the three forms) is concerned, Gabon has the highest prevalence (53,6%) compared with 51,8 % of currently married women from Zambia, while Nigeria has the least prevalence of any of the three forms of violence (29,8%). Physical violence is the most prevalent of all three forms of violence in all the countries, from 16,6% in Nigeria to 44,4% in Gabon and 44,6% in Zambia. The results also show the proportion of currently married women who experienced sexual violence as being 3,7% in Nigeria, with nearly the same percentages being recorded in Gabon (14,7%) and Zambia (15,1%). Experience of emotional violence is more prevalent in Gabon (32,8%), but nearly the same in Zambia (23,1%) and Nigeria (22,9%). In terms of severity of violence, experience of less severe violence is more than three times higher in Zambia and Gabon than in Nigeria. Similarly, the proportion of women who experienced severe violence is higher in Gabon (15,2%) and Zambia (12,1%) than in Nigeria (6,1%).

Table 2: Percentage distribution of currently married women by experience of different forms of violence, background and household characteristics

Variables	GABON N (%)	NIGERIA N (%)	ZAMBIA N (%)
Types of spousal violence			
Any physical	1 307 (44,4)	2 627 (16,6)	1 450 (44,6)
Any sexual	430 (14,7)	589 (3,7)	489 (15,1)
Any emotional	965 (32,8)	3 632 (22,9)	750 (23,1)
Any of the three forms	1 577 (53,6)	4 721 (29,8)	1 685 (51,8)
Severity of physical violence			
Any severe physical	443(15,2)	962 (6,1)	394 (12,1)
Less severe physical	1 294(44,3)	2 557 (16,2)	1 435 (44,2)
Household characteristics			
Residence			
Urban	2 555 (86,9)	4 957 (31,3)	1 130 (34,7)
Rural	385 (13,1)	10 895 (68,7)	2 123 (65,3)
Background variables			
Current age			
15–24	585 (19,9)	3 817 (24,1)	878 (27,0)
25–34	1 237(42,1)	6 331 (39,9)	1 380 (42,4)
35+	1 119(38,0)	5 704 (36,0)	994 (30,6)
Education			
No education	209 (7,1)	7 530 (47,5)	427 (13,2)
Primary	730 (24,8)	3 461 (21,8)	1 962 (60,3)
Secondary +	2 002(68,1)	4 862 (30,7)	862 (26,5)
Age at marriage			
<18	937 (31,9)	9 047 (57,1)	1 759 (54,1)
18–24	1 392(47,3)	5 112 (32,2)	1 364 (41,9)
25+	611 (20,8)	1693 (10,7)	129 (4,0)
Wealth quintile			
Poor	1 052(35,8)	7 105 (44,8)	1 328 (40,8)
Middle	648 (22,0)	2 874 (18,1)	646 (19,9)
Rich	1 241(42,2)	5 873 (37,1)	1 279 (39,3)
Currently working			
No	1 368 (46,5)	5 298 (33,4)	1 583 (48,7)
Yes	1 572 (53,5)	10 554 (66,6)	1 669 (51,3)

Table 3 shows the weighted and unweighted mean number of children ever born (CEB) for Gabon, Nigeria and Zambia by women who experienced domestic violence, by using the most current DHS results in the three countries. The t-statistic was fitted to the unweighted sample means to whether the mean number of children ever born differs significantly by experience of various forms of violence. This is to enable us to answer our research question, namely whether women who experience violence are significantly more likely to have more children than those who do not. The mean CEB (whether weighted or unweighted) differs significantly by experience of any act of physical violence in all countries surveyed. Women who experience any act of physical violence tend to have higher fertility than their counterparts with no experience of violence. The result is consistent for experience of sexual, emotional or any of the three forms of violence, except that the mean difference is not statistically significant for sexual violence in Zambia.

Data on the relationship between the extent of the severity of the violence and fertility show that currently married women who experience either severe violence or less severe violence have a significantly higher mean CEB than their counterparts who have no violence experience in Gabon and Nigeria, but not in Zambia.

Table 3: Mean differences in mean number of children ever born by experience of different forms of violence

Mean number of CEB by experience of:	GABON		NIGERIA		ZAMBIA	
	Weighted mean (N)	Unweighted mean (N)	Weighted mean (N)	Unweighted mean (N)	Weighted mean (N)	Unweighted mean (N)
Physical violence	3,32 (1 307)	3,82 (1 645)	4,26 (2 627)	4,14 (3 098)	4,15 (1 450)	3,97 (1 597)
No physical violence	2,96 (1 634)	3,45 (1 918)	3,94 (13 226)	3,82 (15 304)	3,93 (1 803)	3,77 (2 019)
t-statistic		4,27		5,73		2,22
p-value		<0,01		<0,01		<0,05
Sexual violence	3,49 (430)	4,07 (500)	4,33 (589)	4,21 (710)	3,91 (489)	3,87 (545)
No sexual violence	3,07 (2 492)	3,55 (3 046)	3,98 (15 178)	3,87 (17 599)	4,05 (2 758)	3,86 (3 067)
t-statistic		4,12		3,1		0,02
p-value		<0,01		<0,01		ns
Emotional violence	3,44 (965)	3,95 (1 202)	4,45 (3 631)	4,32 (4 007)	4,15 (750)	4,02 (822)
No emotional violence	2,98 (1 959)	3,46 (2 351)	3,86 (12 161)	3,76 (14 329)	4,00 (2 498)	3,81 (2 790)
t-statistic		5,29		11,09		2,05
p-value		<0,01		<0,01		<0,05
Any form of violence	3,23 (1 577)	3,79 (1 950)	4,35 (4 721)	4,23 (5 292)	4,15 (1 685)	3,94 (1 851)
No form of violence	2,98 (1 363)	3,42 (1 613)	3,84 (11 131)	3,74 (13 110)	3,90 (1 568)	3,77 (1 765)
t-statistic		4,3		10,6		2,06
p-value		<0,01		<0,01		<0,05

Table 3: Mean differences in mean number of children ever born by experience of different forms of violence (concluded)

Mean number of CEB by experience of:	GABON		NIGERIA		ZAMBIA	
	Weighted mean (N)	Unweighted mean (N)	Weighted mean (N)	Unweighted mean (N)	Weighted mean (N)	Unweighted mean (N)
Severity of violence						
Severe violence	3,65 (443)	4,23 (544)	4,33 (962)	4,18 (1 095)	4,04 (394)	3,98 (435)
No severe violence	3,03 (2 477)	3,52 (3 003)	3,97 (14 807)	3,86 (17 212)	4,03 (2 852)	3,84 (3 175)
t –statistic		5,95		3,55		1,05
p-value		<0,01		<0,01		ns
Less severe violence	3,31 (1 294)	3,83 (1 631)	4,26 (2557)	4,14 (3 015)	4,15 (1 435)	3,97 (1 581)
No less severe violence	2,98 (1 626)	3,46 (1 916)	3,94 (13 224)	3,83 (15 310)	3,94 (1 814)	3,78 (2 032)
t –statistic		4,17		5,53		2,25
p-value		<0,01		<0,01		<0,05

ns = not significant; t-statistic based on the unweighted sample

4.1 Multivariate analysis

The multivariate analysis presented in Table 4, Table 5 and Table 6 shows three models of Poisson regression analysis to show the relationship between women who experience violence, and fertility, measured in terms of the total number of children ever born. The first model presents the relationship between selected background characteristics that have been found as correlates of fertility in existing literature. Such characteristics include women's age, age at marriage, and education. Household characteristics include household wealth status and residence. In Model 2 and Model 3, we presented the unadjusted and adjusted regression coefficients and 95% confidence intervals of the effect of violence on fertility. For the adjusted effect, all variables in Model 1 fitted into the regression equation of the relationship between experience of any form of violence and fertility.

The results in Model 1 show a nearly consistent pattern of the relationship between the background/household characteristics and total number of children ever born in terms of direction and significance of the relationship. As expected in all three countries, age at marriage is inversely related to number of children ever born, indicating the lower the age at marriage, the higher the number of children ever born. A similar relationship exists for all countries between wealth status and fertility. The number of children decreases as the level of education rises in all countries.

In Model 2, an attempt is made to relate women's experience of any form of violence to the total CEB; and women's experience of any act of physical violence to total CEB. The unadjusted regression coefficient of the relationship between any form of violence and fertility is statistically significant in two of the three countries (Nigeria and Zambia). For the relationship between any act of physical violence and total children ever born, the unadjusted regression coefficient is significant for Gabon and Nigeria, but not Zambia.

The results of the Poisson regression analysis in Model 3 show the adjusted regression coefficient of the relationship between any form of violence (physical or sexual or emotional) and the total number of children ever born for all three countries. This model was adjusted by age, age square, education, wealth status, residence and age at marriage, but only the result of any form of violence is shown in the Model. Overall, the joint effect of experience of any form of violence and the background/household variables on total children ever born is significant in all three countries surveyed. When adjusted by background/household variables, the regression coefficient for any form of violence is statistically significant in two of the three countries (Nigeria and Zambia).

Table 4: Poisson regression models of relationship between background/household characteristics and total number of children ever born (Model 1)

GABON					
CEB (outcome)	COEFF	t- statistic	95% CI		P
Age	0,2159	12,45	0,1818	0,2500	<0,001
Age squared	-0,0023	-8,85	-0,0028	-0,0018	<0,001
Primary education	0,0847	1,35	-0,0385	0,2079	ns
Secondary education or more	-0,0348	-0,59	-0,1514	0,0818	ns
Middle wealth index	-0,1049	-2,21	-0,1982	-0,0116	<0,05
Upper wealth index	-0,3192	-7,67	-0,4011	-0,2373	<0,001
Rural	0,0594	1,85	-0,0038	0,1227	ns
Married between 18–24	-0,1603	-4,78	-0,2263	-0,0943	<0,001
Married at age 25 or higher	-0,3862	-9,55	-0,4658	-0,3066	<0,001
Constant	-3,0709	-10,87	-3,626	-2,5152	<0,001
N = 3 563 Pop size: 2 940 Design df = 315 F (9,307) = 172,5 p<0,001 ns = not significant					
NIGERIA					
CEB (outcome)	COEFF	t- statistic	95% CI		P
Age	0,2556	58,82	0,2472	0,2640	<0,001
Age squared	-0,0029	-4633	-0,0030	-0,0028	<0,001
Primary education or less	0,0010	0,09	-0,0220	0,2040	ns
Secondary education or more	-0,1723	-11,71	-0,2012	0,1434	<0,001
Middle wealth index	0,0072	0,51	-0,0203	0,0346	ns
Upper wealth index	-07050	-4,53	-0,1076	-0,0425	<0,001
Rural	0,0189	1,34	-0,0087	0,0465	ns
Married between 18–24	-0,2890	-27,36	-0,3098	-0,2683	<0,001
Married at age 25 or higher	0,6976	-30,80	-0,7420	-0,6531	<0,001
Constant	-3,4606	-49,94	-3,5966	-3,3246	<0,001
Number: 18 402 Pop size: 15 852 Design df = 874 F (9,866); 1634,40 p<0,001 ns = not significant					

Table 4: Poisson regression models of relationship between background/household characteristics and total number of children ever born (Model 1) (concluded)

ZAMBIA					
CEB (outcome)	COEFF	t- statistic	95% CI		P
Age	0,2319	23,19	0,2122	0,2516	<0,001
Age squared	-0,0026	-17,01	-0,0029	-0,0023	<0,001
Primary education	0,0086	0,41	-0,0333	0,0506	ns
Secondary education or more	-0,1015	-3,45	-0,1594	-0,0435	<0,01
Middle wealth index	0,0372	-1,60	-0,0829	0,0085	ns
Upper wealth index	0,1434	-4,61	-0,2046	-0,0822	<0,001
Rural	0,0234	0,69	-0,0433	0,0900	ns
Married between 18–24	-0,2324	-12,71	-0,2685	-0,1965	<0,001
Married at age 25 or higher	-0,6782	-10,61	-0,8040	-0,5524	<0,001
Constant	-3,0735	-18,43	-3,4016	-2,7453	<0,001
Number: 3 616 Pop size: 3 252 Design df = 301 F (9,293); p<0,001 ns = not significant					

Table 5: Model 2: Unadjusted regression coefficients from Poisson regression analysis of relationship between ever having experienced any form of violence, ever having experienced physical violence, and total number of children ever born (Model 2)

GABON					
VARIABLE	COEFF	t-statistic	95% CI		P
Any form of violence	0,0807	1,77	-0,0091	0,1705	ns
Constant	1,0931	29,69	1,0207	1,1655	<0,001
Number: 3 563 Pop Size : 2 940 Design df = 315 F (1,315) = 3,12 ns = not significant					
All physical violence	0,1148	2,53	0,0256	0,2040	<0,05
Constant	1,0845	31,95	1,0178	1,0178	<0,001
Number: 3 563 Pop Size : 2 940 Design df = 315 F (1,315) = 6,41, p<0,05					
NIGERIA					
VARIABLE	COEFF	t-statistic	95% CI		P
Any form of violence	0,1257	8,61	0,0971	0,1544	<0,001
Constant	1,3454	142,34	1,3269	1,3640	<0,001
Number: 18 402 Pop Size : 15 852 Design df = 874 F (1,874) = 74,06 p<0,001					
All physical violence	0,0782	4,74	0,0458	0,1106	<0,001
Constant	1,3711	151,24	1,3534	1,3890	<0,001
Number: 18 402 Pop Size : 15 852 Design df = 874 F(1,874) = 22,49 p<0,01					
ZAMBIA					
VARIABLE	COEFF	t-statistic	95% CI		P
Any form of violence	0,0602	2,17	0,0056	0,1148	<0,05
Constant	1,3619	60,46	1,3175	1,4062	<0,001
Number: 3 616 Pop Size :3 252 Design df = 301 F (1,301) = 4,70 p<0,05					
All physical violence	0,0533	1,91	-0,0017	0,1083	ns
Constant	1,3694	66,15	1,3286	1,4101	<0,001
Number: 3 616 Pop Size :3 252 Design df = 301 F (1,301) = 3,63; ns = not significant					

Table 6: Adjusted regression coefficients from Poisson regression analysis of relationship between ever having experienced any form of violence and total number of children ever born (Model 3)

GABON					
VARIABLE	COEFF	t-statistic	95% CI		P
Any form of violence	0,0449	1,32	-0,2219	0,1121	ns
Constant	-3,0935	-10,95	-3,6495	-2,5375	<0,001
Number: 3 563 Pop Size: 2 940 Design df = 315 F (10,306) = 155,05					
p<0,001 ns = not significant					
Model adjusted for background variables in Model 1; variables not listed here					
NIGERIA					
VARIABLE	COEFF	t-statistic	95% CI		P
Any form of violence	0,0825	9,21	0,0649	0,1001	<0,001
Constant	-3,4731	-50,54	-3,6080	-3,3382	<0,001
Number: 18 402 Pop Size :15 852 Design df = 874 F (10,865) = 1 518,67					
p<0,001					
Model adjusted for background variables in Model 1; variables not listed here					
ZAMBIA					
VARIABLE	COEFF	t-statistic	95% CI		P
Any form of violence	0,0472	2,81	0,0141	0,0802	<0,01
Constant	-3,0832	-18,47	-3,4118	-1,7547	<0,001
Number: 3 616 Pop Size :3 252 Design df = 301 F (10,292) = 446,87					
p<0,001					
Model adjusted for background variables in Model 1; variables not listed here.					

5. Discussion and Policy Implications

Several studies have examined correlates of fertility and fertility behaviour in sub-Saharan Africa. Despite promoting such programmes as family planning, gender equality, women empowerment and other programmes aimed at achieving considerable fertility reduction, fertility remains high in the region. We posit therefore that there are factors still sustaining high fertility regime in the region. Previous studies have indicated worse reproductive health outcomes for women experiencing domestic violence than those not experiencing it (Miller et al., 2010; WHO, 2005). Hence, this paper examined the potential effects of women's experience of domestic violence on the fertility behaviour of currently

married women in three sub-Saharan African countries, drawn on the basis of geographical differences and availability of nationally representative and comparable data on domestic violence. We hypothesized that women who have ever experienced domestic violence are likely to have higher fertility measured in terms of mean number of children ever born than those who have not. This hypothesis was based on the premise that women who experienced violence are less likely to use modern contraceptive as found by Kishor and Johnson (2004) for fear of actual or threatened violence and fear of repercussion if contraception is used or if a condom is requested. Besides, such women are less likely to have access to maternal health care services for fear of suffering another abuse from their spouse (Adedini, Somefun, & Odimegwu, 2014); thus, they have little or no control over their reproductive intention and are less likely to decide when to have sex or when not to have sex, as refusal may warrant violence (Wall, 1998).

Findings of this study support our hypothesis in all three selected countries that women who have experienced domestic violence are more likely to have more children than those who have not. Such findings were earlier reported elsewhere outside SSA by Kishor and Johnson (2004) in a multi-country study – Cambodia, Colombia, the Dominican Republic, Egypt, India, Nicaragua, and Peru, where data show that, in seven of the nine countries surveyed, fertility is found to be unequivocally higher among women who have experienced violence than among those who have not. Findings from Ruiz-Perez et al. (2006) and McCloskey et al. (2005) have also linked having three or more children to intimate partner violence, with the explanation that women with a large number of children may be in relationships where negotiation about sex and birth control are difficult and impracticable.

At the multivariate level of analysis, even with the inclusion of selected background/household factors, experience of any form of violence (physical or sexual or emotional) was found to be significantly related to the number of births in two of the three countries surveyed.

Findings of this study suggest that women's experience of violence is not only important for their health and their children's health, as found in the literature (Asling-Monemi, Pena, Ellsberg, &

Persson, 2003; Campbell, 2002; Jejeebhoy, 1998; Kishor & Johnson, 2004), in addition, women's experience of violence is important for their childbearing experiences. Previous studies show that women's experience of gender-based violence has serious public health consequences, including injury, vaginal discharge, emotional trauma, high maternal mortality (WHO, 2005); infant and child mortality – due to domestic restriction imposed on women and the need to obtain permission from spouses before seeking medical help (Adedini, Odimegwu, Bamiwuye, Fadeyibi, & Wet, 2014); unwanted pregnancy (WHO, 2005); poor health-seeking behaviour (Adedini, Odimegwu, et al., 2014); and high predisposition to the risk of HIV infection (Odimegwu et al., 2013). The present analysis thus adds to the existing literature by establishing that women's experience of violence does not only have implications for their health and that of their children, but also for their childbearing experiences. Results from this study established a significant relationship between gender-based violence and a high level of fertility. As pointed out earlier, previous findings indicate a mixture of a downward interjectory and a stall in fertility levels in sub-Saharan Africa, due to possible changes in the proximate and non-proximate determinants of fertility (Johnson et al., 2011). Findings of our study thus confirm gender-based violence as a new proximate determinant of fertility through its influence on such determinants of fertility as contraceptive use, and as established by previous studies that gender-based violence limits contraceptive use (Gage, 1995; Stephenson et al., 2008).

Despite the increased attention currently being given to the phenomenon of GBV globally, the scourge is still largely unaddressed in many African countries, including the three countries studied in this paper. This is particularly because of the predominance of the patriarchy system across various societies on the continent (UNECA, 2010). Violence against women is culturally accepted in many societies, and up until now, women have been largely perceived as being subordinate to men, and are treated as such. Although UNECA's (2010) report indicates there are Penal Codes in Gabon, Nigeria and Zambia that stipulate stringent penalties for perpetrators of violence against women, many cases of GBV are unreported, and consequently, perpetrators often go unpunished. Unfortunately, all efforts at addressing the scourge of violence against women have yielded little or no results.

6. Conclusion

Considering that early works by Bongaarts (1978) and Stover (1998) on proximate determinants of fertility utilised data from several countries, and that our analysis in this paper covered only three countries in Africa, we suggest the need for further studies on the influence of gender-based violence as a new proximate determinant of fertility. Depending on findings based on data from other countries, such efforts will perhaps enable researchers in the field of fertility to propose a new model that incorporates gender-based violence, thus building on the original framework proposed by Bongaarts.

Although this study is based on cross-sectional data, and as such cannot draw conclusions about the causal relationship between violence and fertility, the study's findings call for special attention to societal values on gender equality in programming for prevention of violence against women in sub-Saharan Africa. Policies and programmes targeted at regulating high fertility in the region must give adequate attention to societal norms on gender inequality which fuel violence against women in the region.

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Intimate Partner Violence and Contraceptive Behaviour: Evidence from Malawi and Zambia

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ABSTRACT

Intimate partner violence (IPV) is a form of violence perpetrated by men or women against their spouses or partners. It is a frequent form of gender violence globally and in sub-Saharan Africa. IPV has been associated with a range of negative health outcomes such as still birth, premature delivery, low birth weight, high risk of STI, low use of maternal health care and unintended pregnancies for women and their children. Other consequences include low self-esteem, strained relationships with health providers and employers, isolation from social networks and fear of intimacy. This paper seeks to determine the association between IPV and contraceptive behaviour among women in Malawi and Zambia. Data was sourced from nationally representative samples of 5 234 women in Malawi (2010) and 4 115 women in Zambia (2007) all aged 15–49. The binary and multinomial logistic regression modelling were applied to examine the unadjusted and adjusted influence of intimate partner violence on contraceptive use and method choice. Results showed that 43% and 38% of women in Malawi and Zambia, respectively, were using contraceptives while 22% of women in Malawi and 43% in Zambia reported experience of IPV. There was no statistically significant association between experience of IPV and

contraceptive use in the two countries. In terms of contraceptive choice, women who experienced IPV had a higher likelihood of choosing traditional methods relative to no methods in Malawi and lower likelihood of choosing traditional methods relative to no methods in Zambia.

Keywords:

Intimate Partner Violence, Contraceptive Use, Contraceptive Method Choice

1. Background

One of the most common forms of violence against women is that which is inflicted by husbands or other intimate male partners (Campbell 2002). Violence against women is a common occurrence globally (Abrahams et al 2014, Devries et al 2013), and gender-inequitable norms about violence against women are widely held (Babalola 2013). Intimate partner violence (IPV) is defined as any behaviour within an intimate relationship that causes physical, psychological or sexual harm to people in the relationship (WHO 2013). Examples include physical, sexual, emotional and controlling behaviours. Intimate partner violence is a global problem with over 38% of women worldwide having experienced it in one form or another and its prevalence is high in sub-Saharan Africa compared to the rest of the world (García-Moreno et al 2005, McCloskey et al 2005). Intimate partner violence is also noted to exist among different cultural, socio-economic and religious groups (Devries et al 2010, Oyediran and Isiyebi-Ayaniye 2005).

Intimate partner violence has been associated with a number of negative sexual and reproductive health consequences for women including inability to express their sexual preferences, unintended pregnancy, unsafe abortion, sexually transmitted infections including HIV, non-use and inconsistent use of contraceptives (Miller et al 2010, Williams et al 2008, Stephenson et al 2008, Stephenson et al 2006, Coker 2007, Diop-Sidibé et al 2006, Heise and Garcia-Moreno 2002). However, that IPV has negative consequences on contraceptive use is not conclusive as a number of studies have also documented higher likelihood of contraceptive use among women who experience IPV (Okenwa et al 2011, Alio et al 2009, García-Moreno et al 2005). Nonetheless, non-use and inconsistent use of contraceptives have been closely linked with unintended pregnancies and high fertility rates (Ross and Stover 2013, Bongaarts 2011, Phillips et al 1988).

Malawi and Zambia are two countries in Southern Africa with a high fertility of 5,7 and 6,2 children per woman, respectively (National Statistical Office and ICF Macro. 2011. Central Statistical Office et al 2009). A reasonable range of contraceptive methods are available in Malawi (including female sterilisation, the pill, IUD, injectables, implants and male condom) and accessible through government and

private health services, or commercial pharmacies (Palamuleni 2008). Also in Zambia, pills, male condoms injectables, implants and intra-uterine devices (IUDs) are available and free at public clinics and can also be obtained at private clinics and most pharmacies (Ashraf et al 2010). Yet, in Zambia, 41,7% of the pregnancies that occurred in the five years before the survey were reported as unintended; only two-fifths of married women were using any method of contraception (40,8%) and over a quarter of married women (26,6%) had unmet need for contraception (Central Statistical Office et al 2009). Similarly, in Malawi, 44,6% of the pregnancies in the five years before the survey were reported as unintended; 46,1% of married women were using any method of contraception and unmet need for contraception was 26,1% among married women (National Statistical Office and ICF Macro 2011). Further, about 41% and 52% of the women in Malawi and Zambia, respectively, have experienced intimate partner violence (National Statistical Office and ICF Macro. 2011. Central Statistical Office et al 2009). Thus, this study aims to investigate the association between intimate partner violence on the contraceptive behaviour of women in Malawi and Zambia. These are two countries in southern Africa with high unwanted pregnancy, high unmet need for contraception, high fertility (all associated with contraceptive behaviour) and high reported prevalence of intimate partner violence.

2. Data and Methods

The study used data from the 2010 Malawi and 2007 Zambia Demographic and Health Survey. In the surveys, a total of 23 020 women in Malawi and 7 146 women in Zambia were interviewed. Women who stated they have never had sex and women who stated they were infecund were excluded from the study. Further, women who did not respond to questions on IPV were excluded². The final analysis sample of this study consisted of 5 234 women aged 15–49 years in Malawi and 4 115 women in the same age range in Zambia.

² The women who did not respond to questions on IPV were compared with those who responded on their basic characteristics. The majority of the women who did not respond were aged 15–24, have secondary or higher levels of education and were from rich households. In addition, over 90% of these women were never married nor living with a partner, thus unlikely to be exposed to IPV. See Annexure 1 for details.

3. Variables

The analysis considered two sets of outcomes, namely: contraceptive use and method choice. Contraceptive use was categorised as “0” for women who were not using and “1” for women who were using. Method choice was categorised into no method, all modern methods (IUD, pills, injectables, condom, and sterilisation) and traditional methods (withdrawal, lactational amenorrhea method and rhythm) and coded as “1”, “2” and “0” respectively.

The main independent variable, IPV, captures two dimensions of violence: physical and sexual. Physical violence was assessed using seven questions (ever pushed, ever slapped, ever punched, ever kicked, ever strangled, ever twisted and ever attacked) and sexual violence was assessed using whether a woman had been forced to have sex or engaged in forced sexual acts. The questions were originally coded as “yes” or “no” with follow-up questions to determine the frequency of the acts, which were recorded as “sometimes”, “often” or “not at all”. In this study, women who answered “sometimes” and “often” to the survey questions were coded as “yes”. The women who answered “no” and “not at all” to the same questions were coded as “no”. The generated IPV variable was coded as “1” for women who responded yes to any of the physical or sexual violence questions and “0” for women who responded no to all the questions, implying that they did not experience any act of IPV.

The following explanatory variables were selected based on their association with contraceptive behaviour or with method choice as documented by other studies (Nonvignon and Novignon 2014, Mohammed et al 2014, Do and Kurimoto 2012, Elfstrom and Stephenson 2012): age, highest level of education, marital status, place of residence, occupation, household wealth, religion, accessibility to health facility, fertility intentions and exposure to family planning messages through the media. Religion is considered because various religious affiliations have different moral considerations of method choice. Place of residence captures the

rural-urban variation. The wealth index³ has five quintiles: the lowest quintile (poorest), 2nd quintile (poorer), 3rd quintile (middle), 4th quintile (wealthier) and the 5th quintile (wealthiest). In this study, 'poorest' and 'poorer' were coded as (1) 'poor', middle as (2) 'middle class' and 'wealthier' and 'wealthiest' as (3) 'rich'. Accessibility to a health facility was measured by generating a proxy variable using three DHS standard questions. The questions are: (i) getting money needed for treatment; (ii) distance to health care facility; and (iii) having to take transport. Responses to these questions were merged and categorised as: (1) 'big problem' and (2) 'not a big problem'. Also, a proxy variable was generated to measure exposure to family planning (FP) from the three DHS questions of: (i) heard FP on radio in the last month; (ii) heard FP on television in the last month; and (iii) read about FP in the newspapers in the last month. Responses to these questions were merged and categorised as (1) for women who responded no to all the questions, implying that they did not get FP message from the sources and (2) for women who heard FP message from any of the sources.

4. Analysis

Bivariate descriptive analysis was done to present the profile of the women in the study sample by their experience of IPV. Binomial logistic regression modelling was done to examine the unadjusted and adjusted association between IPV and contraceptive use.

The model is specified as follows:

$$\text{Logit}[P(y = 1)] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \dots \beta_k X_k$$

³ The wealth index is a composite measure of households' living standard that is based on ownership of selected assets (e.g. televisions, bicycles), materials used for housing construction, and types of water access and sanitation facilities. The index, which is generated using principal components analysis, places individual households on a continuous scale of relative wealth.

For method choice, multinomial logistic regression was fitted because the dependent variable has three categories (no method, modern methods, and traditional methods) where no methods (Model 1) and traditional methods (Model 2) were used as the reference category in two separate models. The interest in the model that used traditional method as the reference was to draw out the relative preferred method among users. The multinomial logistic regression is stated as follows:

$$\ln(P_2/P_1) = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + \dots + b_ix_i \dots\dots\dots(i)$$

$$\ln(P_3/P_1) = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + \dots + b_ix_i \dots\dots\dots(ii)$$

Where, P_2 = Probability of P_2 with respect to P_1 ; P_3 = Probability of P_3 with respect to P_1 ; P_1 = Reference category; b_0 = Intercept; $b_1, b_2, b_3 \dots b_i$ is the regression coefficient of $x_1, x_2, x_3 \dots x_i$ respectively. Stata 12 was used for this analysis and the weighting factor was applied in analysis.

5. Limitations

The study relied on self-reported responses of respondents for IPV and contraceptive use. Studies have suggested that experience of IPV may be underreported for social reasons and use of contraceptives may be exaggerated (Kouyoumdjian et al 2013, Dude 2011). Studies have also found that women may be exposed to violence as a result of using contraceptives (Kaye 2006, Wood and Jewkes 1997). Thus, the temporal sequence of IPV and contraceptive use may be difficult to establish and may not be the same for all women.

6. Results

Table 1 presents the profile of women in the analysis sample by their experience of intimate partner violence. Results show that 22% of women in Malawi and 43% in Zambia have experienced IPV, while only about 44% of the women in Malawi and 38% of women in Zambia were using contraceptives. Among the contraceptive users, 90% in Malawi and 82% of the women in Zambia were using modern method of contraceptives. The majority of the women who experienced IPV in both countries were aged 25–34 years, Christians, live in rural areas, married, had attained only primary level of education, or not exposed to family planning messages through mass media. Whereas most of the women that had experienced IPV in Malawi work in the agricultural sector, are from poor households, wanted no more children or had a big problem accessing health facilities; distribution of the analysis sample of women from Zambia showed that the majority were unemployed, from rich households, wanted to space childbearing or had no problem accessing health care facilities.

Table 1: Percentage distribution of women by experience of intimate partner violence in Malawi and Zambia

	Malawi (%)			Zambia (%)		
	Total (N=5,234)	No IPV N=4,062 (77,21%)	IPV N=1,172 (22,28%)	Total (N=4,115)	No IPV N=2,349 (57,08%)	IPV N=1,766 (42,92%)
Contraceptive Use						
No	56,17	56,60	54,69	62,09	62,49	61,55
Yes	43,83	43,40	45,31	37,91	37,51	38,45
Contraceptive Method Choice						
No Method	56,17	56,60	54,69	62,09	62,49	61,55
Modern Method	39,87	39,73	40,36	31,11	30,35	32,11
Traditional Method	3,95	3,67	4,95	6,80	7,15	6,34
Age						
15-24	28,54	27,84	30,97	27,31	26,91	27,86
25-34	42,78	42,20	44,80	45,18	42,40	48,87
35+	28,68	29,96	24,23	27,51	30,69	23,27
Religion						
Other Christian	66,89	66,57	68,00	79,49	80,84	77,69
Catholic	20,10	19,69	21,50	18,57	16,99	20,67
Muslim	13,01	13,74	10,49	1,94	2,17	1,64
Place of Residence						
Urban	11,96	12,04	11,69	35,94	32,69	40,26
Rural	88,04	87,96	88,31	64,06	67,31	59,74
Marital Status						
Currently Married	85,29	86,24	82,00	86,44	87,27	85,33
Formerly Married	14,71	13,76	18,00	13,56	12,73	14,67
No. of Living Children						
0-2	41,88	41,41	43,52	41,19	41,51	40,77
3-4	33,93	33,41	35,75	33,00	30,82	35,90
5+	24,19	25,18	20,73	25,81	27,67	23,23

Table 1: Percentage distribution of women by experience of intimate partner violence in Malawi and Zambia (concluded)

Characteristics	Malawi (%)		Zambia (%)			
	Total (N=5,234)	No IPV N=4,062 (77,21%)	IPV N=1,172 (22,28%)	Total (N=4,115)	No IPV N=2,349 (57,08%)	IPV N=1,766 (42,92%)
Education						
No Education	18,07	19,47	13,23	13,71	15,84	10,87
Primary	67,92	66,54	72,70	60,46	58,41	63,19
Secondary & Higher	14,00	13,98	14,08	25,83	25,76	25,93
Occupation						
Not Working	22,60	23,51	19,45	41,67	42,92	40,00
Formal Employment & Sales	18,46	18,17	19,45	23,46	21,00	26,77
Agricultural Employment	46,96	46,85	47,35	28,30	30,81	24,92
Other	11,98	11,47	13,74	6,57	5,27	8,31
Wealth Status						
Poor	42,32	42,25	42,58	39,78	42,91	35,62
Middle	21,49	21,22	22,44	22,62	22,26	23,10
Rich	36,19	36,53	34,98	37,59	34,82	41,28
Fertility Intention						
Wants within 2 years	15,71	15,34	16,98	25,86	25,54	26,27
Wants after 2 years	37,41	37,32	37,71	37,98	37,46	38,67
Wants no More	46,89	47,34	45,31	36,16	36,99	35,05
Accessibility						
Big problem	56,56	55,37	60,76	34,02	36,24	30,89
Not a Big Problem	43,44	44,63	39,24	65,98	63,76	69,11
Family Planning Exposure						
No	89,03	89,48	87,42	90,12	90,47	89,64
Yes	10,97	10,52	12,58	9,88	9,53	10,36

The results presented in Table 2 show slightly higher (but insignificant) likelihood of contraceptive use among women who had experienced intimate partner violence in Malawi and Zambia. After controlling for other covariates, the association between IPV and contraceptive use remained the same in Malawi while use of contraceptives became less likely among women who had experienced IPV in Zambia. The association remained statistically insignificant in both countries. On the other hand, the older the women in both countries, the less likely they were to use contraception; formerly married women were also less likely to be users. A general positive relationship is seen in number of living children, education and household wealth with contraceptive use. Further, women in formal employment or sales were more likely to be using contraception compared to unemployed women and women who wanted to space or limit childbearing.

Table 2: Unadjusted and adjusted coefficients of the association between intimate partner violence and contraceptive use among women in Malawi and Zambia

Characteristics	Malawi						Zambia					
	Unadjusted			Adjusted			Unadjusted			Adjusted		
	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio
IPV												
No (RC)	0,00		1,00	0,00	0,14	1,00	0,00	0,06	1,00	0,11	0,93	
Yes	0,07	0,06	1,08	0,12		1,13	0,04		1,04			
Age												
15-24 (RC)				0,00		1,00						1,00
25-34				-0,22	0,17	0,80						0,95
35+				-0,39*	0,22	0,67*						0,64*
Religion												
Other Christian (RC)				0,00		1,00						1,00
Catholic				0,18	0,14	1,19						1,29*
Muslim				-0,53*	0,17	0,58*						1,11
Place of residence												
Urban (RC)				0,00		1,00						1,00
Rural				-0,20	0,18	0,81						1,29
Marital Status												
Currently Married (RC)				0,00		1,00						1,00
Formerly Married				-1,11*	0,17	0,32*						0,36*
No. of living Children												
0-2 (RC)				0,00		1,00						1,00
3-4				0,63*	0,16	1,89*						1,71*
5+				1,15*	0,21	3,17*						2,08*
Education (RC)												
Primary				0,00		1,00						1,00
Secondary/Higher				0,47*	0,15	1,60*						1,27
				0,44*	0,25	1,56*						1,53*

Table 2: Unadjusted and adjusted coefficients of the association between intimate partner violence and contraceptive use among women in Malawi and Zambia (concluded)

Characteristics	Malawi				Zambia					
	Unadjusted		Adjusted		Unadjusted		Adjusted			
	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	
Occupation										
Not Working (RC)			1,00	0,00	0,18	1,48*	0,00	0,00	0,15	1,00
Formal & Sales			1,04	0,04	0,14	1,04	0,63*	0,15	0,14	1,88*
Agricultural			1,26	0,23	0,21	1,26	0,15	0,26	0,14	1,16
Other									0,23	1,30
Wealth Status										
Poor (RC)			1,00	0,00		1,00	0,00	0,00		1,00
Middle			1,12	0,11	0,16	1,12	-0,24	0,16	0,16	0,78
Rich			1,46*	0,38*	0,15	1,46*	0,50*	0,21	0,21	1,65*
Fertility Intention										
Wants ≤ 2 years (RC)			1,00	0,00		1,00	0,00	0,00		1,00
Wants after 2 years			2,74*	1,01*	0,19	2,74*	0,94*	0,14	0,14	2,58*
Wants no More			1,70*	0,99*	0,19	1,70*	0,46*	0,16	0,16	1,59*
Accessibility										
Big problem (RC)			1,00	0,00		1,00	0,00	0,00		1,00
Not a Big Problem			1,05	0,05	0,12	1,05	-0,16	0,12	0,12	0,84
Family planning exposure										
No (RC)			1,00	0,00		1,00	0,00	0,00		1,00
Yes			1,38	0,32	0,20	1,38	0,48*	0,19	0,19	1,63*

RC: reference category; *p<0,05

Table 3 presents the unadjusted results of the association of IPV with contraceptive method choice. The results show that women who had experienced IPV in Malawi were statistically significant more likely to use traditional methods, and have insignificantly higher likelihood of using modern methods compared to no method. Among women using contraceptive methods in Malawi, significant less likelihood of using modern methods compared to traditional methods was noted among those who had experienced IPV. In Zambia, no statistically significant association was noted between IPV and method choice.

Table 3: Unadjusted coefficients of association between intimate partner violence and contraceptive method choice among women in Malawi and Zambia

Characteristics	Model 1										Model 2							
	No method vs traditional methods					No method vs modern methods					Traditional methods vs modern method							
	Malawi		Zambia			Malawi		Zambia			Malawi		Zambia					
	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio			
IPV																		
No (RC)	0,00		1,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	1,00	1,00		
Yes	0,033*	0,161	1,39*	-0,10	0,06	0,90	0,04	0,06	1,05	0,07	0,06	1,07	-0,28*	0,16	0,75*	0,17	0,13	1,19

RC: reference category; *p<0,05

Table 4 presents the adjusted results of IPV and contraceptive method choice. After controlling for other covariates, there was no statistically significant association between IPV and method choice in Malawi and Zambia. In Zambia, Catholic women had significant higher likelihood of using traditional methods (compared to no method) and lower likelihood of using modern methods compared to traditional methods. While formerly married women were less likely to use any method (traditional or modern) compared to married women, they were more likely to use modern methods than traditional methods when compared to women that were currently married. A negative association was seen in the use of modern methods compared to traditional methods as number of living children increases while a positive association was noted between wealth and use of modern methods of contraception compared with use of traditional methods. Further, women who indicated that they had no big problem accessing health care facilities were significantly more likely to be using modern methods compared to traditional methods. Although insignificant, a counter-intuitive finding was the less likelihood of use of modern methods compared to traditional methods as the level of education increases. No significant difference was noted in the use of modern methods compared to traditional methods in both countries by place of residence, occupation, fertility intention or exposure to family planning messages.

Table 4: Adjusted coefficients of association between intimate partner violence and contraceptive method choice among women in Malawi and Zambia

Characteristics	Model 1												Model 2						
	No method vs traditional methods						No method vs modern methods						Traditional methods vs modern method						
	Malawi			Zambia			Malawi			Zambia			Malawi			Zambia			
	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	
IPV																			
No (RC)	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	
Yes	0,24	0,35	1,27	-0,15	0,20	0,85	0,11	0,14	1,12	-0,03	0,12	0,96	-0,12	0,35	0,88	0,11	0,21	1,22	
Age																			
15-24 (RC)	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	
25-34	-0,70	0,47	0,49	0,03	0,26	1,03	-0,18	0,17	0,82	-0,06	0,16	0,93	0,51	0,48	1,68	-0,09	0,29	0,91	
35+	-0,27	0,60	0,76	0,29	0,37	1,33	-0,41	0,22	0,66	-0,64*	0,23	0,52*	-0,14	0,61	0,86	-0,93	0,40	0,39	
Religion																			
Other Christian (RC)	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	
Catholic	-0,32	0,43	0,71	0,58*	0,22	1,79*	0,22	0,15	1,25	0,16	0,14	1,17	0,55	0,43	1,73	-0,42*	0,23	0,65*	
Muslim	-1,33	0,62	0,26	0,99	0,68	2,69	-0,47*	0,17	0,62*	-0,33	0,64	0,71	0,86	0,62	2,36	-1,32	0,86	0,26	
Place of residence																			
Urban (RC)	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	
Rural	-0,29	0,51	0,74	-0,06	0,36	0,93	-0,19	0,18	0,82	0,34	0,34	1,40	0,09	0,51	1,10	0,41	0,37	1,50	
Marital Status																			
Currently Married (RC)	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	
Formerly Married	-1,87*	0,74	0,15*	-2,73*	0,72	0,06*	-1,06*	0,18	0,34*	-0,75*	0,19	0,46*	0,80	0,75	2,24	1,97*	0,74	7,20*	
No. of living Children																			
0-2 (RC)	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	
3-4	1,44*	0,47	4,23*	0,61*	0,27	1,85*	0,57*	0,16	1,78*	0,52*	0,16	1,68*	-0,86	0,47	0,42	-0,09	0,28	0,91	
5+	2,29*	0,61	9,92*	0,55	0,36	1,74	1,07*	0,21	2,92*	0,77*	0,21	2,16*	-1,22*	0,62	0,29*	0,21*	0,37	1,24*	
Education																			
None (RC)	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	
Primary	1,11*	0,45	3,06*	0,79*	0,31	2,20*	0,41	0,15	1,51	0,06	0,18	1,06	-0,70	0,46	0,49	-0,72*	0,33	0,48*	
Secondary+	1,52*	0,71	4,57*	0,95*	0,40	2,60*	0,36	0,25	1,43	0,25	0,23	1,29	-1,15	0,71	0,31	-0,69	0,42	0,49	

Table 4: Adjusted coefficients of association between intimate partner violence and contraceptive method choice among women in Malawi and Zambia (concluded)

	Model 1												Model 2						
	No method vs traditional methods						No method vs modern methods						Traditional methods vs modern method						
	Malawi			Zambia			Malawi			Zambia			Malawi			Zambia			
Characteristics	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	Beta	SE	Odds Ratio	
Occupation																			
Not Working RC	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	
Formal/Sales	0,26	0,52	1,30	1,03*	0,29	2,82*	0,40	0,18	1,50	0,54*	0,16	1,72*	0,13	0,52	1,14	-0,49	0,30	0,61	
Agricultural	0,41	0,41	1,51	0,65*	0,25	1,92*	0,07	0,15	1,00	-0,001	0,15	0,99	-4,09	0,41	0,66	-0,65	0,27	0,51	
Other	0,50	0,56	1,64	0,97*	0,40	2,64*	0,21	0,21	1,23	0,10	0,25	1,11	-0,28	0,56	0,74	-0,86	0,42	0,41	
Wealth Status																			
Poor (RC)	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	
Middle	-0,24	0,43	0,77	-0,28	0,27	0,75	0,14	0,16	1,15	-0,21	0,17	0,80	0,39	0,43	1,48	0,06	0,30	1,06	
Rich	-0,36	0,45	0,69	-0,19	0,40	0,82	0,43	0,16	1,54	0,66	0,22	1,94	0,80	0,45	2,23	0,85*	0,42	2,36*	
Fertility Intention																			
≤ 2 years (RC)	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	
Wants >2 years	1,63*	0,64	5,14*	0,99*	0,26	2,70*	0,96*	0,20	2,61*	0,93*	0,15	2,56*	-0,67	0,65	0,50	-0,05	0,28	0,94	
Wants no More	0,63	0,65	1,89	0,21*	0,31	1,24*	1,02	0,20	2,78	0,54*	0,18	1,72*	0,38	0,66	1,46	0,32	0,33	1,38	
Accessibility																			
Big problem- RC	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	
Not Big Problem	-0,23	0,34	0,78	-0,68	0,22	0,50	0,08	0,12	1,08	0,03	0,14	1,00	0,31	0,34	1,37	0,68*	0,32	1,99*	
Family planning exposure																			
No (RC)	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	0,00		1,00	
Yes	1,03*	0,49	2,82*	-0,10	0,42	0,90	0,27	0,20	1,31	0,58	0,20	1,79	-0,76	0,49	0,46	0,68	0,42	1,98	

RC: reference category; *p<0,05

7. Discussion

This study examined the association between intimate partner violence (IPV) and contraceptive behaviour in a nationally representative sample of women of child-bearing age in Malawi and Zambia. Results showed that 22% of women in Malawi and 43% in Zambia have experienced intimate partner violence while only about 44% of the women in Malawi and 38% of women in Zambia were using any contraceptive method. While the estimates derived in this study for both countries were just about two per cent lower than those given in the demographic and health survey reports for contraceptive use among married women, the women who experienced intimate partner violence in this study were about half of the estimate given by the demographic health survey report in Malawi (22% and 41%, respectively) and nine per cent lower in Zambia (43% versus 52%) compared to the demographic health survey estimate (National Statistical Office and ICF Macro. 2011. Central Statistical Office et al 2009). This difference could be because this study looked at physical or sexual violence perpetrated by an intimate partner while the surveys reported any physical or sexual violence irrespective of the perpetrator. This may also suggest that violence perpetrated by people other than intimate partners might be high, especially in Malawi. Another reason could be the restricted sample used in the analysis of this work, which excluded women who had never had sex and women who were infecund.

Although no significant relationship was found between experience of intimate partner violence and the use of contraception at the bivariate and multivariate levels in both countries, the results from Malawi showed higher likelihood of contraceptive use among women who had experienced intimate partner violence. This is consistent with findings by Okenwa et al 2011, Alio et al 2009, García-Moreno et al 2005, Roberts et al 2005, Fanslow et al 2008, Pallitto and O'Campo 2004, and Dalal et al 2012.

On the other hand, women who had experienced intimate partner violence in Zambia were less likely to use any contraceptive method. Other studies have also documented less likelihood of use of contraception among women who had experienced intimate partner violence (Gee et al 2009, Stephenson et al 2006). Further, findings differ in the two countries by method choice among women who had experienced intimate partner violence and were contraceptive users. In Malawi, there was a lower likelihood of use of modern methods compared to traditional methods while in Zambia, there was a higher likelihood of use of modern methods compared to traditional methods.

In Zambia, Catholic women had a significant higher likelihood of using traditional methods compared to no method and lower likelihood of using modern methods compared to traditional methods. This could be a reflection of the preference for natural methods among the adherents of the Catholic faith. The less likelihood of use of contraception among older women found in this study has also been documented by other studies (Yihunie Lakew et al 2011, Stephenson et al 2006). While formerly married women were less likely to be using contraception compared to currently married women, they were more likely to employ modern methods when used. The less likelihood of use may be due to no or less frequent sexual exposure while the use of more effective methods among those who use suggest a deliberate effort to prevent unintended pregnancy. The positive relationship between number of living children, education and wealth with contraceptive use, as well as the more likelihood of use among women who wanted to space or limit childbearing in this study, have also been previously documented (Alemayehu et al 2012, Douthwaite and Ward 2005, Shaikh et al 2013). A counter-intuitive finding in this study is the negative association found between level of education and use of modern contraceptive methods compared to traditional methods. The reason for this unexpected finding is not apparent and conflicts with the more likelihood of use of modern methods compared to traditional methods with higher wealth status and among women who had no problem accessing health care facilities – factors that are usually positively associated with education.

In conclusion, this study found no significant association between intimate partner violence and women's contraceptive behaviour in Malawi and Zambia. Although about 5,7% and 13,2% in Malawi and Zambia respectively of women did not respond to questions on domestic violence in the surveys, this is not expected to significantly affect the findings of this study as over 90% of the women were never married nor living with a partner, thus unlikely to be exposed to intimate partner violence. Further study, including use of qualitative methodology, is recommended to explore and better understand this finding.

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Annexure 1: Characteristics of women who responded vs women who did not responded to questions on intimate partner violence in Malawi and Zambia

	Malawi			Zambia		
	Total % (n=5,549)	Responded (94,32)	No Response 315 (5,68)	Total % (n=4,741)	Responded 4,115 (86,80)	No Response 626 (13,20)
Contraceptive Use						
No	57,51	56,17	79,68	63,87	62,09	75,56
Yes	42,49	43,83	20,32	36,13	37,91	24,44
Contraceptive Method Choice						
No Method	57,51	56,17	79,68	63,87	62,09	75,56
Modern Method	38,67	39,87	18,73	30,06	31,11	23,16
Traditional Method	3,82	3,95	1,59	6,07	6,80	1,28
Age						
15-24	31,47	28,54	80,00	32,88	27,31	69,49
25-34	41,12	42,78	13,65	42,29	45,18	23,32
35+	27,41	28,68	6,35	24,83	27,51	7,19
Religion						
Other Christian	66,99	66,89	68,57	79,79	79,85	78,91
Catholic	20,20	20,10	21,90	18,75	18,57	19,97
Muslim	12,81	13,01	9,52	1,52	1,58	1,12
Place of residence						
Urban	12,47	11,96	20,95	38,30	35,94	53,83
Rural	87,53	88,04	79,05	61,70	64,06	46,17
Marital Status						
Never Married	5,19	0	91,43	12,00	0	90,89
Currently Married	80,84	85,29	6,98	75,17	86,44	1,12
Formerly Married	13,97	14,71	1,59	12,82	13,56	7,99
No. of living Children						
0-2	44,80	41,88	93,33	47,88	41,19	91,85
3-4	32,22	33,93	3,81	29,38	33,00	5,59
5+	22,98	24,19	2,86	22,74	25,81	2,56

Characteristics	Malawi			Zambia		
	Total % (n=5,549)	Responded 5,234 (94,32)	No Response 315 (5,68)	Total % (n=4,741)	Responded 4,115 (86,80)	No Response 626 (13,20)
Education						
No Education	17,34	18,07	5,08	12,63	13,71	5,59
Primary	67,15	67,92	54,29	57,27	60,46	36,26
Secondary & Higher	15,52	14,00	40,63	30,10	25,83	58,18
Occupation						
Not Working	23,43	22,60	37,14	43,36	41,67	54,08
Formal / Sales	18,18	18,46	13,65	23,96	23,46	27,12
Agricultural	46,19	46,96	33,33	25,82	28,30	10,15
Other	12,20	11,98	15,87	6,85	6,57	8,65
Wealth Status						
Poor	41,70	42,32	31,43	38,37	39,78	29,07
Middle	21,25	21,49	17,14	21,51	22,62	14,22
Rich	37,05	36,19	51,43	40,12	37,59	56,71
Fertility Intention						
Wants within 2 years	16,76	15,71	34,29	28,88	25,86	48,72
Wants after 2 years	38,22	37,41	51,75	37,27	37,98	32,59
Wants no More	45,02	46,89	13,97	33,85	36,16	18,69
Accessibility						
Big problem	56,21	56,56	50,88	32,44	34,02	22,73
Not a Big Problem	43,79	43,44	49,12	67,56	65,98	77,27
Family planning exposure						
No	88,52	89,03	81,21	88,74	90,12	80,18
Yes	11,48	10,97	18,79	11,26	9,88	19,82

Exploring biographical differences during a longitudinal study of employee satisfaction in a water utility organisation

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ABSTRACT

Demographic studies on the labour force often focus on size and composition, and usually at aggregate level. Microstudies on factors impacting on attrition in the labour force are limited in the demographic literature. The purpose of this study was to determine whether employee satisfaction differs in terms of gender, race, job level, and department groups at three measuring occasions over a span of six years in a water utility company in South African after implementing organisational transformation interventions. Longitudinal study and quantitative surveys were conducted with convenient sample sizes of $n = 1\,140$ (2003), $n = 920$ (2007) and $n = 759$ (2008). Primary data were collected with participants who voluntarily completed both online and paper-based methods of the employee satisfaction survey (ESS). Data were analysed using descriptive and inferential statistics. Findings indicate significant statistical differences in employee satisfaction between the biographical groups across the three testing occasions. The practical implications are that the findings could help to understand employee satisfaction of a diverse workforce during organisational transformation and to propose interventions to improve employee satisfaction using biographical factors as indicators of individual differences.

Keywords:

Biographical differences, employee satisfaction, longitudinal study, individual differences, organisational transformation, interventions

1. Introduction

Demographic studies on the labour force often focus on the size and composition of the labour force, and usually at aggregate level (see for example, Clark and Anker: 1989; Stelcner and Kyriazis: 1990; Anker and Anker: 1995; Van Aardt: 2002; Prskawetz et al.: 2005). Factors impacting on attrition in the labour force at microlevel are less common in the demographic literature. At a microlevel, attrition in the labour force is partly due to the environment in which employees operate in different organisations. Organisations are constantly faced with the challenge of organisational transformation, which has an impact on attracting and retaining talent in the world of work. The concern is that employee dissatisfaction is a threat to an organisation faced with transformation, as it may lead to turnover and difficulties in attracting top talent if it is not identified and addressed. A perspective that is not often considered is the employment figures and the gross remuneration of employees in specific sectors such as the electricity, gas and water supply industry. The research project was conducted between 2003 and 2008; during this period, both the employment figures and gross remuneration improved in this sector, which might influence employee satisfaction. Research conducted by Bakan and Buyukbese (2013) shows that there is a significant relationship between employees' income level and employees' job satisfaction. However, they do not give any idea of the direction of the causality. Employees may have reported higher levels of satisfaction perhaps because they are motivated by receiving a high income for their job effort.

Employee satisfaction is an important aspect in organisational survival and competitiveness; hence, organisations undergoing the process of transformation need to constantly improve their employees' satisfaction by addressing factors that create dissatisfaction (Küskü, 2003). It is crucial for organisations to improve and sustain employee satisfaction because of its visible effect, which includes lower rates in employee turnover, deviant behaviour and property and production deviance (Kulas, McInerney, DeMuth & Jadwinski, 2007). According to Kulas et al. (2007, p.390), "it is clear that employee deviance is a costly burden on organisations, but the antecedents and processes through which such deviant behaviour is manifest are not apparent". While

employee dissatisfaction is a threat, organisations are able to gain a competitive advantage through their satisfied employees. Employee satisfaction influences organisational performance and customer satisfaction; satisfied employees are an asset, assisting their organisation to achieve its business goals.

The literature refers to numerous studies on employee satisfaction in the field of organisational development, with over 5 000 articles and dissertations having been published on the topic (Chen, Yiang, Shiau & Wang, 2006; Kuskü, 2003). These single studies rather than longitudinal studies focused on antecedent factors of employee satisfaction and other factors that enable organisations to attract, motivate and retain employees, such as productivity, customer satisfaction, employee loyalty and performance (Abott, 2003; Burke, Graham & Smith, 2005). Despite this existing knowledge, employee satisfaction is still a complex construct for the modern-day organisation (O'Neil, 2005), especially in terms of how organisations can use survey processes as a vital step in benchmarking and tracking biographical differences over time in employee satisfaction during organisational transformation. Accordingly, managers and practitioners still need to conduct longitudinal studies on employee satisfaction in order to enable them to conduct an appropriate analysis, which can ultimately lead to the implementation of effective interventions and the monitoring of employee satisfaction or dissatisfaction after the implementation of organisational transformation interventions, using biographical factors. Therefore, it would be important to understand employee satisfaction and biographical factors within this context of organisational transformation and over time. Organisations could benefit by having knowledge and understanding of employee satisfaction and biographical factors, as they can focus interventions to tailor the needs of employees. A longitudinal study could provide transforming organisations with the opportunity to monitor and track employee satisfaction using biographical factors, in order to address areas of satisfaction and dissatisfaction of employees in the light of the current need to attract and retain a satisfied workforce.

2. Literature review

This section of the literature review discusses the following constructs: employee satisfaction and biographical factors.

2.1 Employee satisfaction

Employee satisfaction has been conceptualised and defined differently by various researchers and authors in the literature. The following are some of the earliest and latest definitions:

- According to Lofquist and Dawis (1969, p. 53), satisfaction is “a function of the correspondence between the reinforcement from the work environment and the individual’s needs”.
- Locke (1976, p. 130) states that employee satisfaction can be viewed as “a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experience”.
- Martins and Coetzee’s (2007, p. 21) definition states that employee satisfaction is a “pleasurable or positive emotional state resulting from an employee’s appraisal of his or her company environment or company experience”.
- Voisard (2008, p.6) defines employee satisfaction as the “employees’ feelings or state-of-mind regarding the nature of their work and conditions of employment with a particular employer”.

A critical analysis indicates that all the definitions emphasise employee satisfaction as an emotional response to the individual’s experience of organisational practices and processes. It is an appraisal of the perceived job characteristics, work environment and emotional experiences at work. This perception of satisfaction depends on the intrinsic and extrinsic properties of the job and the characteristics of the individual employee (McShane & Von Glinow, 2005; Varkey, Karlapudi & Hensrud, 2008). Therefore, satisfaction represents the feelings of the employee about the job and is defined as the individual’s overall evaluation of working for a specific organisation (Vilares & Coehlo, 2000; Voisard, 2008). In other words, employee satisfaction is described as employees’ feelings or state of mind about the nature of their work and conditions of employment with a particular employer.

2.2 Biographical factors

'Biographical factors' refers to personal attributes that make people unique and often differentiate them from one another, even though there are similarities amongst them (Bergh, 2008). These include sex, age, job level, education, work experience or department, marital status and race. For the purposes of this study, the focus is on sex, race, job level and department.

In terms of sex, most of the employee satisfaction studies conducted to compare men and women in their global job satisfaction have found few differences (Spector, 2006). Oshagbemi (2003, p. 1214) highlights the fact that some studies have found women to be more satisfied than men, while others have found men to be more satisfied than women. Generally, it is evident that the results of the studies relating to the relationship between employee satisfaction and sex were found to be contradictory, with different findings.

Job level is another biographical factor that refers to an individual's status in an organisation, and indicates an employee's job rank or job seniority in a particular occupational classification (Bowen, Cattell, & Michell, 2008). Evidence in the literature seems to suggest that job level is a reliable predictor of job satisfaction, with employees at higher ranks being generally more satisfied with their jobs compared to employees at lower ranks (Oshagbemi, 2003; Spector, 2006; Bowen et al., 2008). In addition to job level, employees in the same organisation may work in different departments within the organisation. 'Departments' refers to divisions in an organisation depending on its size and core business; which include but are not limited to human resources, finance, marketing, operations, customer services and administration. Literature provides evidence on employee satisfaction studies and job level; there seems to be deficiency of knowledge regarding studies on employee satisfaction and departments within an organisation.

In terms of the relationship between race and employee satisfaction, the literature reports fairly mixed findings (Oshagbemi, 2003; Friday & Friday, 2003; Spector, 2006). However, literature indicates that there are some studies that reported that black employees seemed to have higher levels of satisfaction than white employees; and there are also studies in which white employees also reported higher levels of satisfaction than black employees (Friday & Friday 2003, p. 430).

It is thus evident from the above discussion that research studies in the literature are inconclusive about biographical factors as antecedent factors of employee satisfaction during organisational transformation. Furthermore, there are limited empirical studies examining these variables using a longitudinal study research method. Hence, there is a need to explore biographical differences using a longitudinal study of employee satisfaction, focusing on the variables gender, job level, race and department in a South African water utility organisation.

Goals of the study

The study explored biographical differences in employee satisfaction during organisational transformation, in order to understand a diverse workforce. The research question was:

What are the differences between sex, race, job level and department groups regarding employee satisfaction during organisational transformation, in the three years' study of a sample of respondents in a water utility company?

3. Data and Methods

Research design

The main purpose of this study was to determine whether sex, race, job level and department groups differed statistically significantly in the three years' longitudinal study of employee satisfaction among a sample of respondents within the context of a South African water utility company, after the implementation of organisational transformation interventions. The organisational transformations or changes that were implemented during the period

2003 to 2008 and the targeted dimensions are portrayed in brackets below:

- *Strategy*. The organisation's strategy was changed and a new human resource strategy was formulated (mission and vision).
- *Policy development*. The policies that were developed were employment equity; talent management; recruitment and selection; career management; disciplinary codes and performance management (employment equity and diversity; human resource management).
- *System*. An IT system was introduced for salaries administration (human resource management).
- *Restructuring*. Corporate services and operations departments were restructured in order to fit into the new organisational strategy. A new operations unit was also developed (mission and vision).
- *Training programmes*. Leadership and supervisory development programmes were introduced in the organisation to train team leaders, supervisors and managers (training and development and leadership).

The surveys were conducted in 2003, 2007 and 2008 after the company granted researchers permission to conduct the survey and to report on the research findings anonymously. It is during this period that the company used the opportunity to conduct the survey in order to track or determine if the implemented interventions had the desired effects in the organisation. The purpose of the study is not the evaluation of the interventions per se, but rather to determine changes in the mentioned biographical groups' employee satisfaction levels during the implementation of the interventions. To achieve the purpose of this study, a survey method was used to gather quantitative data on the participants' responses (Welman, Kruger & Mitchel 2009, p.95).

Sample

All the employees of the organisation were invited to participate voluntarily in the survey in order to obtain a sufficient number of participants from the total population. This research study used the non-probability convenience sampling method to obtain the sample sizes for the three years of study of participants who voluntarily completed the survey. As this was the company annual survey, all employees were given the opportunity to participate in the survey. The employee satisfaction survey (ESS) measured employee satisfaction in this company in 2003, 2007 and 2008, using convenience samples.

During the initial survey of this study in 2003, the South African economy witnessed an increase in the number of individuals employed in the formal non-agricultural business sector. According to the December 2003 Survey of Employment and Earnings (SEE), the number of individuals employed in the formal non-agricultural business sector of the South African economy increased by December 2003 to an estimated 6 430 000 employees. In terms of the electricity, gas and water supply industry (which is the business industry within which this water utility organisation belongs), at the end of the year 2003 a total of 43 000 individuals were employed in this industry. However, a comparison of the number of individuals employed in this industry in 2002 (46 000) to the 2003 employees (43 000), reflected an annual decrease of 3 000 employees (or - 6,5%) at December 2003 compared with December 2002 (SEE, 2003). From the total population of ± 4000 employees in this water utility organisation, it is evident that this organisation employed 9,30% of the 43 000 individuals employed in the electricity, gas and water supply industry at the beginning of this study in 2003. The following is a profile of participants who took part in this study in 2003:

- The 2003 sample comprised 1 140 participants in total who voluntarily completed the survey.
- With regard to the 2003 sample, 1,6% of the participants were senior managers, 5,1% were middle managers, 19,8% were supervisors, and 73% were operational staff. These job levels were characterised by 88,5% male and 11,5% female participants.

The December 2007 Quarterly Employment Statistics (QES) survey showed that the number of individuals employed in the formal non-agricultural business sector of the South African economy increased in December 2007 to an estimated 8 408 000 employees. In the year 2007, the electricity, gas and water supply industry had a total of 56 000 individuals employed in this industry. Based on the total population of $\pm 4\,500$ employees in this water utility organisation, this implies that this organisation employed 8,03% of the 56 000 individuals employed in the electricity, gas and water supply industry in the second year of this study in 2007. The profile of participants who took part in this study in 2007 is as follows:

- The 2007 sample involved 920 participants in total who voluntarily completed the survey.
- In terms of the 2007 sample, 6,1% of the participants were senior managers, 16,3% were middle managers, 72% were supervisors, and 5,7% were operational staff. Of the total number of participants, 80,7% were male and 19,3% were female.

According to the December 2008 Quarterly Employment Statistics (QES) survey, the number of individuals employed in the formal non-agricultural business sector of the South African economy increased in December 2008 to an estimated 8 513 000 employees. The electricity, gas and water supply industry comprised a total of 59 000 individuals employed in this industry in the year 2008. The total population of $\pm 4\,500$ employees in this water utility organisation implies that this organisation employed 7,62% of the 59 000 individuals employed in the electricity, gas and water supply industry in the third year of this study in 2008. Below is the profile of participants who took part in this study in 2008:

- The 2008 sample included 759 participants who voluntarily completed the survey.
- For the 2008 sample, 2,9% of the participants were senior managers, 6,9% were middle managers, 20,4% were supervisors, and 69,8% were operational staff. These job levels were characterised by 74,7% male and 25,3% female participants.

Data gathering

The Employee Satisfaction Survey was used to measure employee satisfaction. The instrument was tested for reliability and validity during this period, again in an employee satisfaction study within an engineering company by Martins and Coetzee (2007). ESS is a self-evaluation survey. Its aim is to measure employees' satisfaction levels. The 13 dimensions are vision and mission; values; leadership; communication; teamwork; relationships; health and safety; employment equity and diversity; training; human resource management; job satisfaction; HIV/AIDS; and change management. The survey consists of a set of 75 items, all of which are considered to be of equal value and to which the participants respond by indicating their agreement or disagreement with the statement. The scale used is a summated rating in the form of a five-point Likert-type scale with (1) indicating strong disagreement and (5) indicating strong agreement. The duration for completing the survey was approximately 20 to 30 minutes.

Biographical data was gathered using the biographical questionnaire, which focused on the participants' information regarding gender, race, job level and department.

Data analysis

Descriptive statistics were applied using frequencies and percentages for biographical variables, as well as the Cronbach alpha coefficient to determine the reliability of the ESS as measuring instrument. Mean scores and standard deviations were conducted to analyse the data. Inferential statistics used included Mann-Whitney and Kruskal-Wallis nonparametric tests for analysis of variance, with the three samples being convenience and independent samples. The researchers used nonparametric tests during the data analysis mainly because the three samples of 2003, 2007 and 2008 were independent samples. Although the researchers used the same survey format and process in the three years of study, the researchers could not ensure that the same participants are involved in all the three years of study. Nonparametric tests need not assume random sampling (Tredoux & Durrheim, 2002).

4. Results

The internal reliability of the ESS for the three samples is shown in Table 1.

Table 1: Reliability analysis of the ESS for the three samples

ESS dimensions	Number of items	Cronbach coefficient		
		2003 sample n = 1140	2007 sample n = 920	2008 sample n = 759
Vision and mission	4	0,93	0,66	0,84
Values	5	0,82	0,76	0,84
Leadership	7	0,87	0,88	0,88
Change management	7	0,91	0,86	0,89
Health and safety	3	0,68	0,72	0,81
Employment equity and diversity	6	0,75	0,65	0,74
Human resource management	4	0,80	0,83	0,72
Training	4	0,75	0,72	0,78
HIV/AIDS	3	0,33	0,65	0,66
Communication	11	0,90	0,76	0,84
Teamwork	3	0,71	0,71	0,70
Relationships	8	0,85	0,84	0,83
Job satisfaction	9	0,83	0,89	0,89
Total ESS	74	0,97	0,97	0,96

The 2003 sample obtained an ESS Cronbach coefficient of 0,97, which is similar to the 2007 sample. The coefficient of the 13 ESS dimensions for the 2003 sample ranged from 0,93 to 0,33 (n = 1140), while the coefficients for the 2007 sample scores varied from 0,89 to 0,65 (n = 920). The 2008 sample scored 0,96, which is closely related to the 2003 and 2007 samples. The dimension's coefficients differed from 0,89 to 0,66 for the 2008 sample (n = 759). The alpha coefficients of all the dimensions were considered to have adequate internal consistency reliabilities, as they were mostly above the recommended cut-off of 0,70 or close to it (Nunnally, 1978). As further indicated by Tredoux and Durrheim (2002), coefficients as low as 0,30 are deemed to be acceptable for the reliability of group measures. It was also deemed important by the researchers to retain all items for the three years for comparison purposes.

Research by the HSRC indicates that an average of 3,2 is an appropriate guideline to differentiate between positive and potential negative perceptions (Castro & Martins, 2010). The 3,2 cut-off score was used as a guideline to differentiate between potentially positive and negative perceptions in this study. This implies that a mean score above 3,2 indicated a positive perception, while a mean score below 3,2 indicated a negative perception of the ESS dimensions.

Table 2: Means Scores of the ESS for the three samples

ESS dimensions	Number of items	Means scores		
		2003 sample n = 1140	2007 sample n = 920	2008 sample n = 759
Vision and mission	4	2,59	3,22	3,38
Values	5	3,00	2,97	3,13
Leadership	7	2,99	2,88	3,13
Change management	7	2,30	2,47	2,69
Health and safety	3	3,09	3,12	3,22
Employment equity and diversity	6	2,29	2,32	2,53
Human resource management	4	2,11	2,24	2,69
Training	4	2,91	2,80	3,00
HIV/AIDS	3	2,58	3,77	3,90
Communication	11	2,39	2,60	2,86
Teamwork	3	3,10	3,14	3,29
Relationships	8	2,99	3,01	3,21
Job satisfaction	9	2,97	3,21	3,37
Total ESS	74	2,56	2,80	3,22

Based on the survey results – and especially the 2003 and 2006 results – a number of interventions were launched. One of the aims of the 2008 survey were thus to determine employee satisfaction changes as a result of implementing organisational transformation interventions.

Table 2 provides the mean scores of the ESS dimensions for the 2003, 2007 and 2008 samples. The perceptions of the 2003 sample were negative, with a total mean score of 2,56, which is below the 3,2 cut-off point. This indicates that employees were generally dissatisfied with most aspects of the organisation and that the participants perceived some dimensions negatively. These dimensions are human resource management ($m = 2,11$), employment equity and diversity ($m = 2,29$), communication ($m = 2,39$) and change management ($m = 2,30$). The mean score

below 3,2 for human resource management reflects employees' dissatisfaction with the application of recruitment, promotion, salaries, and disciplinary and grievance processes and procedures in the organisation. The descriptive information for the 2007 sample indicates an overall mean score of 2,80, suggesting employees' dissatisfaction, similar to the 2003 sample. Nonetheless, employees did indicate a few areas of satisfaction, namely HIV/AIDS (m = 3,77), vision and mission (m = 3,22) and job satisfaction (m = 3,21). In terms of the mean scores of the 2008 sample, employee satisfaction in the organisation can be described as positive with a mean score of 3,22. The results of the 2008 sample indicated improvement in several dimensions; hence, participants in this sample were satisfied when compared to the 2003 and 2007 samples. Dimensions perceived positively included vision and mission, health and safety, HIV/AIDS, teamwork, relationships and job satisfaction. Similar to the 2003 and 2007 samples, dimensions that consistently remained developmental areas for the organisation in the 2008 sample were values, leadership, human resource management, employment equity and diversity, communication, change management and training, which had mean values of below 3,2.

Table 3: Sex and Employee Satisfaction

ESS dimensions	2003 Z (asyp. sig.)	2007 Z (asyp. sig.)	2008 Z (asyp. sig.)
Vision and mission	-10,41 (0,000***)	-6,46 (0,000***)	-5,62 (0,000***)
Values	-2,79 (0,05*)	-1,27 (2,04)	-0,91 (0,36)
Leadership	-5,02 (0,000***)	-1,71 (0,87)	-,146 (0,88)
Change management	-5,81 (0,000***)	-1,16 (2,47)	-0,53 (0,59)
Health and safety	-0,70 (0,48)	-5,46 (0,000***)	-6,28 (0,000***)
Employment equity and diversity	-5,84 (0,000***)	-0,94 (0,41)	-0,79 (0,63)
Human resource management	-6,21 (0,000***)	-1,60 (0,10)	-2,03 (0,04*)
Training	-4,10 (0,000***)	-3,05 (0,002*)	-2,30 (0,03*)
HIV/AIDS	-5,33 (0,000***)	-0,81 (0,41)	-1,70 (0,08)
Communication	-8,34 (0,000***)	-2,84 (0,004*)	-3,22 (0,001**)
Teamwork	-0,78 (0,43)	-0,62 (0,53)	-1,11 (0,26)
Relationships	-3,40 (0,00**)	-0,52 (0,60)	-1,56 (0,11)
Job satisfaction	-4,49 (0,000***)	-5,80 (0,000***)	-3,64 (0,000***)

Table 4: Mean scores for significant differences for the sex groups on the ESS (2003, 2007 & 2008)

ESS dimensions	Sex	2003 mean	2007 mean	2008 mean
Vision and mission	<i>Male</i>	2,52	3,07	3,23
	<i>Female</i>	3,72	3,66	3,82
Values	<i>Male</i>	3,01	3,00	3,15
	<i>Female</i>	3,31	2,91	3,05
Leadership	<i>Male</i>	2,99	2,87	3,13
	<i>Female</i>	3,48	3,04	3,13
Health and safety	<i>Male</i>	3,14	3,24	3,37
	<i>Female</i>	3,11	2,76	2,78
Employment equity and diversity	<i>Male</i>	2,66	2,32	2,51
	<i>Female</i>	2,76	2,32	2,61
Human resource management	<i>Male</i>	2,07	2,21	2,65
	<i>Female</i>	2,59	2,31	2,85
Training	<i>Male</i>	2,91	2,84	3,06
	<i>Female</i>	3,29	2,56	2,83
HIV/AIDS	<i>Male</i>	2,57	3,82	3,98
	<i>Female</i>	3,00	3,67	3,64
Communication	<i>Male</i>	2,35	2,58	2,81
	<i>Female</i>	3,05	2,79	3,03
Relationships	<i>Male</i>	3,02	3,04	3,22
	<i>Female</i>	3,30	3,01	3,11
Job satisfaction	<i>Male</i>	2,96	3,29	3,44
	<i>Female</i>	3,42	2,81	3,16
Change management	<i>Male</i>	2,27	2,49	2,68
	<i>Female</i>	2,76	2,38	2,71

In terms of the biographical variable of gender, Table 3 and Table 4 indicate that gender differences contributed to differences in the mean scores of the employee satisfaction dimensions. The results of the 2003 sample indicated that in most of the ESS dimensions, the female respondents were more satisfied than their male counterparts. The results of the 2007 and 2008 samples were similar, indicating that the male participants were more satisfied than their female counterparts in the dimensions of health and safety and job satisfaction, while the female participants were more satisfied than their male counterparts in the dimension of vision and mission. These results also indicated that the females were more dissatisfied in the dimensions of human resource management and communication, while the male participants were more dissatisfied about training.

Table 5: Race and Employee Satisfaction

ESS dimensions	2003 Chi-square (asyp. sig.)	2007 Chi-square (asyp. sig.)	2008 Chi-square (asyp. sig.)
Vision and mission	265,00 (0,000***)	49,88 (0,000***)	8,04 (0,04*)
Values	15,16 (0,002**)	7,41 (,065)	25,97 (,000***)
Leadership	96,63 (0,000***)	28,10 (0,000***)	,990 (0,80)
Change management	85,36 (0,000***)	0,44 (0,93)	3,21 (0,36)
Health and safety	14,36 (0,002**)	3,65 (0,30)	8,75 (0,03*)
Employment equity and diversity	72,28 (0,000***)	4,55 (0,20)	14,42 (0,00**)
Human resource management	132,46 (0,000***)	36,42 (0,000***)	1,46 (0,69)
Training	79,41 (0,000***)	22,18 (0,000***)	3,40 (0,33)
HIV/AIDS	102,77 (0,000***)	58,60 (0,000***)	39,31 (0,000***)
Communication	178,87 (0,000***)	3,18 (0,36)	1,40 (0,70)
Teamwork	10,92 (0,01*)	2,15 (0,54)	4,68 (0,19)
Relationships	47,54 (0,000***)	13,44 (0,004**)	2,64 (0,45)
Job satisfaction	37,80 (0,000***)	16,80 (0,001**)	13,73 (0,00**)

Table 6: Mean scores for significant differences for the race groups on the ESS (2003, 2007 & 2008)

ESS dimensions	Year of study	African	Coloured	Indian	White
Vision and mission	<i>2003 mean</i>	2,36	3,88	3,99	3,88
	<i>2007 mean</i>	3,07	3,77	3,88	3,67
	<i>2008 mean</i>	3,31	3,81	3,71	3,62
Values	<i>2003 mean</i>	2,99	3,37	3,55	3,29
	<i>2008 mean</i>	3,22	2,76	2,82	2,62
Leadership	<i>2003 mean</i>	2,91	3,52	3,70	3,70
	<i>2007 mean</i>	2,82	3,18	3,05	3,38
Health and safety	<i>2003 mean</i>	3,08	3,43	2,97	3,37
	<i>2008 mean</i>	3,30	2,84	2,53	3,22
Employment equity and diversity	<i>2003 mean</i>	2,21	2,69	2,70	3,37
	<i>2008 mean</i>	2,59	2,35	1,98	2,26
Human resource management	<i>2003 mean</i>	1,98	2,77	2,68	2,82
	<i>2007 mean</i>	2,15	2,68	2,50	2,68
Training	<i>2003 mean</i>	2,82	3,50	3,54	3,52
	<i>2007 mean</i>	2,74	2,90	2,87	3,24
HIV/AIDS	<i>2003 mean</i>	2,49	3,25	3,14	3,13
	<i>2007 mean</i>	3,86	3,72	3,55	3,49
	<i>2008 mean</i>	3,96	3,80	3,38	3,50
Communication	<i>2003 mean</i>	2,26	3,04	3,20	3,29
Relationships	<i>2003 mean</i>	2,97	3,22	3,41	3,46
	<i>2007 mean</i>	3,00	3,05	3,26	3,30
Job satisfaction	<i>2003 mean</i>	2,92	3,54	3,72	3,32
	<i>2007 mean</i>	3,28	2,87	2,86	3,08
	<i>2008 mean</i>	3,40	3,43	2,86	3,03
Change management	<i>2003 mean</i>	2,21	2,83	2,84	2,83
Teamwork	<i>2003 mean</i>	3,11	3,21	3,46	3,42

Table 5 and Table 6 indicate that race differences contributed to variances in the mean scores of the employee satisfaction dimensions. According to the 2003 sample, the African participants were more dissatisfied in most of the ESS dimensions than the coloured, Indian and white participants. It was only in the ESS dimension of health and safety that the Indian participants were more dissatisfied than the other race groups. The results of the 2007 sample also indicated that the African participants were more

dissatisfied than other race groups in the ESS dimensions of vision and mission, leadership, human resource management, training and relationships. By contrast, in the dimensions of HIV/AIDS and job satisfaction, the African participants in this sample were more satisfied than the other race groups. The results of the 2008 sample also indicated that in the dimensions of health and safety, HIV/AIDS and values, the African participants were more satisfied than the other race groups, while the coloured participants were more satisfied than the other race groups in the ESS dimensions of vision and mission and job satisfaction.

Table 7: Job Level and Employee Satisfaction

ESS dimensions	2003 Chi-square (asyp. sig.)	2007 Chi-square (asyp. sig.)	2008 Chi-square (asyp. sig.)
Vision and mission	201,53 (0,000***)	67,65 (0,000***)	5,76 (0,216)
Values	26,00 (0,000**)	8,29 (0,08*)	6,87 (0,153)
Leadership	71,92 (0,000***)	40,86 (0,000***)	10,78 (0,02**)
Change management	84,37 (0,000***)	5,98 (0,200)	4,39 (0,355)
Health and safety	32,21 (0,000***)	10,78 (0,02**)	6,71 (0,152)
Employment equity and diversity	75,20 (0,000***)	15,59 (0,04*)	5,77 (0,216)
Human resource management	96,07 (0,000***)	40,37 (0,000***)	7,23 (0,124)
Training	85,49 (0,000***)	30,71 (0,000***)	19,38 (0,001**)
HIV/AIDS	111,99 (0,000***)	25,87 (0,000***)	2,78 (0,594)
Communication	165,15 (0,000***)	18,30 (0,001**)	3,41 (0,491)
Teamwork	18,76 (0,001**)	6,68 (0,154)	6,59 (0,159)
Relationships	39,88 (0,000***)	27,87 (0,000***)	6,51 (0,164)
Job satisfaction	32,24 (0,000***)	19,42 (0,001**)	1,31 (0,859)

Table 8: Mean scores for significant differences between the job level groups on the ESS (2003, 2007 & 2008)

ESS dimensions	Year of study	SM	MM	SS	OS
Vision and mission	2003 mean	2,48	4,13	3,32	2,36
	2007 mean	3,85	3,53	3,00	3,58
Values	2003 mean	2,42	3,19	3,36	2,99
	2007 mean	3,23	3,02	2,96	2,71
Leadership	2003 mean	2,58	3,66	3,43	2,93
	2007 mean	3,56	3,17	2,78	2,97
	2008 mean	3,61	3,44	3,85	3,98
Health and safety	2003 mean	2,89	3,48	3,43	3,06
	2007 mean	3,30	3,13	3,17	2,67
Employment equity and diversity	2003 mean	2,35	2,97	2,57	2,19
	2007 mean	2,63	2,39	2,26	2,24
Human resource management	2003 mean	2,15	2,81	2,47	1,97
	2007 mean	2,79	2,48	2,15	2,13
Training	2003 mean	2,43	3,56	3,43	2,82
	2007 mean	3,33	3,02	2,70	2,67
	2008 mean	3,43	3,36	3,26	2,90
HIV/AIDS	2003 mean	2,50	3,43	2,94	2,46
	2007 mean	3,54	3,62	3,82	3,72
Communication	2003 mean	2,37	3,30	2,91	2,22
	2007 mean	2,76	2,80	2,53	2,72
Relationships	2003 mean	2,65	3,41	3,34	2,98
	2007 mean	3,38	3,24	2,96	2,99
Job satisfaction	2003 mean	2,63	3,52	3,28	2,93
	2007 mean	3,20	3,13	3,29	2,72
Change management	2003 mean	2,21	2,99	2,69	2,18
Teamwork	2003 mean	2,42	3,38	3,32	3,12

Note: Senior Management (SM), Middle Management (MM), Supervisory Staff (SS) and Operational Staff (OS)

Job level also contributed to differences in the mean scores of the employee satisfaction survey, as shown in Table 7 and Table 8. The 2003 sample indicated that the participants at middle management level were more satisfied in most of the ESS dimensions compared with the operational, supervisory and senior management participants. Employees at supervisory level were more satisfied with organisational values. Participants at operational level

were more dissatisfied, compared with the participants at other job levels, in the ESS dimensions of employment equity and diversity, human resource management and change management. According to the 2007 sample, the senior management participants were more satisfied than the participants at other job levels in the dimensions of vision and mission, leadership, health and safety, training and relationships, while the supervisory staff also demonstrated more satisfaction in the dimensions of HIV/AIDS and job satisfaction. The participants at operational level in the sample indicated greater dissatisfaction with employment equity and diversity and human resource management. Two dimensions in the 2008 sample that reported significant differences between the different job levels indicated that participants at operational level were more satisfied with the dimension of leadership, whereas senior management were more satisfied with the dimension of training.

Table 9: Department and Employee Satisfaction

ESS dimensions	2003 Chi-square (asyp. sig.)	2007 Chi-square (asyp. sig.)	2008 Chi-square (asyp. sig.)
Vision and mission	122,64 (0,000***)	54,04 (0,000***)	18,60 (0,001**)
Values	27,50 (0,000***)	7,18 (0,127)	4,39 (0,355)
Leadership	25,27 (0,000***)	8,50 (0,07)	10,07 (0,899)
Change management	49,46 (0,000***)	7,61 (0,107)	2,56 (0,663)
Health and safety	5,98 (0,000***)	70,68 (0,000***)	55,58 (0,000***)
Employment equity and diversity	41,06 (0,000***)	6,52 (0,164)	3,20 (0,525)
Human resource management	71,28 (0,000***)	16,41 (0,003**)	10,00 (0,04*)
Training	46,03 (0,000***)	23,08 (0,000***)	19,50 (0,001***)
HIV/AIDS	35,40 (0,000***)	3,66 (0,453)	4,89 (0,298)
Communication	80,17 (0,000***)	28,49 (0,000***)	9,71 (0,04*)
Teamwork	7,33 (0,111)	19,79 (0,001**)	2,55 (0,635)
Relationships	27,90 (0,000***)	10,11 (0,03**)	4,66 (0,325)
Job satisfaction	48,47 (0,000***)	72,04 (0,000***)	13,83 (0,01**)

Table 10: Mean scores for the significant differences between the department groups on the ESS (2003, 2007 & 2008)

ESS dimensions	Year of study	CA	F	O	CS
Vision and mission	<i>2003 mean</i>	3,29	3,44	2,45	3,53
	<i>2007 mean</i>	3,53	3,26	3,01	3,65
	<i>2008 mean</i>	3,70	3,88	3,19	3,66
Values	<i>2003 mean</i>	2,94	2,97	3,02	3,57
Leadership	<i>2003 mean</i>	3,17	3,30	2,98	3,37
Health and safety	<i>2003 mean</i>	2,95	2,76	3,17	3,21
	<i>2007 mean</i>	3,14	2,67	3,32	2,54
	<i>2008 mean</i>	3,34	3,30	3,43	2,65
Employment equity and diversity	<i>2003 mean</i>	2,48	2,30	2,23	2,71
Human resource management	<i>2003 mean</i>	2,46	2,44	2,01	2,68
	<i>2007 mean</i>	2,41	2,09	2,20	2,27
	<i>2008 mean</i>	2,87	2,46	2,61	2,79
Training	<i>2003 mean</i>	3,00	2,96	2,86	3,52
	<i>2007 mean</i>	3,15	2,43	2,85	2,53
	<i>2008 mean</i>	3,20	2,70	3,08	2,72
HIV/AIDS	<i>2003 mean</i>	2,65	2,88	2,53	3,00
Communication	<i>2003 mean</i>	2,77	2,80	2,30	3,03
	<i>2007 mean</i>	3,00	2,41	2,54	2,72
	<i>2008 mean</i>	3,10	3,05	2,80	2,89
Relationships	<i>2003 mean</i>	3,04	3,00	3,43	3,06
	<i>2007 mean</i>	3,24	2,69	3,05	3,00
Job satisfaction	<i>2003 mean</i>	3,15	3,34	2,90	3,58
	<i>2007 mean</i>	3,02	2,95	2,69	3,23
	<i>2008 mean</i>	3,57	3,32	3,44	3,15
Change management	<i>2003 mean</i>	2,48	2,74	2,22	2,79
Teamwork	<i>2007 mean</i>	3,39	2,67	3,21	2,92

Note: Corporate Affairs (CA), Finance (F), Operations (O) and Customer Services (CS)

Table 9 and Table 10 indicate that departments in the organisation contributed to differences in the scores on the employee satisfaction dimensions. Based on the results of the 2003 sample, it was evident that the participants in the customer services department were more satisfied in most of the ESS dimensions than the participants in the finance, operations and corporate affairs departments. Participants in the operations department were more

dissatisfied in terms of the dimensions of employment equity and diversity, human resource management, HIV/AIDS, communication and change management. Once again, in the 2007 sample, the researcher inferred that while the customer services department indicated satisfaction in most of the ESS dimensions, the finance department indicated dissatisfaction in the dimensions of human resource management, training, communication, relationships and teamwork. The results of the 2008 sample also indicated that the participants in the finance department reported more dissatisfaction with human resource management and training, while staff in the operations department were more dissatisfied with communication.

5. Discussion

Overall, this study indicates that there are differences in terms of employee satisfaction for the 2003, 2007 and 2008 samples. While the 2003 and 2007 samples of employees reported dissatisfaction in this organisation, the results of the 2008 sample indicated that the employees in this organisation were satisfied overall. In addition to the transformation interventions implemented in this organisation, the positive perception of the 2008 sample on employee satisfaction may be attributed to the increase in the employment rate in the electricity, gas and water supply industry. The rise in the number of individuals employed in this industry according to the South African Survey of Employment and Earnings as well as the Quarterly Employment Statistics from 2003 (43 000), 2007 (56 000) and 2008 (59 000) may provide employees in this sector (and, more specifically, in this water utility organisation) with more job security and employment opportunities. Hence, there is a more positive perception of the 2008 sample on employee satisfaction. Gross earnings paid to employees in the electricity, gas and water supply industry reflected an annual increase of R803 million (or +24,8%) for the quarter ended December 2008 compared with the quarter ended December 2007. There was a quarterly increase of R486 million (or +13,7%) for the quarter ended December 2008 compared with the quarter ended September 2008. This is another contributing factor that could have positively influenced employee satisfaction in this sector.

This study also indicates that there are significant differences between the biographical groups during the period of the longitudinal study of employee satisfaction. The finding that gender groups seem to have significant differences in the three years' study of employee satisfaction, confirms the argument in the literature that some studies found women to be more satisfied than men, while others reported that men seemed to be more satisfied than women (Oshagbemi, 2003; Spector, 2006). These opposite results in satisfaction levels of women are not easy to explain. It appears from gender statistics (<http://www.news24.com/SouthAfrica/News/More-women-struggling-Stats-SA-20130704>) as if women experience far higher unemployment than men do. In some industries, this might add to their dissatisfaction while in other industries, this could add to their dissatisfaction as fewer women are employed in the more typical male-oriented environments.

In terms of race, this study validates the findings of previous studies that there are significant differences between race groups and employee satisfaction. Although literature finds the relationship between these variables to be blurred, the mixed results suggest that in some studies, whites are more satisfied, while blacks are dissatisfied (Spector, 2006). This finding also appears to lend support to the finding of Friday and Friday (2003) who reported in their study that black employees reported higher levels of satisfaction than white employees. A possible reason behind the mixed results could be the drop in overall unemployment from 37% in 2003 to only 22,9% in 2008, only to rise again to 24% in 2009. While the population has grown from 42 768 680 to 49 052 490, the unemployment for blacks has declined from 43% to 40% in 2014 (<http://businesstech.co.za/news/general/68842/uncovering-sa-employment-by-race/>). The general expectation was that the unemployment rate – especially for blacks – would decline significantly with the implementation of employment equity, which could have influenced blacks' satisfaction levels. During the same period, the drive for employment equity could have influenced white employees' levels of satisfaction.

It was also found in this study that there are significant differences between job levels in the three years' study of employee satisfaction. The results indicate that the supervisory levels were the most satisfied in the three years of study. These support the results

of previous studies (Oshagbemi, 2003; Spector, 2006; Bowen et al., 2008) that employees in higher ranks are generally more satisfied than employees in lower ranks. This implies that job level as a biographical factor is a reliable predictor of employee satisfaction.

The findings regarding the differences between departments in this longitudinal study of employee satisfaction add to the existing knowledge and supports research by Martins and Coetzee, (2007) who also indicated differences between the perceptions of departments.

6. Conclusions

In terms of the main objective of this study, which was to explore biographical differences, namely gender, race, job level and department groups differences regarding employee satisfaction during organisational transformation, the empirical findings achieved this objective. The results of this longitudinal study address the research question, indicating that there are significant differences between the employee satisfaction levels among biographical groups. Furthermore, the findings present new knowledge on employee satisfaction differences during a period of organisational transformation and the possible impact of positive employment and gross earnings.

Limitation

The primary limitation of this study is that the data for all three samples were collected from a single organisation. In terms of the sample, a convenience sample was used for this study, which implies that the findings could not be generalised because they pertain only to the population involved in this study. The ESS was dependent on the respondents' self-awareness and personal perceptions, which could have potentially affected the validity of the results. In addition, the majority of the participants in this study were Africans. Although there were white, Indian and coloured participants, the large number of Africans affected the generalisation of the results to the broader multicultural South African population.

Future research

The focus of future research should therefore be to collect data from other organisations in order to validate the results of this study. A second future research focus can be to investigate employment figures and gross earnings with the satisfaction levels in specific sectors. The results of this study will not have a general applicability without such replication.

Practical implications

These latest insights on employee satisfaction and biographical variables such as gender, race, job level and department could help the participating organisation to understand its diverse employees' needs in order to enhance their satisfaction level. It will be able to design follow-up interventions to further improve employee satisfaction on the basis of a deeper knowledge of the role of biographical variables in employee satisfaction. In conclusion, this organisation should be able to realise the benefits of enhancing employee satisfaction, namely employee retention, customer satisfaction, improved quality, enhanced performance, life satisfaction, employee health and wellbeing.

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