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Kenisha M. Peters Date

Exploring Men's Condom Experiences, Preferences, and Desires in Cape Town, South Africa: Are New Condoms Needed?

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Exploring Men's Condom Experiences, Preferences, and Desires in Cape Town, South Africa: Are New Condoms Needed?

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An abstract of
A thesis submitted to the Faculty of the
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Abstract

Exploring Men's Condom Experiences, Preferences, and Desires in Cape Town, South Africa: Are New Condoms Needed?
By Kenisha M. Peters

Background: HIV remains one of the world's greatest public health challenges. South Africa has one of the world's highest HIV prevalence rates. In Cape Town, HIV/AIDS is the second leading cause of premature death among the city's population. Correct and consistent condom has an important role to play in HIV prevention. Recently there has been effort to innovate and reinvent the male latex condom to sustain sexual pleasure, increase uptake, and/or make condom donning easier.

Objectives: This study explores and identifies the condom preferences as well as specific characteristics men desire in condoms, to help inform condom promotion and condom development efforts in Cape Town, South Africa.

Methods: Investigators utilized a mixed methods approach, which included seven focus group discussions with 40 sexually active men, over the age of 18. A self-administered survey of 101 men, attending health clinics in Cape Town, South Africa was also conducted.

Results: Men's condom preferences can be grouped into five themes: 1) *high functionality*, 2) *pleasure, sensation, and intimacy*, 3) *accessibility and availability*, 4) *trust*, and 5) *sexual appeal and excitement*. More specifically men identified characteristics such as thin, break-resistant, textured, and colored and/or flavored as important characteristics to have in a condom.

Conclusion: This study makes a strong case for the inclusion of new condom designs for public sector distribution throughout South Africa. Specifically, the majority of participants expressed distrust for government condoms and reported negative experiences with public sector condoms. Existing condoms, and new innovations merit further research that could include implementation science regarding provision of a more diverse array of condom options.

Exploring Men's Condom Experiences, Preferences, and Desires in Cape Town, South Africa: Are New Condoms Needed?

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TABLE OF CONTENTS

Chapter 1

Introduction

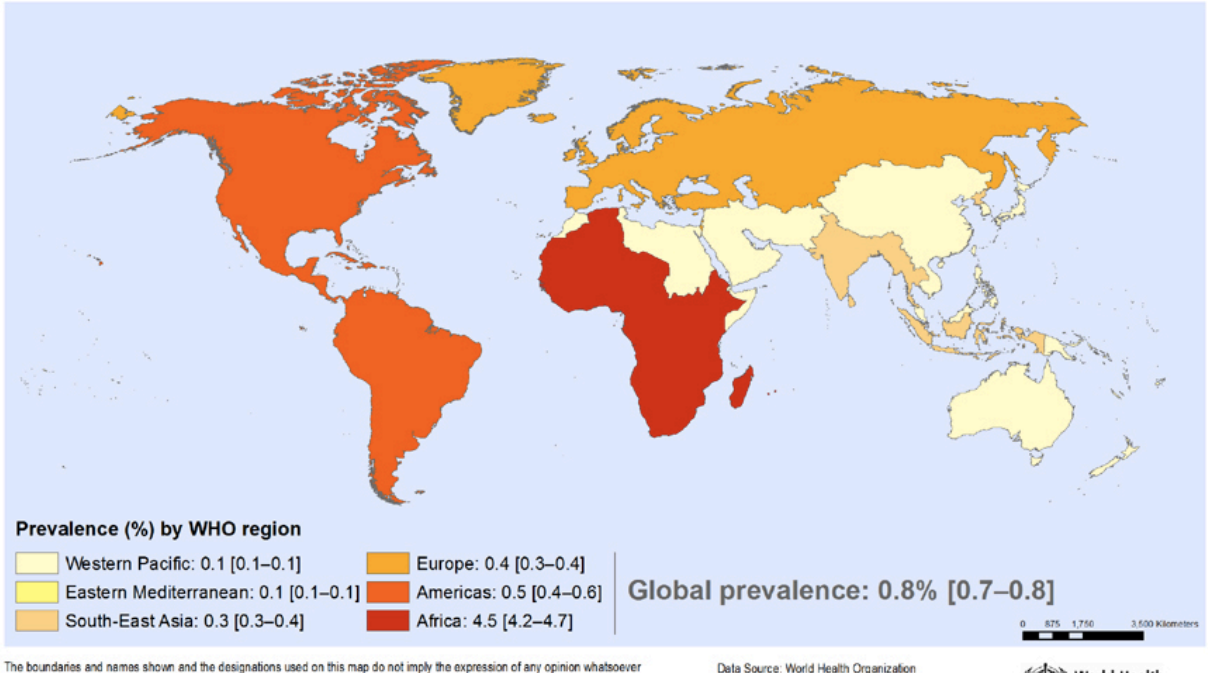
HIV: The Global Burden

HIV remains one of the world's greatest public health challenges. The World Health Organization estimated that there were 35 million people living with HIV/AIDS globally in 2013 (WHO, 2014). Since the onset of the virus, almost 78 million people have been infected with HIV, and almost 39 million people have died from AIDS. Worldwide, prevalence of the virus is less than 1 percent of adults age15-49 (WHO, 2014), however, there are large geographic, social, and other disparities in prevalence, with HIV disproportionately impacting sub-Saharan Africa (see Figure1). Unprotected sex remains one of the primary risk factors for contracting HIV throughout sub-Saharan Africa and the world (Buvé et al., 2002; Steinbrook, 2004).

Sub-Saharan Africa's disproportionate HIV burden is due to a number of factors. The virus was first located in Kinshasa, Democratic Republic of the Congo (Faria et al., 2014). It initially existed in simians or chimpanzees and later transferred to humans during slaughter. As the virus mutated in the human species, factors such as economic growth, trade, and colonialism in the region only increased its spread and amplified its impact (Timberg and Halperin, 2014). Other factors, such as the availability of antiretroviral treatment (and subsequent impact on community viral load), prevalence of male circumcision as a protective factor, and migration patterns have influenced how the HIV epidemic has spread.

Approximately one in every twenty adults in sub-Saharan Africa lives with HIV, and this geographic area accounts for 71% of the world's HIV infections, despite accounting for only 13% of the world's population (Population Reference Bureau, 2014; UNAIDS, 2014; WHO, 2014). In 2013, UNAIDS estimated that there were 1.5 million new HIV infections in sub-Saharan Africa (UNAIDS, 2014). In that same year, there were 1.1 million HIV-related deaths in the region (UNAIDS, 2014). Although these statistics are startling, the per annum number of new HIV infections has fallen by 33% since 2005 (KFF, 2014; UNAIDS, 2014). However, much work still needs to be done to further reduce the incidence of HIV in this region.

Figure 1-1: HIV Prevalence of adults age 15-49 by WHO Region, 2013



Source: (WHO, 2014).

HIV in South Africa

South Africa has one of the world's highest HIV prevalence rates. UNAIDS estimates an HIV prevalence of 19.1% among South African adults age 15-49 (UNAIDS, 2013). Almost a quarter of a million people have died in South Africa since the onset of the virus, and there are an estimated 6,300,000 people living with HIV in the country (UNAIDS, 2013). In Cape Town, HIV/AIDS is the second leading cause of premature death among the city's population (Groenewald et al., 2014). Although HIV prevalence varies across geographical location, age, race, gender, and socio-economic status throughout the country; those most at risk include black African males age 25-49; black African women age 24-34; the disabled[1]; high-risk drug and alcohol users; and cohabitating individuals (HSRC, 2014; SANAC, 2011; UNFPA South Africa, 2014). Like elsewhere in sub-Saharan Africa, the sexual transmission of HIV continues to be the leading route of transmission (UNFPA South Africa, 2014). South Africa has made a concerted effort to target HIV prevention, particularly among populations most at risk; using promising biomedical strategies like treatment as prevention (TasP)[2] and male circumcision. Another promising biomedical strategy for HIV prevention involves improving the experience of condom use, potentially increasing the levels of its use. Modeling indicates that condom use still has an important role to play in HIV prevention even under the case of scale-up of other biomedical interventions (Sullivan et al., 2012).

[1] Disabled includes those with physical and sensory impairments (HSRC, 2014).

[2] "TasP is a term used to describe HIV prevention methods that use antiretroviral therapy (ART) in HIV-positive and HIV-negative persons to decrease the risk of HIV transmission" (MSH, PEPFAR, and USAID, 2012; WHO, 2012)

Condoms as HIV Prevention

As the prevalence of new HIV infections increases in South Africa and around the world, the promotion of condom use has been and continues to be a central tenet of HIV prevention programs (Hearst and Chen, 2004; Maharaj and Cleland, 2004; Reece et al., 2010). As one UN Statement noted, "The male latex condom is the single most efficient, available technology to reduce the sexual transmission of HIV and other sexually transmitted infections" (STIs) (UNAIDS, 2009). A meta-analysis comparing those reporting "always" using condoms found that this group was 80% less likely to acquire HIV compared to those reporting "never" using condoms. This 80% is likely an underestimate, as social desirability bias makes those who may not use condoms all the time, more likely to report consistent condom use (Minnis et al., 2009; Weller and Davis-Beaty, 2007).

In 2012, the South African National HIV Prevalence, Incidence, and Behavior Survey found that only 36.2% of all sexually active respondents, aged 15 and older used a condom the last sex time they had sex with their most recent partner (HSRC, 2014). Men reported a higher rate of condom use than women, with 38.6% using condoms, while 33.6% of women reporting its use (HSRC, 2014).

The low rate of condom use is particularly notable given the South African government's HIV prevention policy. The government has committed to distribute a total of one billion condoms, through its 2012-2016 National Strategic Plan, in order to increase condom availability and accessibility (SANAC, 2011). Recent policies have also made condoms

available in health facilities and non-traditional outlets, such as correctional facilities, mines, airports, malls, bars, hotels, and schools throughout South Africa (SANAC, 2011). Free and widely available condoms throughout much of South Africa are a direct result of government policy, yet consistent use has declined. While this may be limited by user behavior and device functionality (Rosenberg et al., 1996), other factors have the potential to influence condom use.

Factors most associated with willingness to use condoms include decreased sensitivity and sexual enjoyment (Rosenberg et al., 1996). Additionally, users may be susceptible to allergic reactions or sensitive to condom materials such as latex (Rosenberg et al., 1996). Difficulties can also arise when donning and removing condoms, which can decrease its efficacy (Gallo et al., 2006). Moreover, depending on the material of the condom, some may not store well in high temperatures or extreme heat (Gallo et al., 2006).

Condoms in South Africa

In South Africa, the condom market is composed of three sectors: 1) the public sector, which is operated by the government and responsible for the distribution of free condoms; 2) the social marketing sector, which distributes condoms at low-cost; 3) and the commercial sector, which sells condoms for profit (Pallin, et al., 2013). Referred to as a total market approach, South Africans have a multitude of options to procure condoms.

Nevertheless, current options regarding free or low-cost condoms in South Africa are limited. In regards to size, condom girth options are very limited; with a range of 52-56

mm. Commercial sector condoms sold in South Africa do not publish data regarding their length. However, free public sector condoms—Choice condoms—have a circumference of 52-53 mm and a length ranging from 170-180 mm (Karim and Karim, 2010). Despite numerous condom "sizes" being available on the market, the differences in condom dimension are nominal.

Similar to the limited range of sizes available, free condom options, have limited features such as shape and texture. Efforts to have a wider array of condoms are currently underway, but have inadequate availability. In 2014, the South African Ministry of Health announced the rollout of colored and flavored condoms (BBC News, 2014). In April 2015, Choice condoms will be available in strawberry, banana, chocolate, and vanilla flavors at colleges, universities, and clinics in South Africa (SA Breaking News, 2015; The News Room, 2015). Textured, studded, and ribbed condoms are not subsidized by the Government of South Africa and are only available through the commercial sector.

Although public sector condoms are free and widely available, the credibility of the government-branded "Choice" condom is under scrutiny. In recent years there have been three large-scale recalls of Choice Condoms, resulting in millions of condoms being pulled off the market. In 2012, 1.35 million Choice condoms were recalled due to a large number of complaints of breakage during intercourse (BBC News, 2012). Additionally, in 2007, the South African government had two separate recalls of defective condoms, totaling 25 million. The first incident resulted in 20 million condoms recalled. The faulty condoms passed through tests due to corruption and fraud. The second incident included

condoms that failed burst test standards as well as fraudulent condom approvals by personnel at the South African Bureau for Standards (AIDS Foundation of South Africa, 2013; Felix, 2007; Moszynski, 2007). Despite these recalls, Choice is the most widely available condom throughout South Africa, due its free distribution, accounting for approximately 80% of the country's total condom market (Chapman et al., 2012).

In light of condom recalls, the South African government took steps to restore consumer confidence in Choice condoms (USAID, 2009). However, there is a history of underlying mistrust and disdain for public sector condoms within the country. In 2004, the South African National Department of Health (NDOH) created Choice condoms in order to revitalize the image of public sector condoms, which had been viewed as problematic. The once nameless and plainly packaged government condoms, that had been distributed since 2000, suffered from public criticism (Freeman, 2004; Kaiser Health News, 2004). This criticism arose from the perception that government condoms were of inferior quality and less reliable (BBC News, 2004; Freeman, 2004). Much of this was due to the lack of an effective quality assurance program to ensure the production of high quality condoms (Freeman, 2004). A total revamp and rebranding of public sector condoms ensued, in order to promote condom use (Beksinska, et al., 2012).

At the time, research conducted by NDOH illustrated that most young South Africans liked the new-look of the condom and its slogan "no choice, no play" (Freeman, 2004). However, South African's initial positive and welcoming perception of the newly branded, Choice condoms was short lived. Today, South Africans have a strong aversion

to Choice condoms (Guillen et al., 2014). Many perceive the brand as cheap and report that the condom's wide distribution is indicative of poor quality (Versteeg and Murray, 2008). Choice are also perceived as "ineffective, smelly and even 'infectious' and are widely seen to be of lower status as compared to commercial brands" (Mulwo et al., 2009). One study among peer educators at a South African university found that students would rather purchase other condom brands than use free Choice condoms (Roussouw, 2013).

While Choice condoms make up the majority of public sector condoms distributed throughout South Africa, it is not the only brand available. The Anova Health Institute's Health4Men program initiated "Play Nice" branded condoms that are available in clinics and health centers at no cost. Play Nice condoms come in various sizes and colors and are distributed as a safe sex package—which includes a packet of water-based lubricant, promoting both health and pleasure (Anova Health Institute, 2013; Motswagae, n.d.) As a partner with NDOH, Health4Men targets HIV prevention and provides sexual health services for gay and bisexual men. The program is responsible for distributing over 2.2 million condoms and almost 2 million packets of lubricant a year, by partnering with local taverns and shebeens[3] (Anova Health Institute, 2013). While Heatlh4Men serves an important and at-risk sub-population, its reach is limited. Health4Men's current condom distribution makes up less than 1% of the number of condoms needed to achieve the National Strategic Plan's distribution goal of 1 billion condoms.

[3] A shebeen is "an unlicensed or illegally operated drinking establishment" (Merriam-Webster, 2015).

Condom Technology and Innovations

Condom technology has changed very little in last 50 years (Grand Challenges in Global Health, 2013). The earliest versions of rubber condoms were made from crepe rubber—"a crude rubber in the form of nearly white to brown crinkled sheets" (Merriam-Webster, n.d.). By the end of the 18th century, the device was later improved to be seamless. Condoms with reservoir tips first appeared in 1901. Stronger condoms followed thirty years later with the advent of liquid latex, extending product shelf-life (Youssef, 1993). Materials such as plastic and polyurethane were then introduced, followed by the introduction of color and lubricant (Youssef, 1993).

In the last 15 years, condom companies have tried to innovate and reinvent the male latex condom (Global Protection Corp., 2015; Origami, 2015; TheyFit, 2015). This has led to the production of a variety of condoms with varying dimensions, designs, and functions. Domed, patterned, glow in the dark, and custom fit condoms are currently available for purchase in stores and online websites (Global Protection Corp., 2015; TheyFit, 2015). This array of condom options might serve as an incentive for users to use condoms more frequently, if the users prefer some of these condom options to others. A small trial intervention on condom choice among young men not only improved their self-rating of sexual experiences, but also their willingness to use condoms (Milhausen et al., 2011).

In order to increase the acceptability of condoms, the Bill and Melinda Gates Foundation (BMGF), through its Grand Challenges in Global Health program, initiated a call for proposals to develop the *Next Generation Condom* in March 2013 (Grand Challenges in

Global Health, 2013). The foundation awarded eleven groups $100,000 each to develop condoms that would enhance and sustain sexual pleasure, increase uptake, or make condom donning easier (Grand Challenges in Global Health, 2013). Each funded proposal features a key proposed condom innovation, focusing on condom material, application, and sensation. The winning groups have 18 months to show that their design can be easily manufactured and demonstrate that the condom is safe and effective. After illustrating product safety and efficacy, each group can apply for a $1 million grant to scale up production and conduct clinical trials (Doucleff, 2013).

Although previous research has established dissatisfaction with Choice condoms, no research has been done in South Africa to understand how offering an increased array of condom options might impact acceptability and willingness to use condoms. Understanding more about condom preferences in South Africa could inform: (1) implementation of programs with the existing available range of condom options (texture, size, thickness, and shape) and (2) prioritization for future development of novel condom ideas and technologies.

Research Questions

In order to understand the condom preferences and demands among men in Cape Town, South Africa, this study used mixed methods to explore the following questions:

- What specific characteristics do men want in a condom and which of these are deemed most important?

- Which innovative condom ideas (from those proposed to the BMGF) do men most identify with, and which do they believe should be prioritized for future investigation?
- What are men's preferences regarding condom options (e.g. domed) that are currently available, but not necessarily accessible in much of South Africa?

Study Purpose

This research uses a mixed methods approach to identify specific characteristics that men desire in condoms, in order to inform condom promotion efforts and condom development efforts. It also seeks to classify the most important characteristics that men want in a condom; and describes condom use experiences of men in Cape Town, South Africa.

By understanding the condom preferences, experiences, and demands of male condom users, there is potential to redesign public sector condoms to accommodate those who are currently hesitant to use condoms. Examining the perception of and preferences for newly designed condoms among South African men will inform researchers and public health practitioners alike.

Chapter 2

Literature Review

The aims of this literature review are to synthesize previous research regarding preferred features in condoms; to understand men's experiences with condoms; and to understand the impact of specific condom preferences and experiences on condom use.

The literature review is divided into five sections:

- The first section presents prior research on men's condom preferences and its perceived effect on condom use;
- The second section highlights the current literature on condom failure and functionality, with a specific emphasis on the impact of condom slippage, breakage, and fit on condom use;
- The third section provides an overview of studies that examine men's perceived experiences with intimacy, pleasure, sensation, and excitement while using condoms;
- The fourth section explores condom accessibility and availability and its affect on condom use; and
- The final section presents gaps in the existing literature and the rationale for the present study.

Male condom preferences

Current literature around male condom preferences is primarily conducted in the United States and other developed countries with few studies in Africa. However, one noteworthy study examines men's preferences for various condom types, in Africa. Weaver and colleagues (2011) conducted an unblinded, randomized, controlled trial of 1274 men in Ghana, Kenya, and South Africa. The study assessed whether distinctive condom options would increase condom use over a period of six months (Weaver et al., 2011). Researchers also investigated "the acceptability, preference, and uptake of various condom types." Using random allocation, study participants were placed into two groups—standard or choice. The standard group received a standard USAID condom, while participants in the choice group received three different condom brands, which included inSpiral, Rough Rider, and a local brand specific to each country. Among participants in the choice group —90% preferred Rough Rider condoms as compared to the local brand, where less than 1% of participants preferred this condom. Men in both arms preferred Rough Rider the most, followed by the USAID condom, while the InSpiral and the local brand condom were preferred the least. The authors also identified that although the local brand was identical to the USAID condom (except packaging and promotion), participants preferred the USAID condom significantly to the local brand.

Weaver and colleagues' 2011 study also found that although men in the choice group unanimously preferred Rough Rider condoms in all countries, this preference did not translate into an increase in condom use when compared to the control group (Weaver et al., 2011). Participants assigned to the control group, using USAID condoms, had a

significant increase in their frequency of condom use over six months. However uptake was significantly higher in the choice group.

Unlike Africa, numerous studies have been conducted in the United States to investigate this topic. One of the first studies to analyze men's condom preferences was conducted by Grady and colleagues (1993). Researchers used a national survey of 3,321 adult men, to analyze individual condom characteristics and how they affect men's condom perceptions and preferences for various condoms. Participants preferred condoms that did not slip off during sex; easy to put on; and had adequate lubrication. Other important characteristics that men cited were easy accessibility, condoms with a reservoir tip, and thinness. Lower ranking characteristics included condom color and texture.

The study also found that black men were significantly more likely than other races to prefer condoms that were easy to put on and had enough lubrication. This population, within the sample, also indicated that color and odor were important characteristics, unlike other participants (Grady et al., 1993). Substantial male preferences for specific condom features such as colors, were also identified in a mixed methods study of South African men and sex workers (Guillen et al., 2014). Interviews with sex workers indicated that their clients preferred colored, flavored, and textured condoms.

One study conducted by Rhodes and colleagues explored condom preferences of gay and bisexual men in the southern United States. Study findings indicate that men preferred clear-colored and Trojan condoms (Rhodes et al., 2007). However, the preferences

investigated were strictly based on condom color and brand. Further characteristics such as functionality, sensation, and trust were not examined. Condom thinness was another condom preference identified by a study conducted in New York City. In a survey of 456 STD clinic patients, the study found that almost half (42%) of the respondents identified "thin" as a an important characteristic of a condom (Burke et al., 2011). Thirteen percent of the respondents selected color, and 7% identified ribbing as important condom characteristics (Burke et al., 2011).

Condom failure and functionality

Much of the literature surrounding condom failure and functionality is centered on breakage, slippage, and poor fit. Each of these factors has the potential to lead to inconsistent use, decreased effectiveness, and condom failure. One study found that among men reporting poor fitting condoms, almost half (44.7%) had instances of breakage (Crosby et al., 2010). Another study found that men with above average penile dimensions have problems with condom fit (Reece et al., 2009). In light of this body of evidence, several studies have also recommended that there be a wider variety of condom sizes to fit the wide range of penile dimensions (Reece et al., 2010; Reece et al., 2009; Reece et al., 2008).

Current research in the United States spans across race and explores condom failure among men who have sex with men and men who have sex with women. However, much of the work on this topic has been quantitative with few qualitative research studies conducted, which limits the contextualization of findings regarding reasons for condom

use or non-use. However, one noteworthy qualitative study by Crosby and colleagues explore and examine condom failure among African-American men recently diagnosed with STIs (Crosby et al., 2004). Through in-depth interviews, researchers found that condom fit and how well condoms feel during sex were important to men (Crosby et al., 2004). The study also found that, although men were motivated to use condoms, they encountered problems such as breakage and slippage. Men in the study commonly blamed tight fitting condoms for slippage, while errors in application such as trapped air added to instances of condom breakage.

Published literature from South Africa is less dense in this area. One mixed methods study investigating the feasibility of fitted condoms as a sexual intervention in Cape Town, South Africa reported that more than half (67%) of the 133 male respondents had experienced condom fit problems that led to breakage and slippage (Guillen et al., 2014). Participants in the qualitative portion of the study had similar experiences. Interviews with sex workers revealed that most had experienced instances of condom failure with their clients. Many cited that the availability of different condom sizes could increase their client's willingness to use condoms.

Intimacy, pleasure, sensation, excitement, and condom use

Intimacy

A desire to reach a higher level of intimacy is strongly linked to condom non-use (Greene et al., 2014; Khan et al., 2005). The literature surrounding condom use and intimacy identifies that physical and emotional intimacy often outweighs health concerns (Corbett

et al., 2009). Relationship status is also a factor in the use of condoms, likely in part due to issues regarding intimacy and in part due to the mistrust of casual partners (Macaluso et al., 2000; Maharaj, 2006). However, in serious relationships condoms are perceived to hamper the emotional and physical closeness between partners (Khan et al., 2005). For example, in one qualitative study conducted in American high-risk heterosexual relationships, condom non-use was used as a strategy to indicate relationship seriousness (Corbett et al., 2009). Golub and colleagues (2012) found that individuals who endorse the belief that condoms decrease intimacy were more likely not to use condoms (Golub et al., 2012; Starks et al., 2014). Similarly, findings from a study conducted amongst 245 MSM found a correlation between male beliefs of intimacy interference and the frequency of unprotected sex in which they engaged (Starks et al., 2014)

However, not all studies have replicated the correlation between intimacy and condom non-use. In a sample of 45 gay male couples, the author examined the association between perceptions of intimacy and condom use. McNeal (1997) characterized factors of intimacy, including relationship satisfaction, sexual excitement, and closeness. The study found a negative correlation between relationship satisfaction and condom use, suggesting that as men experienced more relationship satisfaction, they were less likely to use condoms. The study also found no significant relationship between partner closeness and condom use, suggesting that that not all facets of intimacy predict condom use.

Pleasure, Sensation, and Excitement

Pleasure, sensation, and excitement have been identified as barriers to condom use,

across age, sex, and sexual orientation (Abdool Karim et al., 1992; Bell et al., 2003; Nettleman et al., 2007; Sarkar, 2008). In studies among rural villagers in Tanzania and university student in the United States, condom use is rated as reducing sexual pleasure, sensation, and excitement (Plummer et al., 2006; Randolph et al., 2007). One study found that, aside from protecting against unplanned pregnancy or STIs, men would rather forgo condom use due to the decrease in sexual pleasure
(Grady et al., 1999), "with many of them asserting that condom use interferes with sexual pleasure and intimacy"(East et al., 2007). Similar to pleasure, a study among gay male couples identified a significant negative association between sexual excitement and condom use (McNeal, 1997). These findings suggest that as sexual excitement increased, condom use decreased. This outcome was linked to men's physical satisfaction of sex within their relationships.

A study of condom "turn offs" among men in the United States explored some of the facets of sensation, pleasure, and reasons why men and women choose not to wear condoms (Crosby et al., 2008b). Through a web-based survey of 833 heterosexual men and women, more than half reported that condoms caused physical or emotional "turn offs" the last time they used condoms. Many participants stated that condoms "spoil the mood," "decrease my sensation," or "decrease my partner's sensation."

In an African context, studies have found that male descriptions of pleasure are closely associated with men's desire to have a "flesh-to-flesh" feeling (Campbell, 2000; MacPhail and Campbell, 2001; Plummer et al., 2006; Selikow et al., 2009; Thomsen et

al., 2004). Weaver and colleagues (2011) found that 25% of male participants, in their control group, using condoms distributed by USAID reported condom-related reductions in their pleasure. However, 65% of the participants in this study reported that USAID condoms increased their pleasure or indicated that sex felt the "same as having sex without a condom"(Weaver et al., 2011). The literature is not in agreement on this subject, as participants in a qualitative study conducted in nine villages of Tanzania had very genitive perceptions of condoms and claimed that condoms "ruin the excitement of flesh-to-flesh contact" (Plummer et al., 2006). Participants also reported that condom use "negatively delayed the onset of intercourse, changed friction, reduced sensation, and (most commonly) delayed ejaculation"(Plummer et al., 2006).

Although the literature illustrates the importance of pleasure, sensation, and excitement as factors that may influence condom use, reduced pleasure can incite resistance to use condoms as well as condom use refusal (East et al., 2007). In a study of 5,764 participants, 37.6% indicated that they had refused to use a condom in the past. However, these participants indicated that they used condoms in the past, which suggests selective use with sexual partners (Chandran et al., 2012).

Condom brand trust and reputation

Although the literature on the impact of condom brand reputation on condom use is very thin, there are a few noteworthy studies that have been conducted. One of which, includes a 2009 study that investigated university students' perception of condom brands and efficacy. By conducting survey questionnaires, in-depth interviews, and non-participant

observations of 1,400 university students in Kwazulu-Natal, South Africa, Mulwo and colleagues found that young men and women trusted the efficacy of brand name condoms more than public sector/government condoms (Mulwo et al., 2009). Additionally, the study found that while students had access to government condoms, they were seen as ineffective, forgoing condom use. Mulwo and colleagues also found that university students perceived government/public sector condoms to provide less protection than those sold in shops. Most students' perceptions were based on the experiences of peers within their social network, while others were based on personal experiences with condom failure.

Another noteworthy study, while not methodologically rigorous, was an anthropological study conducted in Namibia (Rigillo, 2009). The author explored ways in which young, urban Namibians expressed mistrust in the efficacy of free condoms. The findings of this study indicate that although young people possessed HIV knowledge and understanding of how the virus is spread, many were hesitant to use certain condoms to protect themselves from HIV. Much of this hesitance was reliant on the brand, origin, and cost of the condom, which indicated the condom's perceived quality (Rigillo, 2009).

Condom accessibility and availability

Condom availability and access are necessary, but not sufficient components of condom use (Agha et al., 2002). The majority of condom accessibility literature focuses on the availability of condoms in schools (Han and Bennish, 2009; Hlalele and Alexander, 2011), with few data honing in on the accessibility of condoms during the moment of sex.

While free public sector condoms are accessible and available in South Africa and other developing countries, they are not always available at the time of sex (Sarkar, 2008). Prior to an overhaul of South Africa's HIV prevention plan, condoms were not always available or accessible. One qualitative study conducted in 2001 reported that participants had unprotected sex due a lack of condoms access (MacPhail and Campbell, 2001).

Issues with condom accessibility have also been found to occur in the United States. One study examining condom access in high HIV risk areas of Bronx, NY surveyed 75 stores and identified physical barriers to accessing condoms (Rizkalla et al., 2010). Specifically, condoms were physically inaccessible in locations most frequented throughout the community. The majority of stores surveyed (91%) sold condoms, however many of these stores (78%) required the assistance of store personnel in order to be purchased. As a consequence, condom accessibility was poor at numerous sites. Additionally, low-income districts with the highest HIV and STD rates had poor access to condoms.

Similar findings of low condom access, among the poor, exist in literature from various African countries. In a study assessing retail venues and the equity in condom access among urban Zambians, researchers found that compared to the wealthy, males with the least amount of assets were 1.8 times as likely to be within 10 minutes of a condom outlet (Agha and Kusanthan, 2003). Comparable literature from Malawi also addresses condom access. In a geospatial analysis of condom access and availability, in urban Malawi, Shachama and colleagues (2015) suggest the existence 'condom deserts.' Specifically, high accessibility to condoms was a barrier to condom use. In an audit of 220 potential

condom vendors, only 96 stores (44%) sold or distributed condoms. While, stores were open an average of 13.6 hours during the week and 13.5 hours on the weekend, there were substantial obstacles to attaining condoms. Condoms were stored in the back of the store and less than 10% of stores had condoms visible to patrons. In regards to cost, only 13 stores had condoms available at no cost. A significant cost increase was also identified among condoms sold in shops that also sold alcohol.

In an assessment of 70 public- and private-sector condom outlets in urban and rural areas of Kwazulu-Natal, South Africa, Gilmour and colleagues found that condoms were available in all public clinics and in few doctors offices and non-health outlets (Gilmour et al., 2000). However, more recent studies assessing condom availability in South Africa report high rates of condom accessibility in youth and adults (Beksinska et al., 2012).

Summary

An analysis of the literature illustrates a number of important themes such as the importance of condom preferences, condom quality, and sexual pleasure. Much of this data, however, comes from the United States. Comparatively, little rigorous research has conducted in South Africa. This review of current literature illustrates the many factors affecting condom use. Studies show that condom preferences are important in men's desire to use condoms, however preferences for specific condom attributes and characteristics do not necessarily increase condom use. This is important when considering available condom options. The literature also demonstrates a need for condoms to function properly and accommodate the wide range of penile dimensions.

Several studies show that men attributed condom failure with poor condom fit, causing breakage or slippage during sex. Prior research also emphasizes men's perceived loss of pleasure, intimacy, and excitement when using condoms. Specifically, studies have found that male condom users perceive condoms to interfere with their sexual pleasure.

While not a topic entrenched with rigorous methodological studies, prior research asserts that brand trust has a negative effect on the use of specific brands. This was especially true for public sector condoms, where they were perceived as being of inferior quality. Lastly, many studies investigating condom accessibility and availability found that condoms are not always available despite their mass distribution. This was especially true during the moment of sex. When condoms were available, there were significant physical and socio-economic barrier to their uptake.

While studies have been conducted many of the topic areas, of this literature review, there is an overall lack of qualitative depth in exploring reasons why men prefer specific condoms or condom characteristics. Therefore, the quantitative nature of much the literature and lack thereof has been identified as a gap. Additionally, the lack of published data on condom brand reputation and its effect on condom use illustrates an area that has the potential for investigation. In light of the current literature, this study aims to add to and strengthen the research surrounding male condom preferences for South African men.

Chapter 3

Manuscript

Introduction

South Africa has one of the world's highest HIV prevalence rates. UNAIDS estimates an HIV prevalence of 19.1% among South African adults age 15-49 (UNAIDS, 2013). Almost a quarter of a million people have died in South Africa since the onset of the virus, and there are an estimated 6,300,000 people living with HIV in the country (UNAIDS, 2013). Like elsewhere in sub-Saharan Africa, the sexual transmission of HIV continues to be the leading route of transmission in South Africa (UNFPA South Africa, 2014). As the prevalence of new HIV infections increases throughout the country and around the world, the promotion of condom use has been and continues to be a central tenet of HIV prevention programs (Hearst & Chen, 2004; Maharaj & Cleland, 2004; Reece, Briggs, Dodge, Herbenick, & Glover, 2010).

While the South African government has made a concerted effort to target HIV prevention, the 2012 South African National HIV Prevalence, Incidence, and Behavior Survey found that only 36.2% of all sexually active respondents, aged 15 and older used a condom the last sex time they had sex, with their most recent partner (HSRC, 2014). The low rate of condom use is particularly notable given the South African government's HIV prevention policy. Recent policies have made condoms available in health facilities and non-traditional outlets, such as correctional facilities, mines, airports, malls, bars, hotels, and schools throughout South Africa (SANAC, 2011). Free and widely available

condoms throughout much of South Africa are a direct result of government policy, yet consistent use has declined.

South Africa's condom market is composed of three sectors: 1) the public sector, which is operated by the government and responsible for the distribution of free condoms; 2) the social marketing sector, which distributes condoms at low-cost; 3) and the commercial sector, which sells condoms for profit (Pallin, Meekers, Lupu, & Longfield., 2013). Referred to as a total market approach, South Africans have a multitude of options to procure condoms. However, current options regarding free or low-cost condoms in are limited. Efforts to have a wider array of condoms are currently underway, but have inadequate availability.

In the last 15 years, condom companies have tried to innovate and reinvent the male latex condom (Global Protection Corp., 2015; Origami, 2015; TheyFit, 2015). The Bill and Melinda Gates Foundation (BMGF), through its Grand Challenges in Global Health program, initiated a call for proposals to develop the *Next Generation Condom* in March 2013 (Grand Challenges in Global Health, 2013). The foundation awarded eleven groups $100,000 each to develop condoms that would enhance and sustain sexual pleasure, increase uptake, or make condom donning easier (Grand Challenges in Global Health, 2013). Each funded proposal features a key proposed condom innovation, focusing on condom material, application, and sensation.

Although previous research has established dissatisfaction with public sector condoms in South Africa, no research has been done to understand how offering an increased array of condom options might impact acceptability and willingness to use condoms. Understanding more about condom preferences in South Africa could inform: (1) implementation of programs with the existing available range of condom options (texture, size, thickness, and shape) and (2) prioritization for future development of novel condom ideas and technologies.

Therefore, the purpose of this study is to identify specific characteristics that men desire in condoms, in order to inform condom promotion efforts and condom development efforts. It also seeks to classify the most important characteristics that men want in a condom; and describe condom use experiences of men in Cape Town, South Africa.

Methods

Study Setting

Data for this study were primarily obtained from clinic waiting rooms areas and physically proximate areas within 100 meters of clinics, located in or near Cape Town, South Africa.[4]

Three of the four clinic sites were located in Khayelitsha—one of South Africa's largest townships and an area with exceptionally high HIV prevalence. Situated approximately 16 miles from Cape Town, Khayelitsha is home to almost 400, 000[5] people (City of Cape Town, 2013a). Built in 1983 during South Africa's apartheid era, it is comprised of mostly black Africans (98.6%), with a small percentage of colored[6] (0.6%), Asian (0.1%), white (0.1%), and other races (0.6%) (City of Cape Town, 2013a; South Africa History Online, n.d.). The township consists of formal and informal (shack) settlements and more than a third of the population (38%) is unemployed (City of Cape Town, 2013a; South Africa History Online, n.d.). Khayelitsha has an HIV prevalence of 33%: the highest in the Western Cape Province (City of Cape Town, 2012, 2013a; MSF, 2010).

The fourth clinic site was located in Parow, a northern suburb of Cape Town. Approximately 13 miles outside of the city, it has a population of almost 70,000 people.

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[4] Participants from Green Point were not recruited in or around City of Cape Town clinics.

[5] According to the 2011 official census record, Khayelitsha has a population of 391,749 (City of Cape Town, 2013a). However, due to the large number of unofficial residents, the population is believed to be greater (MSF, 2010).

[6] A person of mixed race.

The population is predominantly Colored (57%) and White (28%), with smaller populations of black Africans (11%), and Asians (2%) (City of Cape Town, 2013b).

In order to obtain a more diverse sample, data were also collected from MSM healthcare workers, from Anova Health Institute, located in a prosperous area of Cape Town—Green Point. Nestled in the middle of the city, Green Point is often referenced as Cape Town's version of SoHo. The neighborhood is lined with restaurants, nightclubs, and numerous tourist attractions (Cape Town Tourism, 2015). The area is also frequented by Cape Town's lesbian, gay, and transgender population.

Study Design

Investigators utilized a mixed methods approach consisting of two phases for this study. The first phase consisted of focus group discussions (FGD) and the second phase consisted of a self-administered electronic survey questionnaire. FGD were conducted, first, in order to foster a rich discussion about men's desired condom characteristics, to help develop questions in the survey questionnaire, and to identify participants' experiences with condoms currently available in South Africa. FGDs also helped quickly gather and identify factors influencing condom non-use.

The survey questionnaire was conducted after all data were collected from FGDs. This approach was selected to help quantify FGD findings. Specifically, the data gathered from FGDs helped triangulate survey data and identify themes of paradox or contradiction (Bryman, 2006). The combination of qualitative and quantitative methods

were selected to provide stronger evidence for conclusions by substantiating findings and adding precision to FGD narratives (Johnson and Onwuegbuzie, 2004).

Data Collection

Fieldwork and data collection were conducted in June and July 2014. Convenience sampling techniques were used to recruit male participants at all study sites (Siseko Men's Clinic, Nolungile Youth Clinic, Kuyasa Male Clinic, Parow Clinic, and Anova Institute) for the quantitative and qualitative portions of the study.

Qualitative Methods

FGDs were identified as the best data collection tool for this population since it has the power to provide insight on selected topics and elicit rich conversation. This method also helped explore participants' opinions, allowing the researchers to gain a better understanding of men's condom perceptions, experiences, and preferences.

A total of seven FGDs, consisting of 4-8 men were conducted with 40 male participants. Participants were recruited from clinic waiting rooms and the proximate area surrounding each clinic, to attain a diverse sample population with varying perspectives. In order to recruit participants we made a general announcement of the study in clinic waiting rooms or approached individuals to gage their interest in participating in the study. We screened for eligibility with a brief series of questions. Those eligible were: 1) male; 2) at least 18 years old; 3) had ever used a condom; 4) were sexually active within the last 12 months; and 5) had adequate verbal and written English comprehension. Participants consisted of clinic attendees as well as clinic staff. Eligible participants were given a brief overview of

the research study and if interested completed the written consent process. Participants were given light snacks during the FGD and compensated 50 Rand (approximately $5 USD) for their time at the end of the discussion.

Focus Group Guide

Prior to conducting each FGD, a semi-structured FGD guide was developed and underwent one round of pre-testing to strengthen its content. Pre-testing was conducted in South Africa among a group of graduate students, by researcher interviewers trained in qualitative methodology, including the author. The pre-testing sought feedback on the guide (questions and probes) as well as the overall FGD format.

The FGD guide sought to explore men's concerns and understandings about existing and future condoms, using 11 BMGF's exploratory condoms as a vehicle for discussion. During each FGD, participants were given two folders labeled "yes" or "no" as well as 11 small note cards with a description of each condom innovation. The moderator explained each condom design and gave participants a sheet of paper with each innovation listed. After a brief description of each innovation, participants were asked to place the corresponding note card in the "yes" or "no" folder, based on whether or not they would use the innovation described. Throughout this process participants shared their thoughts as well as reactions to each condom. Questions in the FG guide helped identify what participants liked or disliked about each condom. Examples of questions asked include: *Which condom would you most likely use? Could you talk about the top five condoms and*

why you like each of them? Can you describe the perfect condom? See Appendix A and B for the complete FG guide as well as the list of condom designs, respectively.

Qualitative Analysis

Each FGD was recorded using a handheld digital recorder and transcribed verbatim. Data from each FGD were stored, coded, and analyzed using MaxQDA Software 11 (VERBI GmbH, Berlin, Germany). Some data from one of the seven FGDs was not used in the analysis due to inaudible voice recording.

Using grounded theory, each FGD transcript was thoroughly read by the author and memos were created to generate inductive and deductive codes. This process, helped uncover relevant topics and themes throughout data analysis. Memos were further developed into a total of 21 codes. Based on systematic memos created by the author, code names and code definitions were then developed and applied to each transcript. Examples of codes include: *condom experiences*, c*ondom marketing and promotion*, *condom trust*, *innovation perceptions*, and *partner perceptions* (see Table 3-1 for definitions of each code described). Each code was further characterized into five major themes that assisted in developing the major findings of the study's research questions. These themes were generated and grounded in data collected from participants, and then compared to existing data and literature (Creswell, 2013).

Table 3-1: Focus Group Code Definitions

Code Name	Definition
Condom Experiences	Any discussion of the experiences men had when using condoms. Examples may include sexual experiences they've had with condoms. This does not include functionality.
Condom Marketing and Promotion	Any discussion of how condoms or their packaging should look and how condoms should be promoted in order to encourage their use.
Condom Trust	Expressions of trust in specific condoms. Reasons may include the reputation, perceived quality of the condom, and its price.
Innovation Perceptions	Any mention of men's perceptions and attitudes toward Gates' next generation condoms.
Partner Perceptions	Expressions of how men and their sexual partners feel about specific condom brands or condoms in general. This may include humiliation and other feelings.

Quantitative Methods

200 participants were recruited to participate in an electronic, self-administered, confidential survey questionnaire at clinics in Parow and Khayelitsha. These clinics included Parow Clinic, Siseko Men's Clinic, and Nolungile Youth Clinic. The same eligibility criteria for FGDs were employed for survey participation, except we removed the requirement of being male, as the survey encompassed modules relevant to female participants. Participants were also approached, recruited, and screened in the same manner as the FGD. Similar to the FGDs, eligible participants were given a brief overview of the research study and if interested were given the opportunity to provide written consent to participate. All participants were compensated 20 Rand (approximately $2 USD) and given a snack upon completion of the survey.

The survey questions, used for the present analysis, were a part of a larger survey questionnaire, comprised of the 11 modules. These modules addressed the domains of sexual history, condom use and non-use, condom preferences, as well as abortion knowledge attitudes and practices. For this analysis, only the modules addressing condom use, condom perceptions, and condom preferences were used from the survey questionnaire. Examples of key questions used in this analysis include: *select the top 3 reasons to explain why you have not used a condom in the past; please select what is important to you when choosing a condom*; and *please rate the following condoms (with 1 being the worst and 5 being the best) on which one you would like the most.*

The survey was designed and self-administered on electronic tablets, using the online surveygizmo.com platform, a survey platform that features data encryption, secure web protocols, and a HIPAA-businesses affiliate agreement with Emory University. Prior to its implementation, the study team conducted several rounds of pre-testing. Specifically, the study team checked for appropriate skip patterns (logic and programming) and conferred with local South African partners to identify cultural appropriateness of each item as well as the survey's overall readability.

Quantitative Analysis

In order to perform an in-depth analysis of the study's research questions, findings were reported for male participants, since the study focuses on male perspectives regarding condoms. Survey results were analyzed using SAS Software 9 (SAS Institute, Cary, USA). To assess men's condom preferences, a descriptive analysis of variables pertaining

to condom desires, preferences, and condom innovations was conducted. This included information on condom fit, feel, smell, pleasure, taste, and various condom characteristics. All variables were stratified by gender.

Ethical Considerations

The research protocol was reviewed, and expedited ethical approval was granted by the Human Science Research Council Research Ethics Committee (ID: 10350) and Emory University's Institutional Review Board (Study No.: IRB00066402). Approval was also granted by the City of Cape Town to conduct research in four clinics: Siseko Men's Clinic, Kuyasa Male Clinic, Nolungile Youth Clinic, and Parow Clinic. The head nurse at each clinic where we performed research, also granted permission to conduct the study on premise. Written consent was obtained from each participant prior to his or her participation in the FGD or survey questionnaire (see Appendix C and D for FGD and survey consent forms, respectively).

Results

A total of seven focus group discussions (FG/Ds) were conducted with 40 male participants over the age of 18. The majority (36) identified as black African, with a few identifying as colored (2) or white (2).

Separately, a quantitative survey instrument was administered to 200 participants. Of the 200 participants, 95 were female, 101 were male, and 1 identified as other. The majority of participants (195) were black African, with fewer colored (14), white (1), and other/unknown (10). Participants were between the ages of 18-52 years old. Mean age for men was 25 years old (range: 18-42) and women were 24 years old (range: 18-52). Table 3-2 illustrates the demographics of the male population in more detail.

Table 3-2: Demographic information, male survey participants

Age		
Mean age (years) = 25		
Race		
Black African	N = 99	98%
White	N = 0	0%
Colored	N = 3	2.97%
Religion (can select more than one)		
Christian	N = 73	72.28%
Traditional African Religion	N = 31	30.69%
No religion	N = 2	1.98%
Jewish	N = 1	1.02%
Muslim	N= 1	.99%
Income		
No Income	N = 54	53.47%
Less than R6,000 per year (less than $491 USD)†	N = 15	14.85%
R6,001 – R24,000 per year ($491 - $1,964 USD) †	N = 9	8.91%
R24,001 – 96,000 per year ($1,964 - 7,857 USD) †	N = 10	9.90%
R96,001 or more per year ($7,857.92 USD or more) †	N = 4	3.96%
Unsure	N=9	8.91%
Number of sexual partners in the past year		
1-5 sexual partners	N = 78	77.23%
6-10 sexual partners	N=17	16.83%
11-15 sexual partners	N=3	2.97%
16 or more sexual partners	N=3	2.97%
Used a condom, the entire time, at last sex*		
Yes	N = 47	50%
No	N = 37	39.36%
I can't remember	N = 9	9.57%

I don't know	N= 1	1.06%
HIV status**		
Positive	N = 7	7.61%
Negative	N = 84	91.30%
I don't know	N=1	1.09%

Key: †=Currency conversion as of March 11, 2015 (http://www.oanda.com); *7 missing; and **9 missing

Findings from the FGDs and the survey questionnaire were grouped into five major themes: 1) *high functionality*, 2) *pleasure, sensation, and intimacy*, 3) *accessibility and availability*, 4) *trust*, and 5) *sexual appeal and excitement*. Themes were selected to illustrate male participants' personal experiences with condoms; in particular themes explore problems encountered with condoms as well as men's desired condom characteristics.

Theme 1: *High-functionality*

The theme of condom functionality was brought up in several FGDs, in response to the idea of condom performance. Participants' discussion of functionality included examples of specific condom innovations that were break- or tear-resistant, lubricated, and fit properly. The majority of participants, in each FGD, discussed the importance and need for condoms that function well in these areas.

For example, when break-resistant condom innovations were introduced to FGD participants, the majority approved of this feature. However, some participants believed that a few of the condom innovation concepts were "too fancy." This was especially true for innovations made from unique materials, which raised questions of the condom's affordability and accessibility. One participant said he wanted a condom that was "just safe to use and strong—no breaking …nothing fancy." This discussion also uncovered

negative condom experiences among participants. Several participants complained that condoms they use tend to break during sex. One participant said, "because some of those other condoms, some of them are softer … they like to break too much." Survey results further elucidated participants' value of condom performance, in terms of break resistance. Sixty-five out of 101 (64%) participants rated break resistance as a 5 (the highest rating), in terms of importance.

Throughout the majority of FGDs, the clinical performance of condoms was frequently accompanied by discussion concerning condom size and fit. This was especially true when condom innovations designed to accommodate the wide range of men's penile dimensions were introduced. The description of various condom innovations prompted discussion of the role condom fit plays in their decision to wear condoms. One participant compared the importance of condom fit to trying on a pair of shoes:

> "Because if you can talk about a shoe, I don't wear a big shoe on my foot. When I'm in a shop, if I wear shoes and it fits me, I don't want to take it off and I go buy that [shoe] and I'm wearing it. I'm going out with it because it fits me. If it doesn't, I leave it." (FG 1)

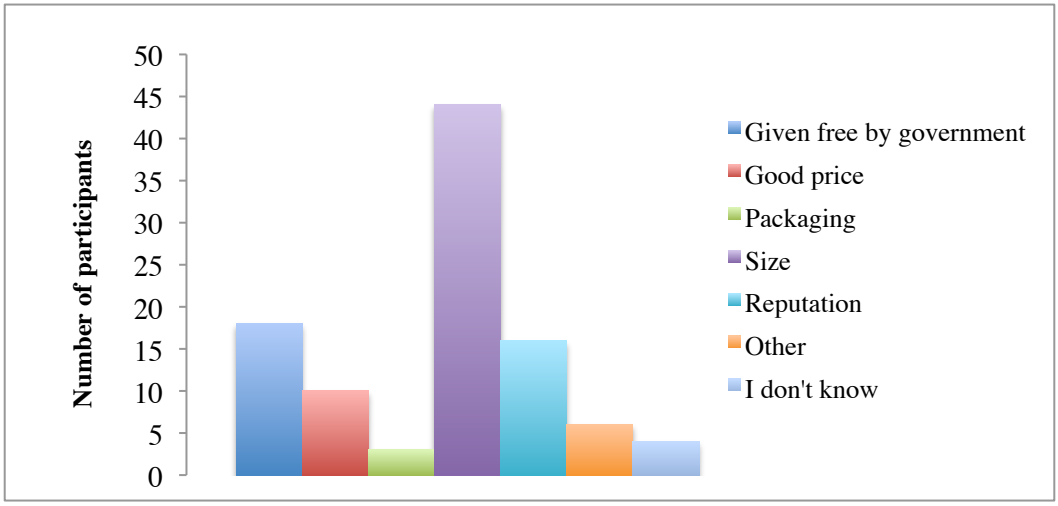
FG participants' discussion of condom fit also introduced their personal experiences with condoms, in which many noted the poor fit and smell of public sector (Choice brand) condoms distributed by the South African government. They often referred to these

condoms as being "too tight" and "smelly." One participant expressed how the features of public sector condoms made him more likely to not use or "unwrap" a condom:

> And you know at the possibility of it breaking more, like you unwrap then it's either no lubricant and it's dry, you unwrap, then it either stinks, you unwrap and then its like 'usable!' you put it on, it tears, you take it off, and unwrap [again]. So the quality is interchangeable between each packet. You might be able to use one. So, and it is funny enough, it is South African, it is SAB[S] approved (South African Bureau of Standards, a government institution), eh? It's SAB[S] approved, so somewhere, somehow, somebody is getting paid under the table, and it is scary to know that that goes out to massive, to the masses to public..." (FG 2)

Similarly, survey participants indicated poor fit and comfort as factors that led to condom non-use. In the sample population, 27/101 participants (27%) indicated that they did not like using condoms. Of this population, 7/27 participants (16%) selected fit as a reason for not wanting to use condoms. Additionally, 17/27 participants (39%) selected that they did not like using condoms, because condoms were uncomfortable. Moreover, when asked what characteristic was most important when selecting a condom, the majority of survey participants (44/101) indentified condom size as the most important factor (see Figure 3-1).

Figure 3-1: Features men identify as important when selecting a condom



When discussing lubricant features of condoms, reactions were mixed; participants in three out of the seven FGDs deemed lubrication as an important factor in a high functioning condom. Some FG participants discussed the importance of having enough lubrication during intercourse. For example, one participant articulated that a condom with enough lubricant would be the ideal condom for men, recommending that condoms cater to this need:

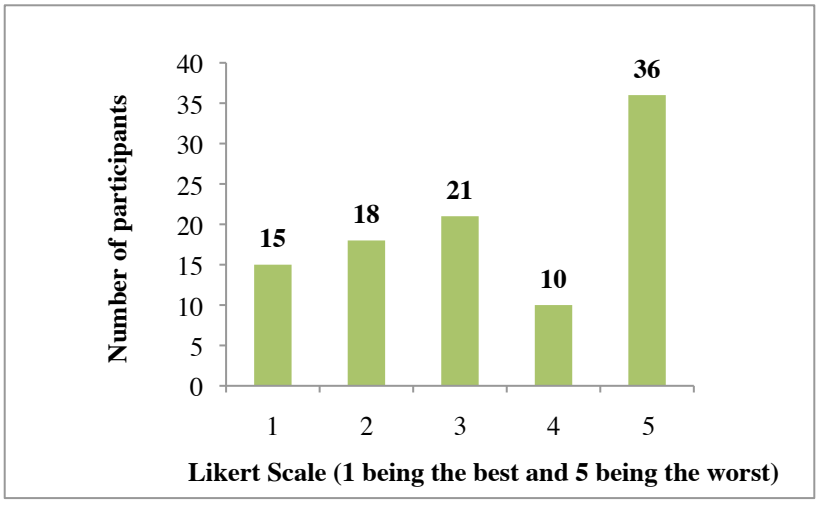
> "The holy grail would be a condom with enough lube for one session, that's it. So, it's in one application, you put it [on] whether it's with an applicator or not, but it's literally, it's only one packet." (FG 2)

Another participant expressed that the correct amount of lubricant, correct condom fit, and size would help alleviate stressful condom experiences:

> "And I think precisely a condom that will take away the stress of the right lubrication, when you're using a male condom you have to use this type of water-based lubrication, when using a female you can't use oil-based lubrication, a condom that will take away that worry and also a condom that is easy to fit, it's easy for you to take it and just put it in with no technical or maneuver way that you can do it." (FG 2)

Survey participants also emphasized the importance of condom lubrication. When asked to rate specific condom innovation features related to lubricant, 36 participants identified more lubricant as a characteristic, newly designed condoms should have (see Figure 3-2). Additionally, of the 51 survey participants that selected skin-to-skin feeling as a reason for not using condoms in the past, 24 (47%) indicated that they did not use condoms in the past, because they enjoyed the "wetness" of natural lubrication.

Figure 3-2: Rating of condom lubricant in newly designed condoms



However, all study participants did not have positive perceptions of lubricant. Some FGD participants disliked this feature, stating that they wanted to "get their partner wet," and

others felt that there was too much lubricant in condoms. Apart from these few exceptions, the majority of FGD participants deemed more and better lubricant as a priority. During discussions of lubricant, some men expressed dissatisfaction with of the amount of lubricant in Choice condoms. Men stated that these condoms needed more lubricant to help with issues of breakage during intercourse:

> "Some guys, if they do not afford to buy a condom from the shops—if they are going to use the free one's that you [get] from the clinic, they need to use uhhhh...that lubricated gel to avoid uhhh...the breakage, because the Choice ones are easy to break. So that's why some people uhhh...they decide to put a lot of lubricated just to...for the penetration and also to avoid the breakage." (FG 3)

Theme 2*: Pleasure, Sensation, and Intimacy*

When condom innovations with pleasure and sensation enhancing features were introduced to FGD participants, the majority of participants expressed the desire for condoms to enhance pleasure, sensation, and intimacy during sex. Discussion of the ultra thin condom or graphene condom innovation allowed men to discuss their perceptions of sensation during sex. All participants expressed that condom features such as "thinness" were important to them. They believed that this condom feature directly affected the level of pleasure and intimacy they felt with their partner. While FGD participants admired the feature of "thinness" and its attempt to give increased sensation, in general, they viewed the condoms they currently use as barriers in their sexual experience, inhibiting the

connection between their partners, therefore, diminishing their overall pleasure.

> "…I think we all go for is break resistant, skin-to-skin, ultra thin, because it also gives—especially if you're in a relationship—that the one thing that you really want to achieve is that sense of belonging and intimacy, and for sex to happen and for [it] to bring, because that's like almost bringing in a third partner into the sexual, into the bedroom and you want to integrate that so you want that to be ultra thin" (FG 2).

Another participant explained the importance of various condom features in relation to partner intimacy and protection against STDs:

> "…If they can get the basics right really, [if] it has enough lubrication, [it's] durable, [it's] thin, and marketed as something where it will not take away or diminish the sexual experience, but will create intimacy… especially for African people it's all about the intimacy. It's all about getting how close you can get to feeling your partner—being inside your partner and stuff like that. So it's important that it's like…that it doesn't take away from that. I think the whole thing about [it] is like how is it going to mess up your brain during the thing (sex)…you want to go into that act (sex) knowing that this little thing (condom) is going to protect you and not be a prophylactic only."(FG 2)

Participants' desire for intimacy was also evident in survey responses. Eight out of 51 participants attributed not using condoms in the past because of their desire to feel nothing between them and their partner.

When pleasure-enhancing condoms were introduced to FGD participants, the majority of participants emphasized the importance of wearing condoms that provide heightened sensation during sex. Similarly, 58/101 survey participants (57%) either strongly agreed (23/58) or agreed (35/58) that condoms reduced their pleasure during sex (see Figure 3-3). The interest in sensation and pleasure were also strongly aligned with FG participants' desire for thin or ultra-thin, studded, and ribbed condoms. Participants viewed these condoms as a way to enhance sensation during sex.

> "Sometimes condom[s] can have ummm …. bumps on the upper head, like Rough Rider (a studded condom) because that boosts a person's sensation. Cause if this one (condom) is too smooth, people outside in my community would say "now man, you know I'm so sick of this condom, I can't feel what…what I am doing." But if it could have uhhh...you know [have] those nice...uhhhh bumps…"(FG 5)

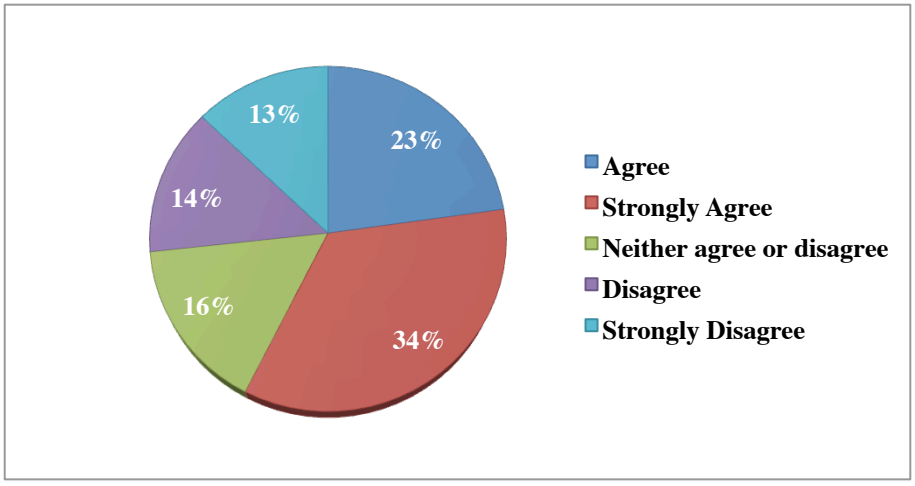
In discussing heightened sensation, many FG participants mentioned the concept of "skin-to-skin" and their desire to achieve this sensation. Participants defined this as sex that feels as though no condom is being worn. Similarly, 51/101 survey participants indicated that they did not wear condoms in the past because of their desire for a "skin-to-skin" feeling during sex. Of these survey participants, 8/51 (9%) indicated that they did

not use condoms in the past because they could only orgasm with skin-to-skin contact, while 27/51 (53%) indicated that they liked the warmth from skin-to-skin contact. During FGDs, participants compared the lack of skin-to-skin sensation to eating candy with the wrapper on.

> "….what I like about that one--it is light and thin and also there's a feeling ahhh of skin-to-skin, when you are…during the sexual intercourse. Like I think that one--it is best because like most of the...most of the men have that feeling that ahhh… when you are using condoms, in some cases, you are like someone eating a sweet with a paper. You see, so that feeling of skin-to-skin, that would be good for those people…"(FG 3)

In sum, many participants wanted condom protected sex to feel more like condomless sex, as stated by one participant: "Even though you are wearing it you mustn't feel like you're wearing a condom." (FG 4)

Figure 3-3: Condoms decrease my pleasure during sex



In many instances, participants expressed discontent with the amount of pleasure and sensation provided by condoms. One participant explained that the lack of sensation during intercourse was one of the main reasons why men do not wear condoms consistently:

> *"*And then what is normally happens sometimes, most people first use a condom and then feel like "I don't feel this condom" and then they take it out, because of the quality of the condom I'm guessing." (FG 5)

Theme 3*: Availability and Accessibility*

Condom availability and accessibility was a theme that transpired in FGDs and the survey questionnaire. When FGD participants were asked about the availability and accessibility of their ideal condom, men expressed the desire for condoms to be available in places they frequent most. These places included: malls, shebeens/taverns, garages, and sporting venues. Some participants mentioned that condoms should be available in schools, but this initiated a discussion in which other participants disagreed. The former group of participants argued that schools are an appropriate venue for providing access to condoms, because youth in a majority of schools are already sexually active. The latter group of participants felt strongly that making condoms available in schools would appear to promote the practice of sexual activity among youth, and this was problematic for these participants. One participant expressed his position on the issue:

> "We cannot ...run away from the fact that in high schools the young adults, the students—the young adults from …grade 11 to grade 12, those are young adults,

> they do practice sex. But [we] cannot run away from the fact that you've got to put some condoms there and try to teach them" (FG 6)

In each FGD the availability and accessibility of condoms led to discussions of condom cost and pricing. Participants emphasized the importance of condom pricing, with a strong preference for condoms available at no cost. Similarly, the survey questionnaire found that 74/101 (73%) participants felt that price was important in the condom selection process. Additionally, 18/101 survey participants indicated that condoms given for free, by the government, was important when selecting a condom (see Figure 3-1). FGDs also revealed that condom price has the potential to be a barrier or facilitator to condom access. The majority of FG participants discussed how finances influenced which condoms they could purchase.

> "That will depend, if I'm working or I'm not working. If I'm not working, I wouldn't recommend that I must go and purchase it (condom). I must get it for free. But also not forgetting to say that, if the condom that I'm choosing is the best one, if like I'm not working, it must be cheaper compared to the good ones that… like… are very expensive…." (FG 3)

> "You see us, we're better—we go to school and we try to make ends meet, but some of the youth in Africa, they are very poor. So if they...if… nobody will put their last money to buy a condom. I mean like a condom. In order for us to buy

> bread, you see. So a condom mustn't be for sale." (FG 6)

Discussion of condom price revealed FG participants' experiences with the quality of free government condoms. The majority of participants were apprehensive about the quality of these condoms. Six of the seven FGDs viewed free condom options, specifically Choice condoms, as being of poor quality when compared to other condoms for purchase. There was high dissatisfaction, overall with Choice condoms. One participant believed that the poor quality of the brand was synonymous with its availability to the poor, in South Africa:

> "You get poor, then you get the middle class, then you get the classy. That is what you are speaking about. Because I am telling you that the middle class…they don't use Choice. [The] upper class, they don't use Choice. Why, now? If you want condoms that you can also [use] …those that are in the high level they can also use it. They would prefer it there…it's a good quality condom, also they can also use it. They can also go to the public clinic and take it also from them…it's (Choice) [it's] only for the poor type of thing. And you don't want that to be. The perfect condom wouldn't be like that. It would be something for everyone." (FG 1)

This conversation also revealed participants' frustration with only having government condoms available. They perceived private sector condoms, sold in stores, to be of higher quality. However, participants indicated that these condoms were not always available during the moment of sex. One participant compared not having private sector condoms

readily available to not having his favorite knife to cut meat:

> "I never choose what kind of knife I must use [laughing]. The meat is here now [but], my favorite knife is at home."(FG 3)

Although the majority of FG participants were enthusiastic about several of the condom innovations introduced by into the discussion, many expressed concern about their accessibility and cost. This was especially true for condom innovations made from unique or hybrid materials, such as a condom made of cow tendon. Participants voiced concerns of product cost.

> Participant 5 "Gosh, this probably [is] going to be the most expensive one, ever " Participant 6: "No, this one will be…the organic one (cow tendon condom). See how much you pay for organic stuff in the shops?" (FG 2)

Theme 4*:Trust*

FGD participants expressed a desire to have condoms they and their partners could "trust." Partner perceptions of the quality and reputation of specific condom brands influenced condom use and condom negotiation. Many FG participants recounted their personal experiences with their partner's skepticism and distrust for certain condoms. Men's partners would refuse sex, decide not to use a condom at all, or ask that another brand of condom be purchased. One participant shared his personal experience with this phenomenon:

> "If a man bring[s] a Choice today, you see, maybe you can end up having sex with them, but later—(the woman will say) tomorrow go and buy a condom and ... she will open it also and even put it on you, if it is not Choice." (FG 1)

In terms of trust, both survey and FGD participants believed that condom use eroded the level of trust in their relationships. Of the survey participants that did not use condoms in the past, 59/67 participants indicated that it was because they trusted their partner. While trust in one's relationship was a brought up as a reason for not using condoms in FGDs, participants perceived condom brand trust and reputation as one of the main reasons for condom non-use. On the contrary, only 16/101 survey participants indicated that a condom's reputation was important when selecting a condom.

Throughout many FGDs, there was a clear link between brand trust and cost. These themes were specifically centered on participants' lack of trust for Choice condoms. Men were reluctant to use the brand, since it is widely available at no cost. FGD participants also noted their female partners' reluctance to use free government condoms, as seen in one conversation:

> Participant 1: "Some of them (women), they want you to buy...they want you to buy them. They don't [like] to use Choice condoms."
> Participant 2: "The [want] expensive ones." (FG 6)

Many participants also compared their experiences with free government condoms to experiences with condoms purchased in shops. One participant expressed his frustration and lack of trust for government condoms and his personal experience with condom breakage:

> "…And the other thing is (private-bought condoms) are more flexible as compared to the (Choice condoms) that we get here, because the one's that we get here, sometimes it's easy for these condoms to break. You can use it, but you must be very careful; especially if it's free. But the one's that you bought—when you are using it, you have that kind of safe mentality, that I'm safe now …" (FG 3)

Participants' mistrust for government condoms could also be seen in their condom donning practices:

> "And some people, they prefer to, to use two condoms at the same time when they are using Choice because it is …it breaks a lot, so people prefer using two condoms at one time..." (FG 6)

Theme 5*: Sexual Appeal and Excitement*

The majority of focus groups expressed their dissatisfaction with the sexual appeal and excitement of condoms available for free. Many participants were interested in colored, flavored, and scented condoms. Participants were particularly interested in flavored and

scented condoms. They described flavors and scents such as "strawberry, banana, and peach." However, within this context there seemed to be a paradox. Only a small number of participants explicitly expressed a desire for condoms that were sexy and appealing. Yet, many FGD participants expressed disinterest in colorless, flavorless, and unscented condoms currently available at no cost.

> **"**…Yes, although they are enjoying the colorful condoms, which also comes with different flavors—we would ask if I give you a condom with a strawberry flavor and I give you a plain condom, which one would you take?" (FG 2)

Eight out of 86 survey participants had forgone condom use, in the past, because condoms were boring. Disinterest and boredom with condoms was also illustrated throughout the majority of the FGDs. Participants in FGDs expressed a desire for condoms that provided more excitement with their partner. In particular, there was interest for condoms to be more "fun" adding to sexual excitement with their partner. One participant discussed his experience with his partner being turned off by public sector condoms, stating "if it's Choice then **whistling sound** then it's a turn off."

FGD participants also expressed that the smell of Choice brand condoms ruined their sexual experiences, which decreased their sexual excitement. One participant said:

> "So it (Choice) would take you out of the mood. So you [would] be like, not interested anymore. Even though you wanted to have sex, when that smell comes to your nose, you're not interested anymore." (FG 6)

In sum, participants found condoms to be boring with consensus that flavored and scented condoms help put excitement into using condoms.

Condom Innovations

In the majority of FGDs, participants had a strong interest in condom innovations that purported to provide heightened sensation and resistant to condom failure. There was also consensus among participants that they would try these innovations—many, of whom, were eager to know their market availability. This was especially true for the ultra thin condom or the graphene condom. This condom received an overwhelming positive response, as expressed by one participant:

> "I think that it's a good condom because what...what we are not...what we run away from those condoms (other condoms)—they are not strong so, they quickly break so this one, it's strong and it's soft and it's thin. So you can...it's…it's...strong so at the same time you can feel the sensation because it's very thin." (FG 7)

Condom features and characteristics such as lubricant and tear- and break-resistant material were also agreeable to participants. However, many participants expressed interest in innovations that had multiple features, such as the ultra thin condom that purports to be soft, strong, and thin. Many participants also had a strong affinity to the Pronto condom, a South African condom that makes condom donning easier. However,

not all feedback was positive. One participant shared his experience with the Pronto condom:

> "It's a horrible condom. No, literally it catches the foreskin...it catches the foreskin as you pull it over just on the handle. We've used them." (FG 2)

Though many FGD participants expressed an interest in procuring new innovative condoms, many believed that these condoms would not be affordable. Some also expressed skepticism about their functionality. One participant expressed his skepticism of the shape memory condom:

> "I don't think they will ever get it right, okay. It's going to be a rip-off to the public because they will market it wrong. It's going to be uhhh…there's still going to be...I think what they will do is they will use it as secret socks, like size 7-9 fits this or 9-11 fits this, so they will never ever get it right because they can't ...they won't be able to measure the entire male population…" (FG 2)

Overall, men were very interested in the innovations introduced in FGDs. One participant expressed his excitement for the new designs and believed that anything would be better than using Choice brand condoms:

> "I feel like men would, would use them (condom innovations). Even women…they like condoms... but when it comes to Choice, no." (FG 1)

Discussion

This mixed methods analysis explores the condom preferences of men in South Africa, and their experiences with condoms. By using recent proposed condom innovations funded by the BMGF as a platform for discussion, this study revealed five main themes of what South African men want in a condom. They include: 1) high functionality, 2) pleasure, sensation, and intimacy, 3) accessibility and availability, 4) trust, and 5) sexual appeal and excitement.

Perhaps the most consequential of this study's findings is the importance of partner perceptions and the levels of trust held for specific condom brands. Study findings reveal that a condom brand's reputation can be a deciding factor in whether or not participants wear condoms. Much of the current literature surrounding trust and condom use is focused on the relationship trust between partners. In this study, participants described situations in which their female partner denied them sex, because they had sourced a specific non-trusted condom (in all cases, this was the Choice branded condom). Lack of brand trust not only affects male self-efficacy, but also puts both parties at an increased risk for HIV and other STIs. This study shows that there are men that do want to practice safe sex, but due to the lack of available "trusted" condoms through the public sector, they are unable to achieve this type of protection. Previous qualitative studies of perceptions of public sector condoms in South Africa have also found that there is a high level of mistrust and angst toward publically sourced condoms (Guillen et al., 2014; Roussouw, 2013). Similarly, a recent survey conducted by the AIDS Foundation of

South Africa found that South Africans have a strong aversion to Choice brand condoms (AIDS Foundation of South Africa, 2013).

While there is an overall lack of published data on South African men's condom preferences, themes extracted from this study's findings are in line with previous research from other settings and populations. Previous studies examining condom functionality found that condom fit is an important factor for men, and that poor fit is a barrier to use (Reece et al., 2010; Reece et al., 2009; Reece et al., 2008). Participants in this study also lamented about the lack of sizing options available to them, particularly for those, who complained of condoms being "too tight." These experiences with condom breakage align with the often-stated interest in "strong" or break-resistant condoms. While reported experiences of breakage and slippage could be made more likely by a number of factors such as the improper use of oil-based lubricants, poor fit or incorrect condom donning; men are interested in condoms that are not prone to breakage, regardless of potential user error (Crosby et al., 2008a; Duerr et al., 2011). Participant perceptions and experiences of condom breakage are similar to findings from other studies that highlight clinical failure a barrier to condom use (Sarkar, 2008).

Participants preferred condoms that would not reduce or interrupt the pleasure, sensation, and intimacy between themselves and their partner. The preference of uninterrupted pleasure was evident in participants' preference for condoms that are "thin" or provide heightened sensation, in order to "feel the warmth of their partner" and perceive that there is little or nothing between them. This suggests that a potential avenue to increase

interest in public sector condoms would be to make available a condom that is thin. Participants' high valuation of thin condoms was closely aligned with their interest to have a "skin-to-skin" feeling during sex. The idea of skin-to-skin or flesh-to-flesh sensation has been brought up in other studies investigating barriers to condom use (Buck et al., 2005; Morojele et al., 2006; Plummer et al., 2006). Previous research shows that much of men's disdain for condoms are due to the lack of pleasure and sensation they receive from wearing condoms (Abdool Karim et al., 1992; Crosby et al., 2008b; Ntata et al., 2013; Philpott et al., 2006; Randolph et al., 2007). This finding was also consistent among participants from this study. However, when compared to other factors such as partner trust, the quantitative component of the study revealed that decreased pleasure was not participants' top reason for not wearing condoms in the past. Survey results revealed that trust in one's partner was one of the main reasons why participants did not use condoms in the past. While trust was not explicitly explored in the qualitative work, prior research in this area indicates that trust is synonymous with monogamous relationships or sex with a regular partner (MacPhail and Campbell, 2001) accompanied by lower perceived risk of STI and HIV transmission (Maharaj and Cleland, 2004).

This study's findings show that participants want and prefer condoms that are readily available and accessible for use. They specifically want condoms that are available in places that they frequent the most, such as shebeens/taverns and sporting venues. Condoms were seen as only being beneficial if they are were readily available for use. Participants emphasized the need for condoms to be available during the heat of the moment.

Despite the importance of venue-based condom availability, participants placed more emphasis on the cost of condoms. Job insecurity was often brought up as one of the reasons for wanting free condoms. This finding is especially relevant to the Khayelitsha Township, where a majority of study participants were recruited. The 2011 census reported that the sub-district has an unemployment rate of 38% (City of Cape Town, 2013) and in our sample, 53% of the participants reported not having an income. Given high unemployment rates in South Africa (24.3%), the freely available public sector condoms are an essential initiative (Statistics South Africa, 2014). Although cost was a top priority, other priorities such as condom quality were also important to participants. The majority of FGD participants recounted several experiences of condom breakage when using public sector condoms. This makes it all the more important why participants want quality condoms at no cost. Their perception of quality closely aligns with the way their partners view condom quality, potentially acting as a barrier to condom use.

An emergent sub-theme was participants' emphasis on the need for condoms to be available in schools. Study participants expressed that South African youth are sexually active and should have access to condoms in places they frequent, including schools. Currently there has been contention between government officials and public schools on whether condoms should be made available in school facilities (Han and Bennish, 2009). Although South Africa's National Strategic Plan has committed to distributing condoms in schools and other non-traditional outlets, to date, there still remains no condom distribution in public schools (Beksinska et al., 2012; SANAC, 2011).

This study identifies specific condom characteristics that align closely with other studies conducted outside of South Africa (Rhodes et al., 2007). Men prefer to use condoms that provide the same heightened sensation and pleasure as if they are not wearing one at all. Specifically, men want to wear condoms that their partner can trust; a condom that functions and fits them appropriately; and a condom that elicits excitement, pleasure, and intimacy during sex.

Finally, in conceptualizing various condom innovations, it became clear that many of the concerns regarding condoms could be addressed with existing condoms, with other concerns potentially better covered by new condom designs. FGD participants expressed interest in condoms that were thin, strong, studded and/or ribbed, flavored/colored/scented, and most importantly available at no cost. However, many of these condoms are available. For example, fitted condoms are available for purchase online, while thin, colored/scented, and textured condoms are available for purchase. The features that participants were interested in are currently available to address these concerns. Effort should be made to include already available condoms in government programs.

Strengths

This study has several strengths. First, it is one of the first explorations of male preferences for specific condom characteristics conducted in Cape Town, South Africa. Second, this research uses innovative qualitative methods of focus group facilitation by

providing new concepts regarding condom design, to help identify specific characteristics men want in a condom. Finally, the investigators' use of mixed methods design adds further evidence to the literature through triangulating quantitative and qualitative data.

Limitations

The present study has a number of limitations. First, this was a convenience sample of mostly black African men living in Cape Town, South Africa and the condom preferences of this group may not be representative of men in Cape Town or in South Africa, as a whole. As a result, study findings cannot be generalized. Second, the majority of FG and survey participants were recruited from two township clinics. This limited selection area may have contributed to the lack of economic and racial variability among the study population. Third, this study was conducted in an area where English was not the first language. Although participants were screened on their level of English reading and comprehension, some participants may have not have fully understood questions on the survey or in FGDs. Finally, as in most studies of condoms, self-report and recall bias are potential sources of error and bias.

Conclusion

Prior research has shown that condom use as a prevention tool is effective in reducing sexual transmission of HIV and other STIs, when used correctly and consistently (Weller and Davis-Beaty, 2007). This study makes a strong case for the inclusion of new condom designs for public sector distribution throughout South Africa. Specifically, the majority of participants expressed distrust for government condoms and reported negative experiences with public sector condoms. This information can add to a growing body of

evidence that states that new condom designs should be a part of South Africa's public or socially-marketed condom sector. Existing condoms, and new innovations merit further research that could include implementation science regarding provision of a more diverse array of condom options. These condoms may provide the pleasure and functionality desires of men and increase the condom use. This study shows the importance of developing new types of condoms through the innovation and distribution of condoms with new materials, shapes, colors, flavors, sizes, and, scents.

The condom innovations described in this study have the potential to alleviate pleasure- and function- related problems men may encounter. While many of the innovations described were perceived to be promising, one innovation—the graphene condom—received the most interest from FGD participants. Men expressed that this condom had numerous features that would be of interest to them—strong, soft, and thin. Men also indicated that this condom's properties made it the most appealing, which may make it worth prioritizing for mass distribution.

Chapter 4

Conclusion and Public Health Implications

Conclusion

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Study findings reveal that a condom brand's reputation can be a deciding factor in whether or not participants wear condoms. Perhaps the most consequential of this study's findings is the importance of partner perceptions and the levels of trust held for specific condom brands. Much of the current literature surrounding trust and condom use is focused on the relationship trust between partners. In this study, participants described situations in which their female partner denied them sex, because they had sourced a specific non-trusted condom (in all cases, this was the Choice branded condom). Lack of brand trust not only affects male self-efficacy, but also puts both parties at an increased risk for HIV and other STIs. This study shows that there are men that do want to practice safe sex, but due to the lack of available "trusted" condoms through the public sector, they are unable to achieve this type of protection. Previous qualitative studies of perceptions of public sector condoms in South Africa have also found that there is a high level of mistrust and angst toward publically sourced condoms (Guillen et al., 2014;

Roussouw, 2013). Similarly, a recent survey conducted by the AIDS Foundation of South Africa found that South Africans have a strong aversion to Choice brand condoms (AIDS Foundation of South Africa, 2013).

While there is an overall lack of published data on South African men's condom preferences, themes extracted from this study's findings are in line with previous research from other settings and populations. Previous studies examining condom functionality found that condom fit is an important factor for men, and that poor fit is a barrier to use (Reece et al., 2010; Reece et al., 2009; Reece et al., 2008). Participants in this study also lamented about the lack of sizing options available to them, particularly for those, who complained of condoms being "too tight." These experiences with condom breakage align with the often-stated interest in "strong" or break-resistant condoms. While reported experiences of breakage and slippage could be made more likely by a number of factors such as the improper use of oil-based lubricants, poor fit or incorrect condom donning; men are interested in condoms that are not prone to breakage, regardless of potential user error (Crosby et al., 2008a; Duerr et al., 2011). Participant perceptions and experiences of condom breakage are similar to findings from other studies that highlight clinical failure a barrier to condom use (Sarkar, 2008).

Participants preferred condoms that would not reduce or interrupt the pleasure, sensation, and intimacy between themselves and their partner. The preference of uninterrupted pleasure was evident in participants' preference for condoms that are "thin" or provide heightened sensation, in order to "feel the warmth of their partner" and perceive that

there is little or nothing between them. This suggests that a potential avenue to increase interest in public sector condoms would be to make available a condom that is thin. Participants' high valuation of thin condoms was closely aligned with their interest to have a "skin-to-skin" feeling during sex. The idea of skin-to-skin or flesh-to-flesh sensation has been brought up in other studies investigating barriers to condom use (Buck et al., 2005; Morojele et al., 2006; Plummer et al., 2006). Previous research shows that much of men's disdain for condoms are due to the lack of pleasure and sensation they receive from wearing condoms (Abdool Karim et al., 1992; Crosby et al., 2008b; Ntata et al., 2013; Philpott et al., 2006; Randolph et al., 2007). This finding was also consistent among participants from this study. However, when compared to other factors such as partner trust, the quantitative component of the study revealed that decreased pleasure was not participants' top reason for not wearing condoms in the past. Survey results revealed that trust in one's partner was one of the main reasons why participants did not use condoms in the past. While trust was not explicitly explored in the qualitative work, prior research in this area indicates that trust is synonymous with monogamous relationships or sex with a regular partner (MacPhail and Campbell, 2001) accompanied by lower perceived risk of STI and HIV transmission (Maharaj and Cleland, 2004).

This study's findings show that participants want and prefer condoms that are readily available and accessible for use. They specifically want condoms that are available in places that they frequent the most, such as shebeens/taverns. and sporting venues. Condoms were seen as only being beneficial if they are were readily available for use.

Participants emphasized the need for condoms to be available during the heat of the moment.

Despite the importance of venue-based condom availability, participants placed more emphasis on the cost of condoms. Job insecurity was often brought up as one of the reasons for wanting free condoms. This finding is especially relevant to the Khayelitsha Township, where a majority of study participants were recruited. The 2011 census reported that the sub-district has an unemployment rate of 38% (City of Cape Town, 2013) and in our sample,53% of the participants reported not having an income. Given high unemployment rates in South Africa (24.3%), the freely available public sector condoms are an essential initiative (Statistics South Africa, 2014). Although cost was the top priority, other priorities such as condom quality were also important to participants. The majority of FGD participants recounted several experiences of condom breakage when using public sector condoms. This makes it all the more important why participants want quality condoms at no cost. Their perception of quality closely aligns with the way their partners view condom quality, potentially acting as a barrier to condom use.

An emergent sub-theme was participants' emphasis on the need for condoms to be available in schools. Study participants expressed that South African youth are sexually active and should have access to condoms in places they frequent, including schools. Currently there has been contention between government officials and public schools on whether condoms should be made available in school facilities (Han and Bennish, 2009). Although South Africa's National Strategic Plan has committed to distributing condoms

in schools and other non-traditional outlets, to date, there still remains no condom distribution in public schools (Beksinska et al., 2012; SANAC, 2011).

This study identifies specific condom characteristics that align closely with other studies conducted outside of South Africa (Rhodes et al., 2007). Men prefer to use condoms that provide the same heightened sensation and pleasure as if they are not wearing one at all. Specifically, men want to wear condoms that their partner can trust; a condom that functions and fits them appropriately; and a condom that elicits excitement, pleasure, and intimacy during sex.

Finally, in conceptualizing various condom innovations, it became clear that many of the concerns regarding condoms could be addressed with existing condoms, with other concerns potentially better covered by new condom designs. FGD participants expressed interest in condoms that were thin, strong, studded and/or ribbed, flavored/colored/scented, and most importantly available at no cost. However, many of these condoms are available. For example, fitted condoms are available for purchase online, while thin, colored/scented, and textured condoms are available for purchase. The features that participants were interested in are currently available to address these concerns. Effort should be made to include already available condoms in government programs.

Public Health Implications

As one of the only barrier methods to protect against unwanted pregnancy and sexually transmitted infections, more effort should be taken to design, and distribute condoms that men actually want to wear. In South Africa, innovating and distributing desirable condoms, would enhance intimacy, pleasure, and excitement for men and their partners. The availability of these condoms also has the potential to bolster other HIV behavioral change and prevention strategies throughout the country. While the government has made an effort to bring back the excitement of public sector condoms, by introducing various condom colors and flavors, the issue of brand reputation still comes into play. All participants from this study complained about the low quality of public sector condoms that were currently available. Numerous studies have also found that Choice condoms are perceived to be of inferior quality (AIDS Foundation of South Africa, 2013; Guillen et al., 2014). This suggests that although the introduction of condom options such as flavored and colored condoms will be available, the tarnished reputation of Choice condoms may be a detriment to condom uptake. Therefore, further research is needed to examine whether the introduction of newly introduced, colored and flavored/scented public sector condoms can serve to increase condom use. This analysis should include consumer perceptions of colored, flavored, and scented public sector condoms and their quality, relative to the same types under different brand scenarios. The results of this research and analysis should be used to guide new strategies to better increase condom uptake in South Africa.

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Appendix A
Semi-structured Focus Group Guide

<MODERATOR 1>
Hello everybody! How are you?
Thank you for coming today. We are students at Emory University in the United States, working with the Human Sciences Research Council of South Africa on a research project. We found a condom company that has condoms in 95 sizes, so that all men can wear a condom that is shaped for them.

We need your help creating a tool for men to easily pick their condom size, from the number of different condom sizes available. We will not be asking you to talk about your penis size, **at all.** Ok, pretend that you are shopping around for shoes. You would ask a shop worker to measure your foot, and they would tell you your shoe size. Now, we cannot just ask someone to measure you to buy a condom that is your size! So, we would like to create a chart, with your help, that men can look at, and be able to pick their condom size.

Before we start, we want talk about some rules and things to keep in mind:

1. **WE WANT YOU TO DO THE TALKING**. We would like everyone to participate, but only one person at a time.

2. **THERE ARE NO RIGHT OR WRONG ANSWERS**. You are the expert of your experiences and we would like to learn from you. We will respect your opinions and we ask that you respect each others.

3. **WHAT WE SAY IN THIS ROOM, STAYS IN THIS ROOM**. This is a safe space. All of your opinions will be kept confidential on our part. We ask that you do not tell anybody else about what we talk about today.
4. **WE WILL BE RECORDING AND TAKING NOTES** because we want to capture everything you say. Your real name will never be in our report.

5. ***IF YOU DO NOT UNDERSTAND SOMETHING, PLEASE TELL US***. We know that you would like to be respectful; however, we ask that you tell us when you do not understand something we say, or someone else says.

How do you guys feel about our rules? Do you want to add any other rules or change the ones we have now?

Do I have your permission to record? **<Wait for response and begin recording>** Your participation is voluntary and you have the right to leave at any time. If you agree, please say your number and say, "I, participant number 0 agree to participate in this focus group."

<If all participants agree, proceed. If not, escort participants who refuse and continue discussion with remaining participants.>

Condom Innovation

<Moderator, please say: To get started, we would like to do an activity with you. In front of you are 11 cards with new condom designs. I will explain each of these condoms to you, and what makes them different. Please put the condom in one of two folders on your table. The folder with the green smiley face means that you would be interested in using this condom design and the folder with the red frowning face means that you are not interested in using this condom. There is also a piece of paper with a description of each condom to help you. Afterwards, let's discuss each of the new condom designs and talk about what aspect of them that you like.

<Moderator goes through all 11 designs and probe with the following questions>.

- Which condom would you most likely use?
- How do you feel about these condoms compared to a Choice condom?
- Could you talk about the top five condoms and why you like each of them?

<**Moderator, please say**: Now I would like to talk you about What do you like about these condoms? >

- What do you like about these condoms?
- What don't you like about these condoms?
- Can you describe how this condom would feel?

<Moderator, please say: Now I would like to talk about what makes the perfect condom. Can you describe the perfect condom?>

- What would it look like?
- How do you think this condom would feel?
- Can you tell me where you would be able to get it?
- How much would it cost?
- Do you think giving them out for free will make people think they are worst quality?

Is there anything else you would like to share in regards to your idea of the perfect condom?

Condom Nonuse

So, as you may know, condoms are currently the only thing that prevent HIV and other sexually transmitted infections, as well as pregnancies. They cost little to make, are freely available to South Africans, and they are easy to use. Correct and consistent use of condoms are currently the best way to reduce HIV/AIDS and sexually transmitted infections.

In 2008 and 2012, the HSRC did a survey about condom use in South Africa. Do you think that in both years, the percentage of people who used a condom stayed the same? Let's talk about this."

<Let men respond.>

"Actually, The use of condoms has decreased from 2008 in the Western Cape. So research has shown that condom use is declining.">

- Does this surprise you?
- What do you think may be going on here?

Developing the guide

<**Moderator, please say**: Now let's work on that condom size chart we were talking about earlier. The size of a condom is determined by its dimensions, which is the length, the length from the base of the penis to the tip of the penis head **<draw on pad three lines of different sizes>**, and the girth, which is the thickness, of a man's penis **<draw on pad four circles of different sizes>. <Show definition of length and girth already written out.>**

We can create nine sizes with three lengths and three girths <**draw on chart**>.

Let's look at each of the designs and talk about them. I will read the instructions out-loud but please follow along.

Design one: Step one, pick your length. Step two, pick your width. Step three, pick your size. What are your thoughts on this design?

<Let men respond.>

Design two: Step one, pick your length. Step two, pick your width. Step three, pick your size. What are your thoughts on this design?

<Let men respond.>

Design three: Step one, pick your length. Step two, pick your width. Step three, pick your size. What are your thoughts on this design?

<Let men respond.>

- So which of these designs is your favourite?
- Why?
- What do you like about these designs?

<Allow men to come to a consensus on the naming system.>

- What about the title of the condom size chart?
- Do you think that these sizes will be understood by everyone in Cape Town?
- How do you feel letting other people see your size, with this naming system?
- What about the colours? Patterns?
- What about privacy when picking a size?
- What about the size of the poster and the layout?

<Moderator, please say: Thank you very much for your time and your participation. Before we end, is there anything else that you would like to add?>

Appendix B
Condom Innovations List

1	**Heat Condom**	This condom creates heat and warmth to feel like your natural body temperature during sex. It also has antibacterial medicine.
2	**Elastic condom**	An elastic and stretchy condom that is light and thin for a more skin-to-skin feeling during sex.
3	**Self-tightening condom**	This condom gets tighter during sex. The material will put less pressure on the skin and increase sensation.
4	**Mucous condom**	Feels like the body's mucous membrane (for example vagina or anus) and gives a natural feeling during sex.
5	**Break-resistant condom**	Break resistant and durable; works by reducing friction and rubbing that causes breaks.
6	**Shape memory condom**	Changes to the shape of a man's penis, using his body heat.
7	**Wrapping condom**	Wraps and clings to a man's penis without squeezing it, and has enhanced lubrication.
8	**Ultra -thin condom**	Very thin, soft, strong, and tear resistant.
9	**Organic condom**	Made from natural material, as opposed to traditional latex. Gives men a more skin-to-skin feel with your partner.
10	**The Pronto condom**	Uses an applicator and takes less than 4 seconds to put on correctly, even in the dark (made in South Africa).
11	**Condom Applicator Pack**	Hands-off condom with applicator in the same packaging. The applicator is to keep the condom away from your hands, which can spread disease, and ensure the condom is put on in the right direction.

Appendix C
Focus Group Consent Form

Consent to be a Research Subject

Title: **Developing and Assessing a Fitted Condom Sizing System in Cape Town, South Africa**

Introduction

You are being asked to be in a research study. This form is designed to tell you everything you need to think about before you decide to consent (agree) to be in the study or not to be in the study. **It is entirely your choice. If you decide to take part, you can change your mind later on and withdraw from the research study. You can skip any questions that you do not wish to answer.**

Before making your decision:

- Please carefully read this form or have it read to you
- Please ask questions about anything that is not clear

You can take a copy of this consent form, to keep. Feel free to take your time thinking about whether you would like to participate. By signing this form you will not give up any legal rights.

Study Overview

The purpose of this study is to develop and assess a fitted condom sizing system, understand the current general condom use, identify new condom designs in which people have an interest, gather information about condom preferences, and provide an understanding of knowledge about abortion in Cape Town, South Africa.

Procedures

You have been selected to participate in a focus group, with up to eight men including yourself. The main purpose of this focus group is to create a visual or word-based fitted condom sizing system. This sizing system will allow men, like you, and your sexual partner(s) to easily select a fitted condom size based on the length and thickness of the user's penis. Furthermore, the focus groups will explore factors that are associated with men's perception of condoms, men's openness to new condom designs and the general use of condoms in Cape Town, South Africa.

The goal of the focus group depends on which group you are recruited for; if you are recruited for the first round of focus groups, you will help develop a visual based sizing system and provide your thoughts on three types of condoms (flavored, colored, textured) made available by the South African government. You will also discuss non-standard condoms (TheyFit and other premium brands) in comparison to commonly available condoms. The second round of focus group discussions will help develop a word-based sizing system. If you are recruited for this group, you will discuss the differences in condoms. Finally, if you are recruited for the third round of focus group discussions, you will assess and compare the visual- and word-based sizing systems developed in the first and second focus groups. You would also talk about the appropriate number of sizes to be made available in South Africa. Each focus group discussion will take between 60 to 90 minutes of your time. Once you are finished with the focus group discussion, you will be compensated for your participation.

Risks and Discomforts

There are few risks associated with participating in this study. However, one risk is discomfort answering questions regarding sex and condom-use. You may also feel discomfort after sharing information that you may not have shared before.

Benefits
This study is designed to understand the condom preferences of men and women in South Africa. By understanding these preferences, we hope to suggest appropriate sexual health programs.

Compensation
You will receive 50 ZAR cash for participating in the focus group discussion.

Confidentiality
Certain offices and people other than the researchers, such as South African government agencies, Emory University employees and funding providers, may look at study records. The study investigators will keep any research records we create private to the extent we are required to do so by law. A study number rather than your name will be used on study records wherever possible. Your name and other facts that might identify you will not appear when we present this study or publish its results.

Study records can be opened by court order. They may also be produced in response to a subpoena or a request for production of documents.

Voluntary Participation and Withdrawal from the Study
You have the right to leave this study at any time without penalty. You may refuse to do any procedures you do not feel comfortable with, or answer any questions that you do not wish to answer. If you choose to withdraw from the study, you may request that your research information not be used.

The researchers and the Global Health Institute also have the right to stop your participation in this study without your consent if:

- They believe it is in your best interest;
- You were to object to any future changes that may be made in the study plan;
- Or for any other reason.

Contact Information
Contact study co-investigators at southafrica2014@gmail.com

- if you have any questions about this study or your part in it,
- if you have questions, concerns or complaints about the research

Consent
Please print your name and sign below if you agree to be in this study. By signing this consent form, you will not give up any of your legal rights. We will give you a copy of the signed consent to keep.

_____
Name of Subject

_____ _____
Signature of Subject Date
Time

_____ _____
Signature of Person Conducting Informed Consent Discussion Date
Time

Signature of Legally Authorized Representative Time	Date

Appendix D
Survey Questionnaire Consent Form

Consent to be a Research Subject

Title: **Developing and Assessing a Fitted Condom Sizing System in Cape Town, South Africa**

Introduction

You are being asked to be in a research study. This form is designed to tell you everything you need to think about before you decide to consent (agree) to be in the study or not to be in the study. **It is entirely your choice. If you decide to take part, you can change your mind later on and withdraw from the research study. You can skip any questions that you do not wish to answer.**

Before making your decision:

- Please carefully read this form or have it read to you
- Please ask questions about anything that is not clear

You can take a copy of this consent form, to keep. Feel free to take your time thinking about whether you would like to participate. By signing this form you will not give up any legal rights.

Study Overview

The purpose of this study is to develop and assess a fitted condom sizing system, understand the current general condom use, identify new condom designs in which people have an interest, gather information about condom preferences, and provide an understanding of knowledge about abortion in Cape Town, South Africa.

Procedures

You have been selected to participate in a survey questionnaire. In this survey, you will measure the layout and user-friendliness of the visual and anchor based fitted condom sizing system. You will also be asked questions about condom preferences, condom use, condom negotiation strategies, sexual practices, and attitudes towards abortion in the survey. All survey questions will be answered on a tablet computer, and will take approximately 20 minutes of your time. Following your completion of questions, you will submit your results, which are secure, anonymous, and stored through the SurveyGizmo system. Once you return the tablet computer to the survey administrators, you will receive compensation for participation.

Risks and Discomforts

There are very little risks associated with participating in this study.

Benefits

This study is designed to understand the condom preferences of men and women in South Africa. This study will also understand the interrelatedness of condom use and knowledge, attitudes and practices surrounding abortion.

Compensation

You will receive 20 ZAR cash or gift card for completing the questionnaire.

Confidentiality

Certain offices and people other than the researchers, such as South African government agencies, Emory University employees and funding providers, may look at study records. The study investigators will keep any research records we create private to the extent we are required to do so by law. A study number rather than your name will be used on study records wherever possible. Your name and other facts that might identify you will not appear when we present this study or publish its results.

Study records can be opened by court order. They may also be produced in response to a subpoena or a request for production of documents.

Voluntary Participation and Withdrawal from the Study

You have the right to leave a study at any time without penalty. You may refuse to do any procedures you do not feel comfortable with, or answer any questions that you do not wish to answer. If you choose to withdraw from the study, you may request that your research information not be used.

The researchers and the Global Health Institute also have the right to stop your participation in this study without your consent if:

- They believe it is in your best interest;
- You were to object to any future changes that may be made in the study plan;
- or for any other reason.

Contact Information

Contact the study co-investigators at southafrica2014@gmail.com,

- if you have any questions about this study or your part in it,
- if you have questions, concerns or complaints about the research.

Consent

Please print your name and sign below if you agree to be in this study. By signing this consent form, you will not give up any of your legal rights. We will give you a copy of the signed consent to keep.

_____

Name of Subject

_____ _____

Signature of Subject Date

Time

_____ _____

Signature of Person Conducting Informed Consent Discussion Date

Time

_____ _____

Signature of Legally Authorized Representative Date

Time