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Knowledge of Termination of Pregnancy (TOP) Legislation and Attitudes towards TOP Clinical Training among Medical Students Attending Two South African Universities

Household Expenditures as a Measure of Socioeconomic Status among Iraqis Displaced in Jordan and Syria

Trends and Determinants of Condom Use in Uganda

Engaging Men in Family Planning Services Delivery: Experiences Introducing the Standard Days Method® in Four Countries

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From the Editor-in-Chief

This issue of *World Health & Population* presents three research papers and a commentary that should be of great interest to our readers. The original papers have all been published online by *WHP* during the last quarter and are selected here as representative of recent outstanding contributions to the journal.

The first paper in this issue, "Knowledge of Termination of Pregnancy (TOP) Legislation and Attitudes toward TOP Clinical Training among Medical Students Attending Two South African Universities" by Wheeler, Zullig and colleagues presents results from robust surveys of knowledge and attitudes among medical students regarding the progressive South African TOP (i.e., abortion) legislation. Respondents were also asked for a self-assessment of their preparation and training to provide TOP services. Typically, surveys that measure knowledge and attitudes also measure practice, thus the classic KAP model. For medical students however, practice is in the future, and current knowledge and attitudes hopefully can be seen as predictors of practice. The researchers found knowledge of the South African TOP legislation was very high; however, confidence in the adequacy of their training and preparation was considerably lower. Attitudes toward TOP overall varied by a number of demographic categories of medical students, including religion, sexual experience, and relationship history. The authors recommend ongoing assessment and adjustment of medical school curricula in order to best meet the needs for providing TOP services for the South African populations.

Social economic status (SES) is a critical covariate for nearly all multivariable studies in healthcare. SES is notoriously hard to define and measure and a variety of proxies have been used over the years, including household income, household possessions, type of residence, educational level of householders and household expenditures, among others. In "Household Expenditures as a Measure of Socioeconomic Status among Iraqis Displaced in Jordan and Syria" Cope, Doocy and colleagues present an interesting methodological study to validate the use of household expenditures (HE) as a proxy for measuring SES among refugee populations. HE has been used as a successful proxy among settled populations; however its research acceptability among populations displaced and stressed by war and destruction has not been looked at. Cope, Doocy and colleagues conducted cross sectional surveys in the two countries that have received the largest refugee influx from Iraq and found the HE can be used reliability as a proxy for SES in certain situations. They have conducted very solid foundational research in this area; however, more work clearly needs to be done on methods for measuring this important construct among difficult research populations.

The third paper tackles an understanding of changes in condom use in Uganda, reflecting, in part, changing attitudes toward the HIV epidemic and changing prevention policy and national campaigns. In "Trends and Determinants of Condom Use in Uganda," authors Zaake De Conick and Gaetano Marroone present an analysis of Uganda Demographic and Health Survey (UDHS) data documenting a fall in the prevalence of condom use between two waves of the survey, 1995-2000/2001 and 2000/2001-2006. These time periods coincided with two significant changes in the HIV landscape in Uganda: the widening availability of antiretroviral drugs and a lessening of the nationwide "ABC" (Abstinence, Be faithful, use Condoms) campaign. Also likely affecting the downturn in condom use reflected in the surveys was an unfortunate nationwide recall of defective condoms. De Conick and Marrone conclude that policy changes and further education among women and rural populations in particular are needed if condom use is to regain its previous level and role in HIV prevention programs in Uganda.

The final paper in this issue "Engaging Men in Family Planning Services" by Rebecka Lundgren and colleagues is a commentary on the importance of involving men in family planning activities, in particular through a fertility awareness approach called the Standard Days Method©. Through

a series of four country vignettes, the authors, all from Georgetown University (Washington, DC, US), present the case for involving men in understanding fertility awareness in order to broaden the traditional female-centred paradigm of family planning. The authors also posit that taking a couple-centred approach to family planning will result in higher likelihood of success for other, more conventional and interventional family planning approaches and a greater sensitivity by both partners toward critical sexual and reproductive health topics, including intimate partner violence, HIV, sexuality and partner communication.

In conclusion, we hope that you find the papers in this issue interesting and worthwhile, and that you will also consult others recently released online at www.worldhealthandpopulation.com. *WHP* remains committed to its mission to provide a forum for researchers and policy makers worldwide to publish and disseminate health- and population-related research, and to encourage applied research and policy analysis from diverse global and resource-constrained settings. *WHP* is indexed on MEDLINE and is accessible through PubMed.

We look forward to continued enthusiastic submission of manuscripts for consideration, peer review and publication. Finally, the editors and publishers of *WHP* are always interested in any comments or suggestions you might have on the papers or about the journal and our mission. Please feel free to write or email us.

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Knowledge of Termination of Pregnancy (TOP) Legislation and Attitudes toward TOP Clinical Training among Medical Students Attending Two South African Universities

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Abstract

Provision of safe, voluntary, termination of pregnancy (TOP) in South Africa is challenged by an insufficient number of TOP-trained clinicians. Medical students' understanding of TOP legality and their attitudes toward TOP training are indicators for future service provision. We administered a 63-item questionnaire to explore these issues at the University of Cape Town and Walter Sisulu University. Ordinary least squares regression assessed predictors of TOP legislation knowledge and training attitudes. Results: Of 1308 students, 95% knew that TOP was legal in South Africa, but few (27%) understood the specific provisions of the legislation beyond 13 weeks' gestation. Sixty-three percent

desired more information about TOP. In multivariate models, female, white and sexually experienced students and students more advanced in school had better legislation knowledge (all $p < .01$). Attending religious services regularly ($p < .01$) was associated with lack of support for TOP training, whereas being in a relationship ($p < .01$) was associated with support for TOP training.

Introduction

In the last century, voluntary termination of pregnancy (TOP) has emerged as a major public health and human rights issue, stimulating rigorous debate over the legality and morality of the practice worldwide (Dyer 2003; van Bogaert 2002). Despite statements issued by international health and development organizations affirming that safe, accessible TOP is a human right and must be legally addressed in developing nations, only a handful of African countries have made some form of voluntary abortion legal (van Bogaert 2002). During apartheid in South Africa, inequitable access to health services among non-white South Africans and coercive family planning practices led to significant morbidity and mortality from abortion-related injuries and adverse events (Ipas 2005; Rees et al. 1997). After the end of apartheid, however, South Africa produced a highly progressive democratic constitution that addressed equity and human rights issues related to women's sexual and reproductive health decision making (Althaus 2000). South African public health officials recognized the need to establish equitable practices in reproductive decision making, which resulted in the legalization of TOP in 1996. Non-governmental organizations including the Reproductive Rights Alliance (RRA) played an important role. The RRA consisted of a national alliance of 30 organizations committed to promoting women's rights, specifically the right for women to have freedom of reproductive choices. These groups had played an important advocacy role prior to the introduction of the *Choice on Termination of Pregnancy* (CTOP) *Act* and continued to assist with its implementation. Through the CTOP Act, access to safe, timely and free legal abortion became a reproductive health right for South African women (South African Government 1996).

The law allows voluntary TOP within the first 12 weeks of pregnancy. After 12 weeks and before 20 weeks, a woman can obtain TOP if continuing the pregnancy would pose a risk to her mental or physical health if there is significant risk that the fetus has a malformation, if rape or incest caused the pregnancy, or if the pregnancy would worsen the woman's economic condition (Lee 2003). Beyond 20 weeks, TOP is allowed only when the woman's life is endangered (South African Government 1996). The law was amended in 2008 to expedite facility-based approvals of TOP, requiring providers to collect and maintain TOP service data and to allow registered nurses to train and provide TOP services (South African Government 2008). The law states "any person who prevents the lawful termination of pregnancy shall be guilty of an offence and liable on conviction to a fine or imprisonment" (South African Government 2008). In addition, the CTOP Act promotes counseling, which is reinforced in the regulations to the CTOP Act that all women should be informed of their rights, and providers may not impede TOP service provision. Despite these provisions, the Constitution also upholds "freedom of conscience, religion, thought, belief and opinion"; thus, many health workers believe they are under no obligation to perform abortions, and this has led to an environment of inaction wherein TOP services are unavailable in many districts in South Africa.

Following implementation of the CTOP Act, deaths resulting from unsafe abortions dropped by 90%; however, in rural areas and in areas with no TOP providers, many women continued to obtain clandestine abortions (Jewkes et al. 2005; Moodley and Pattinson 1999). In fact, although an estimated 50,000 legal abortions were safely provided in the year following legalization of TOP, an equal number of unsafe abortions occurred (National Department of Health 1997), mostly due to lack of access to services. Recent estimates from South Africa suggest that 125,000 unsafe abortions, of approximately 200,000 total abortions, occur each year and 26% of all maternal deaths in South Africa are due to unsafe abortions (Aahman and Shah 2011; Blaauw and Penn-Kekana 2010; Daulaire et al. 2002; National Department of Health 2009; Statistics South Africa 2010). Finding, training and retaining sufficient staff to provide TOP services remain the most significant challenges to safe TOP provision in countries like South Africa, the United States (US) and Australia

(Adamo 2003; Australian Nursing Federation 1997; Dickson-Tetteh and Billings 2002; Edwards 2001; Ipas 2005; Joffe 2003; Wear and Keck-McNulty 2003). Studies in South Africa and the US have demonstrated that service provision is often dependent on a core of committed providers (Adamo 2003; Dickson et al. 2003; Foster et al. 2003; Joffe 2003). Lack of support for these providers, within both provincial and local administrations, and lack of available TOP training or rotation in medical education contributes to an environment of lethargy around the issue (Adamo 2003; Joffe 2003; van Bogaert 2002; Westhoff 1994).

A critical point for recruiting future TOP providers is to identify receptive individuals early in their medical training and direct them toward rotation or specialty programs addressing TOP. A supportive legislative environment around TOP does not necessarily imply inclusion of TOP training in the standard medical curriculum. Medical programs throughout the world offer few training opportunities in TOP-related services (Espey et al. 2004; Foster et al. 2003; Harper et al. 2005; Westhoff 1994; Williams 2002). Lack of specific requirements and the failure of governments to impose curriculum audits have meant that most advanced clinicians and medical doctors were never exposed to opportunities for TOP training (Westhoff 1994). In developing countries where TOP is legal, information is scarce regarding training programs and education in abortion care. Evidence from South Africa suggests more could be done to include abortion education in preclinical instruction and in rotation or residency programs (Ipas 2005; van der Westhuizen 2001). The eight medical schools operating in South Africa, four of which are located in metropolitan areas, have considerable latitude in designing curricula around TOP. South African medical schools currently offer a variety of TOP training opportunities ranging from singular lectures on TOP law or ethics discussions to complete clinical training in TOP provision and management, usually offered as part of obstetrics/gynecology (OBGYN) rotations. However, requiring values clarification sessions and more extensive training in TOP techniques in the general curriculum may make medical students feel more comfortable offering or referring patients for TOP because they feel appropriately qualified (Schwarz et al. 2005).

Future healthcare professionals are key to determining availability and coverage of future abortion services, but there is little literature documenting their TOP knowledge and attitudes toward abortion training, particularly in developing countries. Understanding medical students' knowledge and attitudes about TOP training may be crucial to overcoming challenges associated with ensuring a TOP workforce supply (Adamo 2003). Our study contributes to the scarce literature from Africa with regard to TOP training and curriculum development by examining medical students' knowledge about the legislative environment and attitudes toward TOP training in the context of the CTOP Act in South Africa.

Methods

Sampling and Data Collection

We designed a cross-sectional, quantitative survey assessing medical students' knowledge of current TOP legislation and attitudes toward inclusion of TOP training in medical school curricula in South Africa. The survey was administered to medical students enrolled at the University of Cape Town (UCT) and Walter Sisulu University (WSU) in 2005 and 2007, respectively, throughout the training trajectory (all years/cohorts in medical school were surveyed). UCT is located in an urban environment, whereas WSU is in a rural setting. Although they may not be fully representative of the entire student population attending all eight medical schools in South Africa, these two schools were specifically recruited for this study because of their geographic, socio-economic, racial/ethnic, religious and political diversity. The medical curriculum at UCT offers a lecture on TOP law in the third year, an ethics case study and discussion on TOP in the fourth year and two TOP observations in the fifth year. Students who conscientiously object to TOP can opt not to participate. The medical curriculum at WSU offers exposure to TOP case studies during the preclinical years and training in TOP management in the fourth and fifth years.

Medical faculty members were involved in designing the survey to ensure clarity of questions and to determine time required for completion. We conducted a pilot test of the instrument among

women's health faculty, health sciences students and other collaborators not directly involved in the survey's development. The instrument was revised in response to their feedback. The final anonymous survey was administered during a required course and took 15 to 20 minutes to complete. We surveyed all students present at the designated lecture. Students who were absent from class or were not enrolled in medical school (i.e., auditors) did not complete the survey. Medical faculty provided class rosters to determine what proportion of students responded.

The study instrument was structured with closed-ended questions. The questionnaire utilized true/false responses for knowledge questions and five-point Likert scale responses for curriculum/training questions (e.g., on a scale of "highly agree" to "highly disagree"). Respondents were asked to indicate "true," "false," or "don't know/uncertain" in response to a series of knowledge-based statements. Knowledge responses were recoded such that "1" indicated a correct response and "0" an incorrect response. For knowledge-based questions, responses of "don't know/uncertain" or missing responses were coded as incorrect. Curriculum questions were coded such that "5" indicated strong support of inclusion of TOP in the curriculum and "1" indicated strong lack of support.

We created two summary scales reflecting "Knowledge of current TOP legislation" and "Supportive attitudes for inclusion of TOP training in medical school curriculum" by summing item responses related to knowledge and averaging item responses related to curriculum. These scales were created based on theorized relationships among survey items (developed by S.B.W., L.L.Z. and R.J.) and consisted of multiple related items believed to represent each underlying construct (hereafter referred to separately as "Knowledge" and "Curriculum"). Nine survey items constitute the Knowledge scale; five constitute the Curriculum scale.

To confirm aggregation of items into Knowledge and Curriculum scales as indicators in the models, B.B.R. conducted confirmatory factor analyses using a structural equation-modelling framework within MPLUS software (Version 6.1; Muthén & Muthén, LosAngeles, CA). Both single factor models demonstrated relatively good fit to the observed data: Knowledge factor–Confirmatory Fit Index = .93, Tucker-Lewis Index = .91 (both should be ≥ .95 for good fit) and Root Mean Squared Error of Approximation = .06 (should be ≤ .06); Curriculum factor–Confirmatory Fit Index = .95, Tucker-Lewis Index = .91and Root Mean Squared Error of Approximation = .22. Reliability (internal consistency) for both scales were .64 and .83 for the Knowledge and Curriculum factors, respectively (where reliability > .70 is optimal for group comparisons).

Data Analysis

Descriptive analyses of respondents' socio-demographic characteristics were used to examine outliers, missing variables and data inconsistencies, as well as characteristics of students across medical schools and year of enrolment (e.g., first- through sixth-year students). One of the key characteristics described is whether respondents intended to specialize in OBGYN or another specialty; importantly, we also describe respondents' relationship history and sexual experience. We used ordinary least squares (OLS) regression to examine predictors of Knowledge scores and Curriculum scores. Independent variables included in the OLS regression were institution, gender, year in medical school (i.e., first-year student through sixth-year student), religious affiliation, religious attendance, relationship status, sexual history and racial/ethnic group (i.e., White, Black/African, Coloured/multiracial, Asian Indian or Other, consistent with the predominant racial/ethnic classification scheme currently used in South Africa to describe population demographics). P-values of .05 or lower were considered statistically significant. All analyses were performed in Stata (Version 11; Stata Corporation, College Station, TX).

Results

Socio-demographic Characteristics of Respondents

In total, 1308 students responded (UCT n = 882; WSU n = 426), for a response rate of 84%. Socio-demographic characteristics and relevant information describing UCT and WSU are presented in Tables 1 and 2. As expected, the student populations at UCT and WSU differed, with slightly more

female students at UCT (63% compared with 55% at WSU), a much higher proportion of Black/African students at WSU (84% compared with 34% at UCT) and more students reporting regular religious service attendance at UCT (44% compared with 36% at WSU). Most medical students surveyed had previously been or were currently involved in a romantic relationship. Approximately one fifth of all students reported never having been in any relationship. Students farther along in their training reported more relationship experience and higher rates of sexual intercourse than their more junior counterparts.

Table 1. Socio-demographics, sexual history, and plans for specialization among medical school students at the University of Cape Town, South Africa

Characteristic, % (n)	First year 21% (186)	Second year 20% (177)	Third year 13% (118)	Fourth year 17% (150)	Fifth year 19% (166)	Sixth year 10% (85)	Total 100% (882)
Sex							
Male	39%	40%	36%	33%	39%	28%	37%
Female	61%	60%	64%	67%	61%	72%	63%
Religious affiliation							
Catholic	12%	11%	9%	11%	11%	11%	11%
Christian, non-Catholic	63%	57%	53%	53%	52%	50%	56%
Muslim	11%	12%	16%	14%	16%	18%	14%
Hindu	3%	7%	11%	5%	8%	9%	7%
Jewish	4%	3%	2%	3%	1%	2%	3%
Other religion	3%	2%	5%	5%	4%	1%	3%
Agnostic/atheist	5%	7%	4%	8%	8%	9%	7%
Frequency of religious service attendance							
Regular	46%	42%	53%	43%	43%	35%	44%
Semi-regular	22%	21%	17%	16%	27%	31%	22%
Not often	23%	28%	19%	26%	19%	25%	23%
Never	10%	9%	11%	15%	10%	8%	11%
Relationship status							
Single, never with someone	36%	24%	20%	10%	13%	13%	21%
Single, not with anyone currently	39%	42%	37%	33%	34%	34%	37%
Single, in a relationship	24%	34%	40%	53%	45%	47%	39%
Other (including married)	1%	0%	4%	4%	9%	7%	4%
Population group							
White	29%	27%	23%	41%	29%	46%	31%
African	40%	40%	36%	27%	35%	19%	34%

Coloured	16%	15%	12%	16%	14%	12%	14%
Indian	11%	15%	27%	15%	17%	19%	17%
Other	5%	4%	2%	1%	5%	4%	3%
Ever had sexual intercourse	21%	34%	31%	50%	52%	62%	40%
Considering specializing in OBGYN							
Strongly agree/agree	27%	22%	27%	27%	25%	13%	24%
Neutral	30%	26%	26%	20%	19%	9%	23%
Strongly disagree/disagree	43%	52%	48%	53%	56%	78%	53%
Considering specializing in FamMed							
Strongly agree/agree	30%	20%	17%	17%	23%	35%	23%
Neutral	39%	33%	28%	30%	32%	17%	32%
Strongly disagree/disagree	31%	47%	54%	53%	45%	49%	45%

Note. As a result of rounding, columns may not sum to 100%.

Table 2. Socio-demographics, sexual history and plans for specialization among medical school students at Walter Sisulu University, South Africa

Characteristic, % (n)	First year 23% (96)	Second year 21% (89)	Third year 24% (104)	Fourth year 14% (60)	Fifth year 18% (77)	Total 100% (426)
Sex						
Male	45%	37%	48%	44%	53%	45%
Female	55%	63%	53%	56%	47%	55%
Religious affiliation						
Catholic	7%	18%	14%	17%	13%	14%
Christian, non-Catholic	82%	68%	75%	63%	68%	72%
Muslim	0%	1%	0%	2%	1%	1%
Hindu	4%	9%	8%	10%	11%	8%
Other religion	5%	3%	4%	9%	4%	5%
Agnostic/atheist	1%	0%	0%	0%	3%	1%
Frequency of religious service attendance						
Regular	43%	35%	34%	30%	34%	36%
Semi-regular	27%	38%	36%	43%	30%	35%
Not often	25%	23%	27%	23%	32%	26%
Never	4%	5%	2%	3%	4%	4%

Relationship status						
Single, never with someone	30%	24%	21%	21%	7%	21%
Single, not with anyone currently	33%	36%	27%	24%	28%	30%
Single, in a relationship	33%	33%	48%	43%	54%	42%
Other (including married)	4%	7%	5%	12%	11%	7%
Population group						
White	2%	2%	2%	0%	0%	1%
African	90%	82%	85%	80%	81%	84%
Coloured	1%	0%	2%	2%	3%	1%
Indian	7%	15%	12%	19%	15%	13%
Other	0%	1%	0%	0%	1%	1%
Ever had sexual intercourse	60%	65%	74%	63%	78%	68%
Considering specializing in OBGYN						
Strongly agree/agree	19%	26%	24%	37%	42%	29%
Neutral	39%	41%	35%	36%	38%	38%
Strongly disagree/disagree	42%	32%	41%	27%	20%	34%
Considering specializing in FamMed						
Strongly agree/agree	35%	25%	20%	26%	25%	26%
Neutral	35%	45%	55%	50%	42%	45%
Strongly disagree/disagree	30%	30%	26%	24%	34%	29%

Note. As a result of rounding, columns may not sum to 100%.

Knowledge of TOP Legislation

Table 3 presents knowledge about abortion, abortion legality and related topics. The overwhelming majority of students knew that legal abortion on request was available in South Africa (95%). Eighty-three percent of all respondents also correctly responded that in South Africa women could obtain an abortion for any reason up to 12 weeks' gestation. Respondents were less knowledgeable about specific circumstances for which TOP is sanctioned beyond 12 weeks' gestation and which types of medical providers could legally perform TOP. Over half of respondents correctly responded that abortion was provided free by the South African government.

Supportive Attitudes for of TOP Training in Medical School Curriculum

Table 3 also presents attitudes around TOP training. Nearly half (48%) of students agreed that, "Because it is a routine medical procedure, abortion should be incorporated into the medical curriculum." Almost one third (30%) disagreed, and the rest were uncertain. Sixty-nine percent of students indicated that they "would be willing to attend a workshop on abortion and related issues." Over half (57%) of medical students agreed with the statement, "I feel that issues related to abortion require more attention in the medical curriculum," and 63% agreed they "would like to receive more information about abortion and abortion-related health services."

Table 3. General knowledge and curriculum survey items about TOP services

General knowledge of TOP provision	Correct	Incorrect
Legal abortion on request is available in South Africa.	95%	5%
In South Africa, a woman can obtain an abortion for any reason until up through 12 weeks of pregnancy.	83%	17%
Between 13 and 20 weeks of pregnancy, the only circumstance for which abortion may be granted is if the pregnancy poses physical harm to the mother.	27%	73%
Abortion is illegal beyond 20 weeks of pregnancy.	34%	66%
Abortion is free in public health facilities in South Africa.	63%	37%
Only doctors can perform abortions in South Africa.	52%	48%
Under the apartheid government, abortion was officially illegal/against the law.	67%	33%
When performed by a trained medical professional, abortions are safe procedures with minimal risk to a woman's health.	78%	22%
When performed by an untrained person ("backstreet"), abortions are safe procedures with minimal risk to a woman's health.	89%	11%

Support for TOP curriculum/training	Strongly agree/ agree	Neutral	Strongly disagree/ disagree
Because it is a routine medical procedure, abortion should be incorporated into the medical curriculum.	48%	23%	30%
I would be willing to attend a workshop on abortion and related issues.	69%	16%	15%
I would be willing to take a class that involved training in performing voluntary abortions and related topics.	43%	19%	38%
I feel that issues related to abortion require more attention in the medical curriculum.	57%	25%	18%
I would like to receive more information about abortion and abortion-related health services.	63%	22%	15%
Additional survey items	**Strongly agree/ agree**	**Neutral**	**Strongly disagree/ disagree**
I believe that in addition to doctors, nurses should be trained to provide abortions.	51%	23%	26%
Do you think that your attitudes toward abortion have changed since you started medical school? (answered as "Yes," "Don't know" or "No")	41%	10%	50%

Notes. For regression analyses, all knowledge questions were coded on a binary correct/incorrect scale and curriculum/training questions were reverse coded. For descriptive purposes only, we collapsed "strongly agree" and "agree" responses and collapsed "strongly disagree" and "disagree" to reflect overall support or lack of support with each of the statements about TOP training and curriculum.

Table 4. OLS standardized regression coefficients for summary scores reflecting "Knowledge of TOP legislation" and "Support of TOP training in the medical curriculum"

Characteristic	Knowledge of TOP legislation	Support of TOP training
University of Cape Town	0.654*** (0.416, 0.891)	–0.195** (–0.358, –0.032)
Walter Sisulu University	Reference	Reference
Female	0.556*** (0.366, 0.746)	–0.056 (–0.188, 0.076)
Male	Reference	Reference
Year in medical school		
Sixth	2.524*** (2.084, 2.964)	–0.091 (–0.402, 0.219)
Fifth	2.049*** (1.751, 2.347)	–0.186* (–0.392, 0.020)
Fourth	1.586*** (1.281, 1.891)	–0.161 (–0.373, 0.051)
Third	2.137*** (1.837, 2.437)	–0.245** (–0.454, –0.037)
Second	0.261* (–0.013, 0.535)	–0.146 (–0.337, 0.046)
First	Reference	Reference
Population group/race		
White	0.411*** (0.140, 0.682)	–0.327*** (–0.515, –0.139)
Coloured	–0.111 (–0.467, 0.245)	–0.126 (–0.371, 0.119)
Indian	–0.029 (–0.453, 0.395)	–0.119 (–0.412, 0.173)
Other	–0.061 (–0.663, 0.541)	–0.064 (–0.484, 0.357)
African/Black	Reference	Reference
Religious service attendance (ordinal variable ranging from 0 to 3, where 0/Reference is "Never attend")	0.140*** (0.035, 0.245)	–0.327*** (–0.400, –0.255)
Religious affiliation		
Catholic	–0.025 (–0.319, 0.268)	0.047 (–0.155, 0.249)
Muslim	0.511** (0.102, 0.920)	–0.049 (–0.333, 0.236)
Hindu	0.498* (–0.021, 1.016)	0.657*** (0.299, 1.015)
Jewish	0.795** (0.091, 1.500)	0.973*** (0.480, 1.465)
Atheist/agnostic	0.233 (–0.237, 0.704)	0.346** (0.019, 0.672)
Other, including none	0.393 (–0.076, 0.861)	0.060 (–0.271, 0.391)
Non-Catholic Christian	Reference	Reference
In relationship now	0.120 (–0.134, 0.373)	0.297*** (0.122, 0.473)
Once in relationship but not now	0.044 (–0.199, 0.288)	0.039 (–0.130, 0.208)
Single, never in relationship	Reference	Reference
Ever had sexual intercourse	0.407*** (0.176, 0.638)	0.140* (–0.021, 0.300)

Never had intercourse	Reference	Reference
Intercept	3.158*** (2.758, 3.559)	4.421*** (4.145, 4.697)
Adjusted R2	0.348	0.174
Observations	1135	1157

Notes. Summary score for Knowledge is the total number of correct responses. Summary score for Curriculum is the simple average of survey item responses expressed on a scale of 1–5, where higher scores reflect more supportive views of TOP training; 95% confidence interval in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

Additional Survey Items

Although not included in either the Knowledge or Curriculum factors, additional survey items collected are of interest. Medical students were asked to respond to the statement, "I believe that in addition to doctors, nurses should be trained to provide abortions." Slightly over half (51%) of students agreed; the remaining responses were divided between neutral (23%) and disagreement (26%). Forty-one percent of students indicated that their attitude toward TOP had changed since starting medical school, with more advanced students being much more likely to report that their attitude had changed since beginning medical school (results not shown).

Multivariate OLS Regression Analyses

Results for multivariate analyses are shown in Table 4. For the TOP Knowledge factor, controlling for other factors, being enrolled at UCT ($p < .01$), being female ($p < .01$) and being white ($p < .01$) were significantly positively associated with being more knowledgeable about TOP legislation. As expected, increasing year in medical school was also positively associated with increased knowledge. Being Muslim ($p = .01$) or Jewish ($p = .03$) (as compared to non-Catholic Christian) was associated with better knowledge. Additionally, having had sexual intercourse ($p < .01$) was positively associated with better knowledge of TOP legislation, controlling for other factors.

For the support of the TOP Curriculum factor, being enrolled at UCT ($p = .02$), attending religious services regularly ($p < .01$) and being white relative to African/Black ($p < .01$) were associated with lack of support of TOP training. Being Hindu ($p < .01$), Jewish ($p < .01$) or atheist/agnostic ($p = .04$) were positively associated with TOP training support. Being in a relationship currently ($p < .01$) also was positively associated with support for TOP training.

Discussion

This study described future healthcare professionals' knowledge about TOP legislation, curriculum exposure and demand for TOP training as well as socio-demographic and behavioural correlates. Overall, 95% of students knew that legal abortion was available in South African public health facilities. However, the details of legal provision of care were unknown to many students, especially first- and second-year students. Most students agreed that abortion training should be more widely incorporated in medical curricula, that the current medical curriculum lacked sufficient abortion training and that they would appreciate additional opportunities to learn about abortion. This is consistent with literature from around the world indicating that abortion training and discussion of abortion-related topics is lacking in routine preclinical curricula, in OBGYN rotations and in residency training (Espey et al. 2004; Foster et al. 2003; Goldman et al. 2005; Shotorbani et al. 2004; Visser et al. 1993; Wear and Keck-McNulty 2003; Westhoff 1994). Generally, age and medical socialization, religion and religious attendance, and sexual and relationship experience had the greatest impact on TOP knowledge and attitudes about incorporating TOP into the medical curriculum.

Older and more advanced medical students were more knowledgeable about TOP provisions under the 1996 law. First- and second-year students answered incorrectly more often to questions about knowledge and answered neutrally more often to questions about the curriculum, which may

be explained by their lack of exposure to the entire medical curriculum. Additionally, students in higher years reported a greater change in attitude as a result of their experiences in medical school than did first- and second-year students. Although students in higher years reported greater knowledge of the TOP legislation relative to first-year students, third-year students were less supportive of additional TOP training ($p < .05$), which may be a cohort effect. Alternatively, it may reflect the fact that both WSU and UCT offer discussions of TOP-specific case studies during the third year, which may have led students to disagree with certain curriculum-focused questions such as "I feel that issues related to abortion require more attention in the medical curriculum." This finding is in accordance with results from another study in a rural South African university that reported an increase in tolerance with time spent in medical school (Buga 2002) and may be explained by increased opportunity for educational influence with time spent in medical school. Studies from the US also report that attitudes become increasingly more tolerant of abortion with medical socialization (Leiblum and Williams 1993; Rosenblatt et al. 1999; Westfall et al. 1991). In a study conducted among Columbia University medical students, of the 20% of students reporting a change in attitude, the majority of the shift in opinion was attributed to training received during the clinical years, in particular, after exposure to the obstetrics and gynecology rotation and after observing abortion procedures during clinical rotation, indicating perhaps that students are more receptive to changing their opinions during clinical years (Stennett and Bongiovi 1991). In a study at the University of New Mexico, the majority of students participating in a voluntary half-day clinical experience in abortion care in the third year rated the experience as highly informative and reported they would recommend it to others (Espey et al. 2004). Moreover, 94% became more supportive of access to abortion services and over 80% reported that the experience would enable them to better counsel patients about abortion or to provide TOP in the future (Espey et al. 2004).

Consistent with other studies(Abdel-Aziz et al. 2004; Aiyer et al. 1999; Buga et al. 2002; Espey et al. 2004; Francome 1997; Stennett and Bongiovi 1991), religion was significantly associated with most responses to questions regarding attitudes and demand for TOP training in the curriculum. Students self-reporting as Hindu, Jewish, agnostic/atheist or "other" religion were significantly more interested in receiving training and seeking opportunities to learn about TOP. Personal religion was most commonly reported as an important external factor reported by students to influence the formation of their values and beliefs with respect to abortion, with 77% of all students indicating that religion had influenced them "very much" or to some extent (results not shown).

Sexual experience and relationship status/history also were significantly associated with TOP-related knowledge and training attitudes. Students who had previously engaged in sexual intercourse or students who had been involved in at least one romantic relationship were generally more knowledgeable about abortion and more interested in seeking opportunities to learn about abortion. These results were expected, since sexually active individuals may relate more easily to the risks of unintended pregnancies. In our study, sexual experience also was associated with knowledge of a facility where abortions were provided (results not shown), which is consistent with the notion that sexual activity leads to increased familiarity with reproductive health services. These findings align with literature from the US (Klamen et al. 1996), but diverge from results from a South African study reporting that sexual experience was not correlated with medical students' attitudes towards TOP (Buga 2002).

Most students in this study reported interest in learning about abortion and related health services. Over half of the students surveyed reported that TOP did not receive enough attention in the medical curriculum. Only 10% of students in the UCT program felt abortion was sufficiently covered in the current curriculum. These findings are generally consistent with literature from the US (Almeling et al. 2000; Dowling and Bates 2000; Edwards 2001; Espey 2004; Shotorbani et al. 2004; Wear and Keck-McNulty 2003). Although the US legalized abortion much earlier than South Africa – in the 1970s – providing American health providers and medical institutions more time to add TOP care to the formal medical curriculum, TOP training remains in high demand in both settings.

Based on these findings, several implications emerge. TOP is the second most commonly performed surgical procedure in women's health, after Caesarean section (Westhoff 1994); as such,

medical students should be trained in abortion care. Particularly, students should have the chance to explore the ethical, legal and human rights dimensions of TOP, including a provider's right to conscientious objection, a patient's right to make an informed choice and the intersection of these two rights. There are many opportunities to improve abortion education in the medical curriculum, both during basic sciences/preclinical instruction and in the clinical years. Training in certain key areas should be made compulsory in the general medical curriculum, including legal dimensions of care provision, basic clinical training in performing surgical and medical abortion, management of complications, observation of procedures and reproductive health rotations. Students who conscientiously object should have the option to forgo observations, but should be able to counsel or refer patients for TOP in an unbiased, informed manner that is consistent with patients' rights. Additionally, medical students should be trained to perform emergency abortions. Residency programs in OBGYN, internal medicine and family medicine should require TOP training in order to be considered comprehensive programs. The National Department of Health in South Africa should take an active role in ensuring that residents are adequately trained in TOP care. In the long term, implementing standardized medical education requirements and government curriculum audits may be effective approaches to address deficiencies in abortion training (Westhoff 1994).

To help address TOP workforce shortages, nurses and midwives also should have opportunities to receive TOP training. Approximately half of students in the current study supported TOP training for nurses, demonstrating little professional territoriality. Utilizing the skills of nurses and midwives has proven to be one effective solution to the provider shortage problem in South Africa and is supported by the CTOP amendment (Adamo 2003; van der Westhuizen 2001). Since nurses are often the sole health providers in underserved areas in South Africa, they are critical determinants of access to abortion care (Dickson et al. 2003; van der Westhuizen 2001). Additional research in this field should examine nurses in training to determine if their knowledge, attitudes, beliefs and intentions are similar to respondents in the current survey.

This research has several limitations worth consideration. First, responses to a sensitive topic via self-administered survey may be subject to social desirability bias. To limit such bias, we carefully designed an anonymous questionnaire based upon previous authors' experiences (Buga 2002; Cook et al. 1993; Rosenblatt et al. 1999; Shotorbani et al. 2004; Westfall et al. 1991), and we piloted and refined our questionnaire repeatedly to improve questionnaire specificity and minimize bias (Cook et al. 1993). Finally, because there appears to be no social consensus with respect to TOP in South Africa, it is unlikely that findings were biased in any particular direction. Second, as this questionnaire was administered among medical students at two universities in South Africa, the results may not be generalizable to other student populations. However, this study was specifically designed to address knowledge and attitudes about TOP training among South African medical students in the context of TOP workforce shortages. Nevertheless, the issues brought up by students in South Africa echo many other budding health providers' sentiments worldwide, and the applicability of the current research may be more far-reaching than was originally realized. Finally, because this study was cross-sectional, it does not describe changes in opinions over time. In the future, long-term cohort studies following medical students through their professional trajectories to clinical practice would be useful to describe changes in knowledge, attitudes, beliefs and practice behaviours over time.

Despite these limitations, to our knowledge, this study represents one of the first of its kind assessing students' views of the African medical curricula with respect to abortion training. Our 84% response rate indicates that the sample of students surveyed in this study is likely representative of medical school classes studying at UCT and WSU during this time period. Furthermore, comparative analyses demonstrated that gender and medical school class distribution of study participants accurately reflected that of the UCT and WSU medical programs and others in South Africa. Our study suggests that medical students in South Africa are receptive to inclusion of more TOP training in the medical curriculum and that knowledge of TOP legislation could be improved. Based on our findings, curriculum changes at African medical universities may be valuable to improve TOP knowledge, access, availability, equitability and quality of abortion care services in South Africa. By

introducing the TOP training initiatives students desire, the provider base for future abortions may be increased, a significant contribution to access/quality of care issues in TOP service provision. A coherent, widespread effort to improve TOP training, knowledge and service delivery must be identified, incorporating the views of all stakeholders. A multidisciplinary approach will likely be most effective in addressing deficiencies in professional training and ensuring that safe, accessible abortion care is available to all women.

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Household Expenditures as a Measure of Socioeconomic Status among Iraqis Displaced in Jordan and Syria

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Abstract

Background: Various measures are used to represent socioeconomic status (SES) in health research, including income. However, reliability of income data can be low. Household expenditures are an accepted proxy for income as a more reliable measure but have been studied little in refugee populations.

Methods: Health and SES measures from cross-sectional surveys of Iraqi refugees in Jordan and Syria were analyzed using logistic regression to assess the interchangeability of household income and expenditures.

Results: In Jordan, odds ratios in the regression models including income quartiles were frequently similar to odds ratios found in the models including expenditure quartiles, indicating interchangeability. In Syria, fewer similarities were observed.

Conclusions: This study provides some evidence that household expenditures may be used interchangeably with household income for some populations, allowing for the potential collection and use of data related to expenditures as a measure of SES, similar in importance to that of income.

Background

The 2003 conflict in Iraq resulted in a large displacement of Iraqis, with many fleeing to neighbouring countries. In 2011, an estimated 1,000,000 Iraqis were thought to be in Syria and an additional 450,000 to 500,000 in Jordan (United Nations 2010). Most Iraqis chose to settle in Jordan and Syria because of both to their proximity to Iraq and their readiness to accept the displaced population (Fagen 2007). Iraqis are the largest urban refugee population being assisted by the United Nations, and the size of the displaced population relative to the populations of Jordan and Syria is substantial (US Government Accountability Office 2009). However, this has resulted in Jordan and Syria bearing much of the burden of the displacement, which has placed significant pressures on their public sectors, costing Jordan an estimated $1.6 billion US per year and Syria an estimated $150 million per year (IRIN News 2008; Mamaux and Kaufmann 2008). While funding from the international community provides some assistance, shortfalls due to the global economic slowdown and other contributing factors are a persisting challenge (United Nations 2011). Tenuous access to medical care and the high prevalence of chronic and degenerative diseases have resulted in higher costs and increased need for secondary and tertiary care among Iraqi refugees (Mowafi and Spiegel 2008). The inability to gain legal employment, which limits income earning abilities and gradually depletes household savings, further restricts the population's ability to access medical care (Doocy et al. 2010; United Nations High Commissioner for Refugees [UNHCR] 2011a, 2011b).

Various measures are used to represent socioeconomic status (SES) in health research, including income, wealth and education, which all impact health (Adler and Ostrove 1999; Anderson and Armstead 1995; Metcalf et al. 2008). With respect to health, income is a particularly important SES measure because of its relationship to health status and access to care, including mechanisms such as paying for medical care, purchasing more nutritious foods and affecting the choice of where one lives (Kennedy et al. 1998; Robert Wood Johnson Foundation to Build a Healthier America 2009). Limited income can cause struggles with day-to-day life by restricting one's ability to access resources and adopt healthy behaviours. The need for additional research into the effects of SES on health, including a determination of the potential interchangeability of SES measures and data quality and availability, has been well documented (Adler et al. 1995; Adler and Ostrove 1999). Issues with non-reporting and reliability of income data are common, in part due to reluctance to report this information to a stranger, but also due to potential complications related to non-standard forms of income, seasonal variations and measurement issues (Lipton and Ravallion 1995). Household expenditures are an accepted alternative often used as a proxy for household income and have been shown to be a more reliable indicator (Deaton 1997; Morris et al. 2000; Xu et al. 2009). This paper examines the interchangeability of household income and expenditure data in relation to health outcomes and access to care among displaced Iraqi refugees in Jordan and Syria.

Methods

In this study we analyzed health and SES components of cross-sectional surveys conducted among Iraqi refugees in Jordan (October 2008) and Syria (March 2009) to assess a variety of health and well-being measures. Stratified cluster sample designs (120 clusters 10 households in Jordan; 80 clusters 10 households in Syria) were used to distribute the sample in proportion to Iraqi residence locations. (For a detailed explanation of the sampling methodology, see Doocy et al. 2010.) The clusters were split proportionally between the capital city and non-capital Iraqi populations, resulting in 75% and 70% of the sample in Jordan and Syria, respectively, being allocated to Amman and Damascus. Clusters were assigned to smaller administrative units using similar probability-based methods; cluster start points within each area were randomly selected, and the 10 nearest Iraqi households identified were interviewed. The primary data collection tool was a household questionnaire that was completed by oral interview with an adult household member, most often the household head and/or his or her spouse.

The questionnaire was initially developed in Jordan with input from multiple stakeholders, including UN agencies, the Government of Jordan, domestic and international organizations that

provide services to Iraqis, and Iraqis with expertise in humanitarian assistance. The Jordan questionnaire was subsequently adapted for use in Syria; the final questionnaires in Jordan and Syria included many sections that were identical, although some questions differed. Questionnaires focused on general food security and living conditions, health status, access to health services and receipt of humanitarian assistance. All interviewers underwent a minimum of four days training that included basic interviewing techniques, informed consent, the survey instrument and sampling methods. Interviews averaged from 30 to 50 minutes in duration; prospective respondents were informed that participation was voluntary, and no direct benefits were associated with completion of the interview. Full names and addresses were not recorded to protect the anonymity of respondents.

The Aday and Andersen framework for the study of access to medical care served as the basis for our analysis (Aday and Anderson 1974; Urrutia-Roja and Aday 1991). Individual- and household-level demographic and socioeconomic characteristics were categorized as predisposing or enabling. Predisposing characteristics include variables such age, sex, health knowledge, household size and arrival date, whereas enabling characteristics detail the ability of persons or households to access services and include such variables as income, household expenditures, borrowing money, registration status and financial situation. Exploratory analysis was conducted to assess whether factors within the model could be used as feedback mechanisms to formulate policies in response to the needs of displaced Iraqis. An overriding goal was to discern variables that could be used to identify vulnerable urban refugees by associating characteristics of the population at risk with health conditions and access to care outcomes of interest.

Data analysis was conducted using Stata/IC 10.0 (StataCorp 2007). Logistic regression was utilized to determine associations between independent variables (predisposing and enabling characteristics) and outcome variables of interest (health conditions and access to care). Variables that showed potential association in univariate logistic regression ($p < .25$) were incorporated into multiple logistic regression models. Manual backwards selection was used to remove variables that were not significant ($p < .05$). (Variables that were not significant but appeared to affect the p-value and/or odds ratio of one or more remaining variables were controlled for and included in final models.) This process allowed for the results from each model to contain those predisposing or enabling variables associated with each outcome of interest, attempting to include all relevant variables in each model and to account for any potential confounding. Adjustments were made to account for both clustering within household clusters and clustering within individual households using appropriate methods in Stata.

Both studies were approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board. The Ministry of Planning and International Cooperation approved the study in Jordan. In Syria, the protocol and survey instrument were reviewed and approved by a locally composed review committee that included Iraqi community leaders, physicians and humanitarian assistance professionals.

Results

The final study populations included 1200 households with 4997 individuals in Jordan and 813 households with 3684 individuals in Syria. Average household size was 4.5 persons in both Jordan and Syria, and 20% to 25% of households, respectively, were headed by a female. Educational attainment was high, with 89% to 93% of households having a member who had completed secondary schooling. In Jordan and Syria, 52% and 59% of households, respectively, reported having children, including 30% and 22%, respectively, with children less than five years of age. Large minorities of Iraqi households in Jordan (17%) and Syria (41%) lived below the international poverty line of < 2 US dollars/person/day; however, low response rates were a problem specific to income data. Population summary statistics for health conditions and access to care, the outcomes of focus of the SES analysis, are summarized in Table 1.

Table 1. Health Conditions and Access to Medical Care Among Iraqi Refugees in Jordan and Syria

Health Conditions	Jordan		Syria	
	Prevalence (95% CI)		Prevalence (95% CI)	
Chronic Conditions in Adults	***n* = 3414**		***n* = 2,342**	
Hypertension	19.6%	(18.3–21.0)	19.6%	(18.0–21.3)
Musculoskeletal	18.5%	(17.2–19.9)	16.6%	(15.1–18.2)
Digestive	11.3%	(10.3–12.4)	7.1%	(6.1–8.2)
Diabetes	9.1%	(8.2–10.1)	7.6%	(6.6–8.7)
Cardiovascular	6.7%	(5.9–7.6)	7.8%	(6.8–9.0)
Lung/Respiratory	3.1%	(2.5–3.7)	6.0%	(5.1–7.1)
Kidney	1.9%	(1.5–2.4)	2.9%	(2.3–3.7)
Cancer	1.3%	(0.9–1.7)	0.6%	(0.4–1.1)
Others	13.7%	(12.6–14.9)	29.8%	(28.0–31.7)
Any chronic condition	41.0%	(39.4–42.7)	51.5%	(49.4–53.5)
Disability	***n* = 4997**		***n* = 3684**	
Any disability	3.4%	(3.0–3.9%)	7.1%	(6.3–8.0%)
Physical disability	1.7%	(1.4–2.1%)	3.0%	(2.5–3.6%)
Access to Medical Care	**Percent**		**Percent**	
Sought care last time medical attention was needed	85.8%		84.4%	
We are able to get medical care when necessary	62.5%		58.8%	
We can always afford medical care	32.4%*		23.5%*	
We have access to the medical specialists we need	53.3%*		40.8%*	
We receive enough information to stay healthy	55.4%*		30.4%*	
Households with a member hospitalized within past year	30.2%*		43.1%*	

*Statistically significant difference ($p < .05$) between Jordan and Syria.
CI = confidence interval.

Approximately two thirds of respondents answered the income question (64% in Jordan, 66% in Syria), leaving a large proportion of respondents without income data. Expenditure data was reported at a much higher level in both countries (91% in Jordan; 96% in Syria). To test that the distribution of non-responses was random, the association between SES factors and income reporting was assessed (Table 2).

Households in both Jordan and Syria that reported no adult member employed were more likely to not report their income. A difference in reporting also appeared among people with different levels of education, but the pattern varied by country. In Jordan, a higher percentage of households with an adult with a university education failed to report an income, whereas in Syria, households with an adult with a primary level of education were more likely to not report an income. Similarly, results for proximity to the capital, home ownership, arrival year and UNHCR registration status

were not consistent between the countries. No differences were seen with regard to respondent age, reporting a chronic disease, or access to care variables. Assuming there are no obvious confounding factors influencing the reporting of income that can be adjusted for, it stands to reason that other available indicators with more complete reporting should be used as alternative SES proxies.

Logistic regression models where income and expenditures were significantly associated with a health condition (Table 3) and access to care outcomes (Table 4) have several similarities, particularly in Jordan.

Table 2. Comparison of socioeconomic factors and reporting of income in Jordan and Syria[a]

Household characteristics	Jordan			Syria		
	Households *not* reporting income (n = 430, 36%)	Households reporting income (n = 770, 64%)	p-value	Households *not* reporting income (n = 267, 34%)	Households reporting income (n = 533, 66%)	p-value
Employment						
Household member(s) employed	117 (27%)	462 (60%)	$p < .01$	47 (19%)	217 (41%)	$p < .01$
No employed household member	313 (73%)	308 (40%)		200 (81%)	316 (59%)	
Education						
Primary	34 (8%)	94 (12%)	$p < .01$	20 (8%)	31 (6%)	$p < .00$
Secondary	88 (20%)	198 (26%)		91 (35%)	119 (22%)	
Institutional	68 (16%)	133 (17%)		42 (16%)	124 (23%)	
University	240 (56%)	345 (45%)		109 (41%)	258 (49%)	
Residence location						
Lives in capital city	339 (79%)	561 (73%)	$p = .02$	210 (80%)	353 (66%)	$p < .00$
Lives outside of capital	91 (21%)	209 (27%)		52 (20%)	180 (34%)	
Arrived prior to 2003						
Yes	350 (81%)	573 (77%)	$p < .01$	10 (4%)	14 (3%)	$p = .46$
No	80 (19%)	167 (23%)		249 (96%)	514 (97%)	
Home ownership						
Residence owned	97 (23%)	89 (12%)	$p < .01$	25 (9%)	74 (12%)	$p = .04$
Residence not owned	333 (77%)	681 (88%)		242 (91%)	457 (88%)	
Registered with UNHCR						
Yes	328 (76%)	599 (78%)	$p = .47$	231 (87%)	495 (94%)	$p < .00$
No	102 (24%)	168 (22%)		36 (13%)	32 (6%)	

[a] Due to missing data, some differences exist in the number of households reported compared to study totals.
UNHCR = United Nations High Commissioner for Refugees.

Table 3. Comparison of income and expenditure quartile results for health condition regression models

		Jordan		Syria	
		Expenditure quartiles odds ratio (95% CI)	Income quartiles odds ratio (95% CI)	Expenditure quartiles odds ratio (95% CI)	Income quartiles odds ratio (95% CI)
Diabetes	1st	**Reference**	**Reference**	**Reference**	**Reference**
	2nd	**0.48 (0.30–0.79)**	**0.54 (0.35–0.82)**	0.85 (0.53–1.38)	**0.52 (0.29-0.93)**
	3rd	0.92 (0.61–1.40)	0.81 (0.54–1.24)	0.91 (0.61–1.36)	0.84 (0.53–1.37)
	4th	0.79 (0.49–1.25)	0.73 (0.48–1.12)	0.97 (0.61–1.55)	0.97 (0.59–1.60)
Musculoskeletal disease	1st	Reference	**Reference**	**Reference**	**Reference**
	2nd	0.75 (0.53–1.06)	0.79 (0.57–1.10)	**0.60 (0.44–0.82)**	**0.70 (0.50–0.97)**
	3rd	0.86 (0.62–1.19)	0.74 (0.51–1.07)	**0.60 (0.47–0.78)**	**0.66 (0.43–0.99)**
	4th	0.79 (0.53–1.16)	**0.52 (0.27–0.61)**	**0.62 (0.46–0.84)**	0.77 (0.53–1.12)
Respiratory disease	1st	**Reference**	**Reference**	Reference	Reference
	2nd	0.75 (0.43–1.33)	0.45 (0.19–1.05)	0.55 (0.30–1.01)	0.58 (0.32–1.06)
	3rd	0.65 (0.36–1.19)	0.64 (0.29–1.40)	0.82 (0.51–1.34)	1.04 (0.64–1.68)
	4th	**0.39 (0.18–0.82)**	**0.33 (0.12–0.93)**	0.78 (0.49–1.24)	1.02 (0.67–1.57)
Dialysis	1st	**Reference**	**Reference**	Reference	**Reference**
	2nd	**0.43 (0.20–0.94)**	0.83 (0.36–1.92)	1.12 (0.55–2.30)	0.71 (0.29–1.70)
	3rd	0.63 (0.30–1.33)	**0.32 (0.13–0.82)**	0.59 (0.28–1.26)	0.85 (0.39–1.86)
	4th	**0.45 (0.21–1.00)**	**0.24 (0.09–0.59)**	1.06 (0.59–1.91)	**0.24 (0.07–0.92)**
Physical disability	1st	**Reference**	**Reference**	**Reference**	Reference
	2nd	0.79 (0.53–1.97)	0.61 (0.34–1.09)	0.74 (0.45–1.20)	0.73 (0.38–1.40)
	3rd	**0.62 (0.38–0.99)**	**0.38 (0.19–0.76)**	**0.52 (0.31–0.87)**	0.64 (0.33–1.21)
	4th	**0.43 (0.23–0.80)**	**0.28 (0.14–0.57)**	0.97 (0.65–1.48)	1.33 (0.78–2.27)

Note. **Bold** value indicates statistically significant results ($p < .05$); only predictors that showed potential association in univariate logistic regression ($p < .25$) were incorporated into multiple logistic regression models.
UNHCR = United Nations High Commissioner for Refugees.

Table 4. Comparison for income and expenditure quartile results for access to care regression models

		Jordan		Syria	
		Expenditure quartiles odds ratio (95% CI)	Income quartiles odds ratio (95% CI)	Expenditure quartiles odds ratio (95% CI)	Income quartiles odds ratio (95% CI)
Sought care when last needed	1st	**Reference**	**Reference**	Reference	**Reference**
	2nd	**2.13 (1.24–3.66)**	**2.75 (1.42–5.35)**	0.64 (0.38–1.07)	1.13 (0.62–2.07)
	3rd	**1.95 (1.15–3.30)**	**2.49 (1.35–4.57)**	1.04 (0.57–1.90)	1.30 (0.71–2.39)
	4th	**4.05 (2.02–8.10)**	**2.74 (1.37–5.47)**	0.85 (0.45–1.60)	**2.80 (1.19–6.44)**

Not able to access care	1st	**Reference**	**Reference**	Reference	Reference
	2nd	0.86 (0.57–1.30)	0.74 (0.49–1.12)	3.16 (0.76–13.19)	0.97 (0.34–2.79)
	3rd	**0.60 (0.40–0.92)**	**0.55 (0.33–0.90)**	0.95 (0.24–3.71)	1.65 (0.14–19.32)
	4th	**0.51 (0.31–0.82)**	**0.28 (0.15–0.52)**	2.09 (0.51–8.41)	0.74 (0.05–11.62)
Not able to access health information	1st	**Reference**	**Reference**	**Reference**	Reference
	2nd	0.78 (0.57–1.06)	0.79 (0.50–1.24)	**1.81 (1.04–3.15)**	1.03 (0.59–1.81)
	3rd	0.80 (0.54–1.19)	0.73 (0.46–1.17)	1.88 (0.98–3.60)	1.25 (0.60–2.63)
	4th	**0.54 (0.34–0.85)**	**0.37 (0.23–0.61)**	**2.59 (1.16–5.60)**	0.90 (0.41–2.00)
Not able to access specialist care	1st	**Reference**	**Reference**	Reference	Reference
	2nd	0.89 (0.65–1.23)	0.65 (0.40–1.04)	0.83 (0.53–1.31)	0.99 (0.56–1.74)
	3rd	**0.60 (0.42–0.86)**	**0.57 (0.35–0.94)**	0.81 (0.49–1.35)	1.37 (0.71–2.63)
	4th	**0.24 (0.15–0.39)**	**0.19 (0.11–0.35)**	0.74 (0.43–1.25)	0.65 (0.34–1.23)
Hospitalized in the past year	1st	**Reference**	**Reference**	Reference	Reference
	2nd	**1.71 (1.07–2.74)**	1.42 (0.89–2.28)	0.91 (0.56–1.48)	1.22 (0.77–1.93)
	3rd	**2.01 (1.24–3.25)**	**1.79 (1.13–2.84)**	0.81 (0.51–1.28)	1.25 (0.70–1.22
	4th	**2.33 (1.46–3.72)**	**1.98 (1.24–3.16)**	1.13 (0.68–1.88	1.43 (0.70–2.92)

Note. **Bold** value indicates statistically significant results ($p < .05$); only predictors that showed potential association in univariate logistic regression ($p < .25$) were incorporated into multiple logistic regression models.

In many cases, the odds ratios found in the model that included income quartiles were similar in value to the odds ratios found in the model that included expenditure quartiles. For instance, in Jordan, those households in the 2nd, 3rd and 4th expenditure quartiles as well as those in the 2nd, 3rd and 4th income quartiles were significantly more likely to have sought care when last needed compared to those in the 1st quartile. Also in Jordan, those households in the 4th expenditure quartile as well as those in the 4th income quartile were significantly less likely to have reported difficulty accessing health information compared to those in the 1st quartile. In Syria, fewer similarities were observed between the income and expenditure models. This is likely attributable to weaker association between income and expenditures that was observed in Syria. In Jordan, a clear linear relationship between income and expenditures can be observed (Figure 1), whereas in Syria the relationship is less apparent (Figure 2).

Pair-wise correlations for income and expenditure quartiles led to similar conclusions. Among households reporting both measures, the household income quartile was more likely to be the same as the household expenditure quartile in Jordan than in Syria, with pair-wise correlations of 0.69 ($p < .00$) and 0.20 ($p < .00$), respectively.

Discussion

Household income and expenditure as measures of socioeconomic status were significantly associated with multiple health conditions and access to care measures in Iraqi refugee populations in both Jordan and Syria. In many cases, lower likelihood of health conditions was observed among individuals in higher income and expenditure quartiles, compared to those in the lowest quartile. With regard to access to care, households in the higher expenditure and income quartiles generally reported less difficulty accessing care. In Jordan, households in the higher quartiles, compared to

Figure 1. Jordan correlation: log of monthly expenditures versus log of monthly income (R squared = 0.5408)

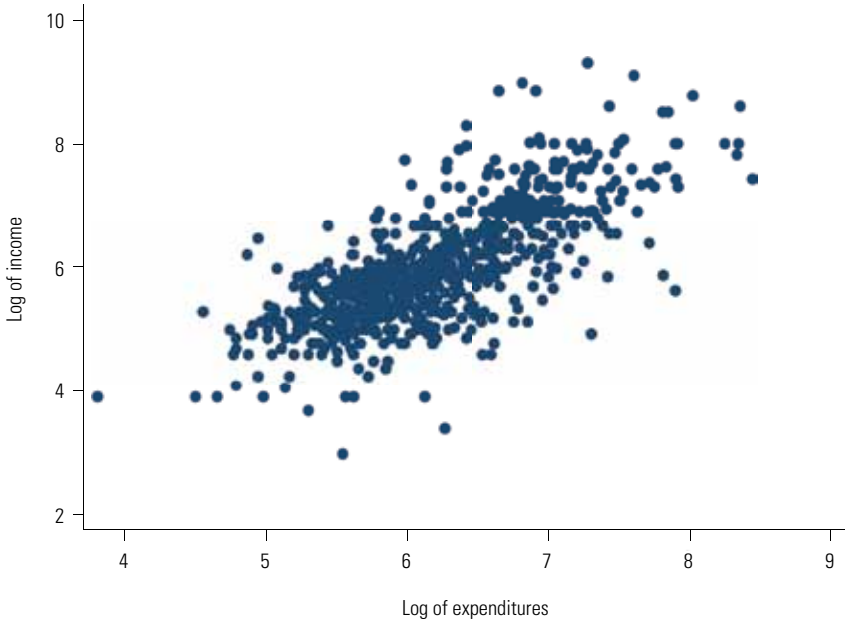
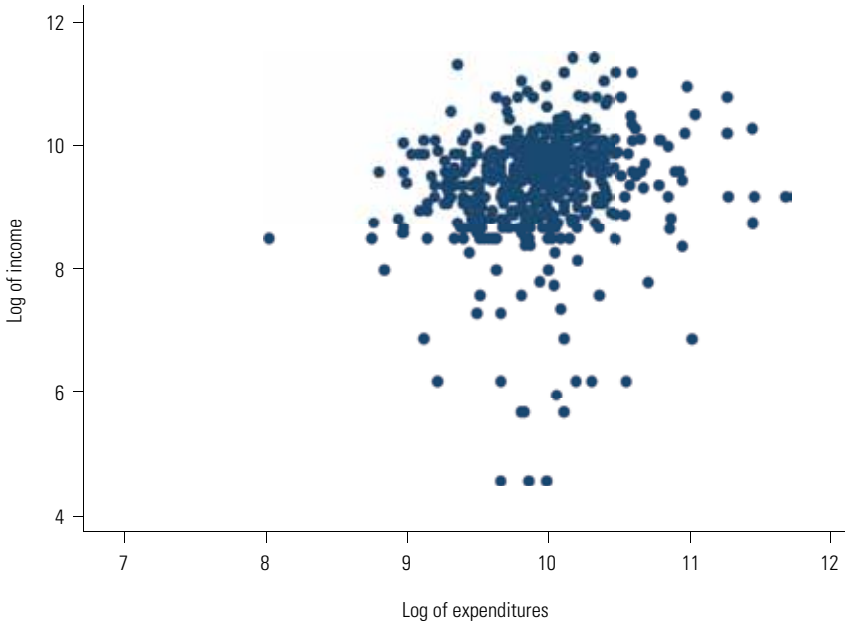


Figure 2. Syria correlation: log of monthly expenditures versus log of monthly income (R-squared = 0.0175)



those in the lowest quartile, were less likely to have reported not being able to access care, not being able to obtain health information, not being able to access specialist care and not being able to afford care. In Syria, the results were less compelling, which could in part have to do with the difference in how Iraqis access care in the two countries. In Jordan, the private sector is more developed and

serves as the primary source of care for the Iraqi population, whereas in Syria the Syrian Arab Red Crescent (SARC) is the most common primary care provider (Doocy et al. in press). Overall in Jordan, households reporting higher monthly expenditures and incomes were less likely to have someone reporting a health condition and less likely to report difficulty accessing care.

More importantly, however, these results support the assumption that household expenditures are a reasonable proxy for household income. In many cases, the results from logistic regression models that included income quartiles were similar in value to those found in the logistic models that included expenditure quartiles, thus providing evidence of the interchangeability of the two measures in the study models. The linear association between income and expenditure values and the correlation between household expenditure and income quartiles in Jordan further demonstrated similarity.

However, findings from Syria are again not as compelling, which may in part be due to measurement error. The one consistent factor between the two countries was the higher percentage of non-employed households failing to report an income. It is possible that the stigma associated with reporting income is further complicated when there is a lack of current employment. It is also possible that some respondents were reluctant to provide income information out of concern that reporting it could decrease humanitarian assistance or compromise their situation, since they are not legally able to seek employment.

Our findings support previous research and practice that have used expenditures as a proxy for income, while extending the concept to vulnerable and displaced populations, for which there are a limited number of studies available. Food security is one area where this concept has been applied. In examining food security based on national household budget surveys, the Food and Agriculture Organization (FAO) of the United Nations notes that income can be difficult to aggregate, while household expenditures as a proxy for income can be used to estimate inequalities in food consumption relative to income (FAO 2008). Quality estimates of such measures are critical to estimating the prevalence of food poverty; thus, national household surveys often use expenditures as opposed to income when estimating the prevalence of food deprivation and poverty. A report from the US Agency for International Development noted several key advantages to using expenditures as a proxy for income in measuring indicators related to food availability (Kumar 1989). Advantages included the fact that expenditure data are more reliable than income data because people are more willing to discuss expenditures; they are easier to recall and they represent actual as opposed to potential consumption. Community and household surveillance of refugee camps in Tanzania utilized household expenditures as a proxy for income, successfully demonstrating that, compared to households with higher expenditures, those with lower expenditures had proportionally higher expenditures on food (World Food Program and UNHCR 2011).

A survey of Palestinian refugees utilized household expenditure as a proxy for income to show that low expenditures among refugees equated to higher rates of poverty (Chaaban et al. 2010). Efforts in Uganda to quantify poverty routinely use expenditure as a proxy for income, which allows for the adjustment of expenditure data to ensure comparability between surveys over time and in different geographic locations (Okidi and Mugambe 2002). Similar research in Uganda has noted that this approach is favoured by economists because it reflects a household's ability to cushion its standard of living through saving and borrowing despite income fluctuations, while income data is often viewed as an unreliable measure (Mukasa and Masiga 2003). In Burundi, a study assessing the role of local institutions as determinants of income in a conflict setting used expenditures as a proxy for income, noting that it is a better measure of permanent income than current income (Voors and Bulte 2008). Finally, research on malaria in Kenya assessed the links between malaria, poverty and vulnerability at the household level, using expenditures as a proxy for income (Chuma et al. 2006).

Limitations

There are a few limitations with this study. While efforts were made to standardize the questionnaires, the adaptation process to contextualize the survey instrument to the Syrian context could have changed how questions were framed and affected the reliability of the income and expendi-

ture data. Jordanian interviewers were used in Jordan and Iraqi interviewers were used in Syria. Interviewer nationality in conjunction with differing security situations could have led to reporting biases and differences between the two study populations, particularly since income and expenditure data are self-reported. While some time has passed since the data were collected and the political situation in Syria has changed dramatically, potentially limiting the impact of the findings, significant Iraqi populations remain in Jordan and Syria and it appears that the protracted nature of the situation will continue into the foreseeable future. Finally, there is also some concern regarding the differences between the Syria and Jordan datasets, with the significant findings being limited to Jordan. Future research is needed to help assess the generalizability of our results.

Conclusions

While the relationship between expenditures and income would be expected in general, the results from this research showed that household expenditures may be used interchangeably with household income for some populations. This would potentially allow for the collection and use of data related to expenditures as a measure of SES, similar in importance to that of income. A stigma can be associated with the reporting of income, and there can be potential reluctance by some to provide a response based on the specific situation, as possibly shown by the relatively low response rate in the data. This can be particularly important in refugee populations where there are real and perceived consequences of providing household income information, including both legal status and qualifying for humanitarian assistance. Future research is needed to validate these findings, in particular in light of the results from Jordan compared to those from Syria. Income is an important measure of SES, so demonstrating the potential interchangeability of income with another, less stigmatized measure of SES is of value, particularly in refugee, hidden and marginalized populations who may not be legally able to seek employment and generate income. By demonstrating such potential, it may be possible to enhance the understanding of SES and its impact on health, and improve policy recommendations for vulnerable populations such as refugees.

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Trends and Determinants of Condom Use in Uganda

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Abstract

Background: Documenting trends in condom use and exploring factors associated with their utilization are important for broadening the information base for the design of HIV intervention programs. This paper aims to document Uganda's nationwide trends in condom use from 1995 to 2006 and seeks to understand some of the socio-demographic variables that may be associated with their use, using Uganda Demographic Health Surveys (UDHSs).

Method: Data from UDHSs conducted in 1995, 2000/2001 and 2006 were analyzed. Socio-demographic variables as well as 'survey year' were selected to assess their interaction with condom use. Multivariate regression analyses were performed. Odds ratios and confidence intervals were computed.

Results: Socio-demographic factors such as being male and living in an urban setting were significantly associated with an increased likelihood of reported use of condoms. All results indicated a far greater increase in condom use between 1995 and 2000/2001 than between 2000/2001 and 2006.

Conclusion: Policies need to intensify condom use campaigns especially among women and rural populations. The wane in increase in condom use between 2000/2001 and 2006 may be due to the large-scale influx of antiretrovirals (starting in 2004) which may be lowering the anxiety associated with the social construct of HIV/AIDS.

Introduction

Hailed as a model for the rest of Africa, Uganda's fight against HIV/AIDS has been extensively documented. In the early 1990s strong government leadership and partnerships worked to successfully contain the high prevalence of the disease – estimated at a high of 18% in rural areas and 25% to 30% in urban areas at that time (Uganda AIDS Commission and the Uganda HIV/AIDS Partnership 2008). The 2008 United Nations (UN) General Assembly Special Session (UNGASS) report on Uganda states that HIV prevalence has now stabilized at between 6% and 7% (Uganda AIDS Commission and the Uganda HIV/AIDS Partnership 2008).

Many public health campaigns in Uganda were introduced as a greater understanding of the complexity of the nature of the HIV epidemic developed. Because the majority of infections in the country occur via sexual transmission, the promotion of a comprehensive ABC approach (Abstinence, Be faithful, use Condoms), similar to that used in a number of sub-Saharan African countries, has been an important mainstay in the public health message to fight the epidemic (Hogle et al. 2002). Indeed, being the "single, most efficient, available technology to reduce the sexual transmission of HIV" (UNAIDS et al. 2004), condom use is an important indicator of risky sexual behaviour and, consequently, is a potential predictor of future HIV infection rates. For instance, recent estimates by UNAIDS (2010) indicating that HIV incidence may be on the increase again in Uganda were preceded by data illustrating a decrease in reported condom use between 2000 and 2006: self-reported condom use with someone other than one's regular partner had decreased from 39% to 35% among women and 59% to 57% among men during this period (UNAIDS and the World Health Organization [WHO] 2011).

In light of the fact that seroincidence in Uganda is on the rise and that ensuring condom use is one of the essential strategies to combat the epidemic, this paper aims to broaden the information base for the design of future HIV intervention programs by documenting changing trends in condom use and exploring the factors associated with their use. It also aims to document nationwide trends in reported condom use between 1995 and 2006, using Uganda Demographic and Health Surveys (UDHSs), and it seeks to understand some of the socio-demographic variables that may be associated with their use.

Methods

Study Setting

This study makes use of data collected in Uganda between 1995 and 2006. Between these two dates, the World Bank estimates that the country's life expectancy rose from 45 to 51 years and that the population grew from 21 to 30 million, with an average annual population growth rate of 3.3%. Throughout the period, the population remained mostly rural (accounting for 88% of the entire population), and GDP per capita increased from 274.4 US dollars to 334.6 US dollars (World Bank 2011). UNESCO (United Nations Educational, Scientific and Cultural Organization) estimates that the literacy rate increased from 56.1% to 71.4% for persons aged 15 years and over between 1991 and 2006 (UNESCO Institute for Statistics 2011).

Demographic and Health Surveys (DHSs), from which data for this study are drawn, are conducted every few years in selected low- and middle-income countries. The primary objective of the surveys is providing detailed information to stakeholders and researchers on demographic, health, reproductive health and family planning trends within the country. The surveys are conducted for monitoring and evaluation and for policy development purposes. All surveys aim to be nationally representative and collect information on women aged 15 to 49 and men aged 15 to 54. This study makes use of all the UDHSs that addressed sexual behaviour:

- 'The 1995 survey was conducted in all of the country's districts except Kitgum. It included 7,070 female and 1,996 male respondents.
- The '2000/2001 survey was conducted in all of the country's districts except Bundibugyo, Gulu, Kasese and Kitgum. It included 7,246 female and 1,962 male respondents.

- 'The 2006 survey was conducted in all of the country's districts and included 8,531 female and 2,503 male respondents.

Data Collection and Ethical Clearance

Data for DHSs are collected with the respondents' informed consent, and ethical clearance is given before the commencement of the data collection process. The data are publicly accessible, and analyzing DHS data from any country, including Uganda, does not require ethical clearance.

Data Analysis

Data were analyzed using SPSS-PASW, Version 18 (SPSS, Inc., Chicago, IL). Condom use was registered if used by either the male or female partner. The following condom use indicators were selected in the 1995, 2000/2001 and 2006 surveys:

- "At last intercourse with anyone was a condom used? (Yes/No)" was recoded as "Condom used during last intercourse." This indicator had a recall period of 12 months.
- "At last intercourse with man/woman other than your partner was a condom used? (Yes/No)" was recoded as "Condom used during last intercourse with man/woman (1) other than partner." Although this indicator had a recall period of 12 months in the 2000/2001 and 2006 surveys and a recall period of 6 months in the 1995 survey, the authors did not consider this difference an important source of bias (as discussed in the limitations section of this paper).

The following condom use indicator was also selected, although only in 2000/2001 and 2006:

- "At last intercourse with third man/woman was a condom used? (Yes/No)" was recoded as "Condom used during last intercourse with man/woman (2) other than partner." This indicator had a recall period of 12 months.

The following independent variables were selected in order to study their interaction with the condom use indicators just mentioned: Year (1995, 2000/2001, 2006), Sex (Male, Female), Current age in 5-year groups (15–19, 20–24, …, 50–54), Type of place of residence (Urban, Rural), and Highest education level (No education, Primary, Secondary, Higher).

The association between each condom use indicator and each independent categorical variable was first assessed using Chi-square or Fisher's exact test. The independent variables with a p-value equal to or less than .25 were then entered into multiple logistic regression models. '2000/2001' was used as the baseline indicator for the variable 'Year' in the regression models in order to compare condom use before and after this point. Both backward and forward stepwise logistic regression analyses (Wald test) were performed, and they gave the same results. P-values less than .05 (two-sided test) were considered significant in the final model. Odds ratios (OR) and their 95% confidence intervals (CI) were computed. The final multivariate models were tested for goodness of fit with the Hosmer–Lemeshow test.

Results

The socio-demographic characteristics of the 29,308 respondents are presented in Tables 1 and 2. Demographic Health Surveys were initially set up to assess the health of households – notably of women and children – and as a result almost 80% of respondents are female. The data reflect the fact that Uganda is predominantly a young and rural-based population and that the majority of respondents have a primary education.

These tables cross-tabulate the condom use indicators against the independent variables. Males, urban populations, respondents with higher education, and younger generations appear to be correlated with higher condom use. Interestingly, for all condom use indicators, condom use was highest in 2000/2001 but dropped in 2006. For "Condom used during last intercourse," condom use

increased from 6.8% in 1995 to 10.5% in 2000/2001 but dropped to 9.9% in 2006. For "Condom used during last intercourse with man/woman (1) other than partner," condom use increased from 10.9% in 1995 to 47.5% in 2000/2001 but dropped to 37.3% in 2006. For "Condom used during last intercourse with man/woman (2) other than partner," condom use decreased from 57.5% in 2000/2001 to 41.5% in 2006. Figure 1 presents these observations in a line graph.

Figure 1. Condom use in 1995, 2000/2001 and 2006

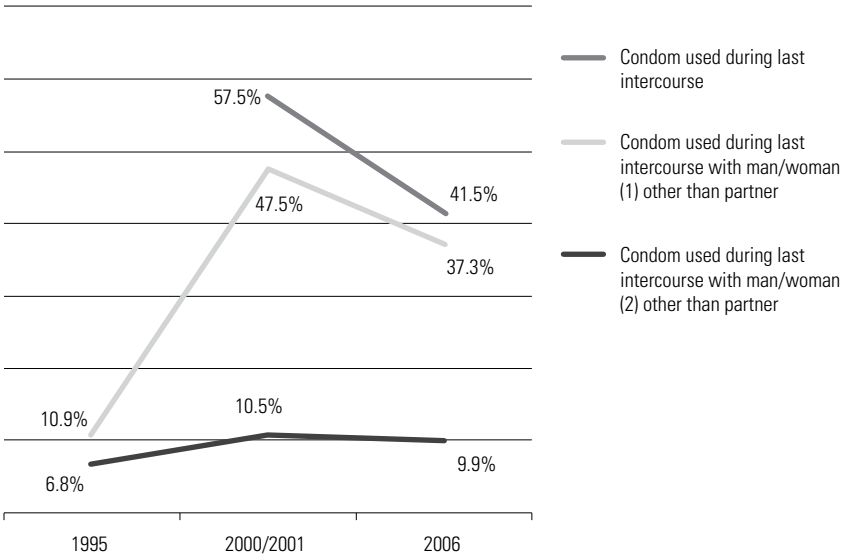

Table 1. Year, sex, educational level and condom use behaviour of respondents

			Condom used during last intercourse			Condom used during last intercourse with man/ woman (1) other than partner			Condom used during last intercourse with man/ woman (2) other than partner		
			No	Yes	Total	No	Yes	Total	No	Yes	Total
Year	1995	**N**	7093	518	7611	2726	334	3060	0	0	0
		Row %	93.2%	6.8%	100.0%	89.1%	10.9%	100.0%	.0%	.0%	.0%
	2001	**N**	6240	731	6971	269	243	512	31	42	73
		Row %	89.5%	10.5%	100.0%	52.5%	47.5%	100.0%	42.5%	57.5%	100.0%
	2006	**N**	7234	794	8028	416	247	663	62	44	106
		Row %	90.1%	9.9%	100.0%	62.7%	37.3%	100.0%	58.5%	41.5%	100.0%
Sex	Male	**N**	4233	766	4999	1447	520	1967	82	85	167
		Row %	84.7%	15.3%	100.0%	73.6%	26.4%	100.0%	49.1%	50.9%	100.0%
	Female	**N**	16334	1277	17611	1964	304	2268	11	1	12
		Row %	92.7%	7.3%	100.0%	86.6%	13.4%	100.0%	91.7%	8.3%	100.0%

Table 1. Continued

			Condom used during last intercourse			Condom used during last intercourse with man/ woman (1) other than partner			Condom used during last intercourse with man/ woman (2) other than partner		
			No	Yes	Total	No	Yes	Total	No	Yes	Total
Highest educational level	No education	**N**	4514	73	4587	594	39	633	8	1	9
		Row %	98.4%	1.6%	100.0%	93.8%	6.2%	100.0%	88.9%	11.1%	100.0%
	Primary	**N**	12228	884	13112	2139	424	2563	68	44	112
		Row %	93.3%	6.7%	100.0%	83.5%	16.5%	100.0%	60.7%	39.3%	100.0%
	Secondary	**N**	3246	840	4086	639	294	933	14	31	45
		Row %	79.4%	20.6%	100.0%	68.5%	31.5%	100.0%	31.1%	68.9%	100.0%
	Higher	**N**	578	246	824	39	67	106	3	10	13
		Row %	70.1%	29.9%	100.0%	36.8%	63.2%	100.0%	23.1%	76.9%	100.0%

Adjusting for all potential confounding factors listed in Tables 1 and 2, all condom use indicators demonstrate that males and urban populations are strongly associated with an increased likelihood of reported use of condoms, just as the previously mentioned cross-tabulations suggested. For the variable "Condom used during last intercourse" (Table 3), the odds of females reporting use of a condom compared to males is significantly lower (OR=.377, 95% CI .338–.419), as is the odds ratio of rural persons using a condom compared to urban persons (OR=.369, 95% CI .331–.411). For the variable "Condom used during last intercourse with man/woman (2) other than partner" (Table 4), the odds ratio of females reporting use of a condom compared to males is significantly lower (OR=.553, 95% CI .450–.679), as is the odds ratio of rural persons using a condom compared to urban persons (OR=.378, 95% CI .310–.461). For the variable "Condom used during last intercourse with man/woman (2) other than partner" (Table 5), the odds ratio of females reporting use of a condom compared to males is significantly lower (OR=.040, 95% CI .004–.452), as is the odds ratio of rural persons using a condom compared to urban persons (OR=.300, 95% CI .116–.779).

Table 2. Age, residence and condom use behaviour of respondents

			Condom used during last intercourse			Condom used during last intercourse with man/ woman (1) other than partner			Condom used during last intercourse with man/ woman (2) other than partner		
			No	Yes	Total	No	Yes	Total	No	Yes	Total
Age	15–19	**N**	2268	530	2798	242	109	351	5	6	11
		Row %	81.1%	18.9%	100.0%	68.9%	31.1%	100.0%	45.5%	54.5%	100.0%
	20–24	**N**	4380	625	5005	597	211	808	5	17	22
		Row %	87.5%	12.5%	100.0%	73.9%	26.1%	100.0%	22.7%	77.3%	100.0%
	25–29	**N**	4291	373	4664	741	204	945	17	21	38
		Row %	92.0%	8.0%	100.0%	78.4%	21.6%	100.0%	44.7%	55.3%	100.0%

Table 2. Continued

			Condom used during last intercourse			Condom used during last intercourse with man/ woman (1) other than partner			Condom used during last intercourse with man/ woman (2) other than partner		
			No	Yes	Total	No	Yes	Total	No	Yes	Total
Age	30–34	**N**	3503	219	3722	621	153	774	19	17	36
		Row %	94.1%	5.9%	100.0%	80.2%	19.8%	100.0%	52.8%	47.2%	100.0%
	35–39	**N**	2747	141	2888	537	89	626	9	15	24
		Row %	95.1%	4.9%	100.0%	85.8%	14.2%	100.0%	37.5%	62.5%	100.0%
	40–44	**N**	1824	105	1929	346	33	379	18	4	22
		Row %	94.6%	5.4%	100.0%	91.3%	8.7%	100.0%	81.8%	18.2%	100.0%
	45–49	**N**	1304	40	1344	228	18	246	16	3	19
		Row %	97.0%	3.0%	100.0%	92.7%	7.3%	100.0%	84.2%	15.8%	100.0%
	50–54	**N**	250	10	260	99	7	106	4	3	7
		Row %	96.2%	3.8%	100.0%	93.4%	6.6%	100.0%	57.1%	42.9%	100.0%
Type of place of residence	Urban	**N**	4879	1106	5985	964	406	1370	11	32	43
		Row %	81.5%	18.5%	100.0%	70.4%	29.6%	100.0%	25.6%	74.4%	100.0%
	Rural	**N**	15688	937	16625	2447	418	2865	82	54	136
		Row %	94.4%	5.6%	100.0%	85.4%	14.6%	100.0%	60.3%	39.7%	100.0%

Furthermore, younger generations and persons with higher education are also associated with an increased use of condoms, except within the context of "Condom used during last intercourse with man/woman (2) other than partner" (Tables 3, 4 and 5).

Table 3. Factors included in the final multivariable logistic model analyzing the association with "Condom used during last intercourse"

	p-value	Odds ratio	95% CI for odds ratio	
			Lower	Upper
Year (2000/2001)	Reference group			
Year (1995)*	<.001	.602	.530	.684
Year (2006)**	.001	1.217	1.083	1.369
Sex (Male)	Reference group			
Sex (Female)*	<.001	.377	.338	.419

Table 3. Continued

	p-value	Odds ratio	95% CI for odds ratio	
			Lower	Upper
Age (15–19)	Reference group			
Age (20–24)*	<.001	.516	.450	.591
Age (25–29)*	<.001	.293	.252	.342
Age (30–34)*	<.001	.211	.176	.252
Age (35–39)*	<.001	.188	.153	.231
Age (40–44)*	<.001	.217	.172	.275
Age (45–49)*	<.001	.128	.091	.181
Age (50–54)*	<.001	.080	.041	.154
Residence (Urban)	Reference group			
Residence (Rural)*	<.001	.369	.331	.411
Education (No)	Reference group			
Education (Primary)*	<.001	2.614	2.044	3.342
Education (Secondary)*	<.001	6.591	5.121	8.483
Education (Higher)*	<.001	11.189	8.377	14.945

*p<.001. **p<.01.

With regards to the independent variable Year, the logistic regression analyses indicate that for "Condom used during last intercourse" (Table 3), the odds ratio of using a condom in 1995 is significantly lower than in 2000/2001 (OR=.602, 95% CI .530–.684), and the odds ratio of using a condom in 2006 is almost 22% higher than in 2000/2001 (OR=1.217, 95% CI 1.083–1.369). These odds differences are statistically significant. With regards to "Condom used during last intercourse with man/woman (1) other than partner" (Table 4), the odds ratio of using a condom in 1995 is significantly lower than the odds of using a condom in 2000/2001 (OR=.154, 95% CI .121–.196), but there is no statistically significant difference in condom use between 2000/2001 and 2006. For "Condom used during last intercourse with man/woman (2) other than partner" (Table 5), there is no statistically significant difference in the odds of using a condom between 2000/2001 and 2006. When adjusted for age, sex, education and type of residence, the logistic model no longer depicts a drop in condom use from 2001 to 2006: condom use either increases at a slower rate or there is no statistically significant change in condom use between 2001 and 2006 compared to the period between 1995 and 2001.

Table 4. Factors included in the final multivariable logistic model analyzing the association with "Condom used during last intercourse with man/woman (1) other than partner"

	p-value	Odds ratio	95% CI for odds ratio	
			Lower	Upper
Year (2000/2001)	Reference group			
Year (1995)*	<.001	.154	.121	.196
Year (2006)	.358	.883	.678	1.151
Sex (Male)	Reference group			
Sex (Female)*	<.001	.553	.450	.679
Age (15–19)	Reference group			
Age (20–24)	.069	.741	.536	1.024
Age (25–29)*	<.001	.475	.342	.659
Age (30–34)*	<.001	.383	.271	.540
Age (35–39)*	<.001	.237	.162	.347
Age (40–44)*	<.001	.135	.084	.219
Age (45–49)*	<.001	.111	.061	.201
Age (50–54)*	<.001	.071	.030	.170
Residence (Urban)	Ref.			
Residence (Rural)*	<.001	.378	.310	.461
Education (No)	Reference group			
Education (Primary)**	.004	1.720	1.190	2.486
Education (Secondary)*	<.001	3.408	2.312	5.022
Education (Higher)*	<.001	7.491	4.183	13.416

*p<.001. **p<.05.

Table 5. Factors included in the final multivariate model analyzing the association with "Condom used during last intercourse with man/woman (2) other than partner"

	p-value	Exp(B)	95% CI for odds ratio	
			Lower	Upper
Year (2000/2001)	Reference group			
Year (2006)	.898	.952	.450	2.014
Sex (Male)	Ref.			
Sex (Female)*	.009	.040	.004	.452

Table 5. Continued

	p-value	Exp(B)	95% CI for odds ratio	
			Lower	Upper
Age (15–19)	Reference group			
Age (20–24)	.290	2.520	.454	13.975
Age (25–29)	.944	.947	.205	4.367
Age (30–34)	.477	.566	.118	2.711
Age (35–39)	.755	1.298	.252	6.698
Age (40–44)	.056	.165	.026	1.045
Age (45–49)	.051	.141	.020	1.011
Age (50–54)	.367	.368	.042	3.224
Residence (Urban)	Reference group			
Residence (Rural)**	.013	.300	.116	.779
Education (No)	Reference group			
Education (Primary)	.652	1.718	.164	17.979
Education (Secondary)	.094	7.973	.701	90.629
Education (Higher)	.210	5.887	.369	93.992

*$p<.01$. **$p<.05$.

Discussion

All condom use indicators demonstrate that males and urban populations are strongly associated with an increased likelihood of using condoms. These differences are at times very striking. For instance, for the indicator "Condom used during last intercourse," the odds of males using a condom was 2.65 times that of females (Odds Male/Odds Female), and the odds of urban populations using a condom was 2.7 times that of rural populations (Odds Urban/Odds Rural). Indeed, males and urban populations are more likely to use condoms when it comes to all condom use indicators. This may be due to the fact that males and urban populations generally have greater access to awareness campaigns on safe sex than females and rural populations and consequently may be more informed on the importance of condom use (Sarkar 2008). Furthermore, gender inequalities could explain why males seem to be able to determine the use of condoms more readily than women (Sarkar 2008). As expected, persons with higher educational attainment are also associated with increased condom use (Sarkar 2008), although this finding was not consistent across all sexual behaviour indicators. In turn, perhaps because the accessibility of education in Uganda has drastically increased over the past 20 years (UNESCO Institute for Statistics 2011), younger generations are also associated with increased condom use, although, again, this finding is not consistent across all sexual behaviour indicators.

Having adjusted for potential confounding factors, the condom use pattern over time gives interesting readings: for all indicators, there was a far greater rate of decrease in high-risk sexual behaviour between 1995 and 2000/2001 compared to the rate of decrease between 2000/2001 and 2006. For the indicator "Condom used during last intercourse," condom use increased by 66% (Odds 2001/

Odds 1995) between 1995 and 2000/2001, and, for the indicator "Condom used during last intercourse with man/woman (1) other than partner," the odds ratio of using a condom in 2000/2001 was almost 6.5 times (Odds 2001/Odds 1995) that of 1995. Comparing the results between 1995 and 2000/2001 indicates a substantial decrease in high-risk sexual behaviour over the course of this period. However, the results comparing sexual behaviour indicators between 2000/2001 and 2006 read otherwise. Considering the fact that condom distribution in Uganda almost doubled between 2001 and 2006 and that donor funding for HIV programs increased more than ten-fold between 2003/2004 and 2006/2007 (Uganda National AIDS Commission and UNAIDS 2009), the country should also have expected a further significant increase in condom use between the 2000/2001 and 2006 surveys. That said, for the indicator "Condom used during last intercourse," the odds ratio of using a condom in 2006 was only 21.7% higher than in 2000/2001 – a much slower rate of increase compared to that of 66% between 1995 and 2000/2001. For the indicators "Condom used during last intercourse with man/woman (1) other than partner" and "Condom used during last intercourse with man/woman (2) other than partner," the difference in condom use between 2000/2001 and 2006 was not even statistically significant.

Thus, one of the more important findings of this paper is the fact that the rate of increase in condom use between 1995 and 2000/2001 was far greater than the rate of increase between 2000/2001 and 2006. This wane in increase may be the result of a dramatic, large-scale, nationwide recall of faulty condoms in 2004 (Kirumira 2006) and/or a shift in prevention policy toward one by the United States PEPFAR (President's Emergency Plan for AIDS Relief), which visibly promoted abstinence-only programs over condom use programs from 2004 onwards (although condom use was not actively discouraged). Indeed, since the late 1980s, Uganda had' been promoting a comprehensive ABC approach to combat the HIV epidemic.

However, this increase in high-risk sexual behaviour may also be as a result of PEPFAR's large-scale distribution of antiretroviral therapy (ART) starting in 2004 (ART coverage increased from 12% in 2004 to 27% in 2006 [WHO et al. 2008]). Indeed, during the 1990's, some high-income countries reported an increase in high-risk sexual behaviour among men who have sex with men when ART was made extensively accessible in their public health systems (International Collaboration on HIV Optimism 2003; Katz et al. 2002; Mechoulan 2007). Although inconclusive, more recent studies exploring heterosexual behaviour among non-antiretroviral (ARV) users in low-income settings suggest that access to ART may have led to an increase in risky behaviour (Abbas et al. 2006; Crepaz et al. 2004; Ezekiel et al. 2008). One retrospective study on a clinical cohort established between 2002 and 2009 in rural South–West Uganda suggests that the availability of HIV treatment may have led to an increase in risky sexual behaviour among HIV-uninfected people (Shafer et al. 2011). However, this finding was inconsistent across the study's chosen behavioural indicators. Hence, there is a possibility that between 1995 and 2000/2001, the social construct of HIV/AIDS – built around suffering and death – led to risky sexual behaviour being rapidly reined in. However, the radical increase in ART accessibility (from 2004 onwards, PEPFAR) may have lowered the anxiety associated with HIV/AIDS – either because HIV transmission appeared less likely (since HIV carriers are no longer as visibly distinguishable as they once would have been) or because HIV is no longer perceived the death sentence it once was – and this may have led to the increase in risky sexual behaviour observed between the 2000/2001 and 2006 surveys.

Implications and Further Studies

There is a striking difference in condom use between males and females. This suggests that more has to be done to educate and empower women so that they understand the importance of using condoms and feel empowered enough to use them or to urge their partners to do so. The same can be said of rural populations: more needs to be done to get people living in rural areas to use condoms, perhaps by increasing the coverage of awareness campaigns to the most rural areas. It is encouraging to see that younger generations were more strongly associated with increased condom use, because younger people will be the ones contributing to the future of their communities and

instilling change among their peers as well as their own children. It is also encouraging that increased condom use was associated with higher education, since the country is increasingly educating its people. However, more research needs to be conducted to further assess the associations between condom use and the aforementioned socio-demographic characteristics.

That said, the trends in condom use over time were worrying. If indeed the lack of expected increase in condom use between 2000/2001 and 2006 was due to the nationwide recall of faulty condoms in 2004 (Kirumira 2006) and/or the shift in prevention policy toward PEPFAR-backed abstinence-only programs, then more needs to be done at the governance level to provide for easy and consistent access to condoms for all. However, if it is the large scale distribution of ART that has led to an increase in risky sexual behaviour, then this will undoubtedly affect the epidemiology of the HIV/AIDS epidemic. Ironically, the expansion in provision of HIV/AIDS treatment, without addressing the general population's increase in risky sexual behaviour, could offset Uganda's public health achievements since the 1990's. The dearth of articles available when carrying out research on ART and population-wide sexual behaviour in low-income settings is either indicative of the lack of importance attached to the issue or to the relatively recent emergence of its importance in low-income countries (since ART was, in general, made extensively available only during the mid-2000s, thanks to PEPFAR). Either way, it is evident that a lot more research needs to be conducted in order to explore the association between ART and risky sexual behaviour. Mathematical models are particularly useful in understanding the epidemiology of the HIV/AIDS epidemic, but these must now begin to take into account the potential population-wide impact of ART on sexual behaviour change both among ARV users and non-ARV users.

Ultimately, policy makers are urged to intensify public health campaigns addressing risky sexual behaviour and HIV and promote the practice of safe sex. Indeed, efforts to address the increase in high-risk sexual behaviour are needed if we aim to control the HIV epidemic efficiently.

Limitations

For the indicator "Condom used during last intercourse with man/woman (1) other than partner," the recall period in 2000/2001 and 2006 was 12 months, whereas in 1995 it was only 6 months. This may explain the drastic increase in condom use between 1995 and 2000/2001, although we felt that there was still some comparison we could carry out between 1995 and the other surveys. That said, even if the denominator in 1995 was adjusted (in order to approximate for condom use over 12 months instead of 6), we would still have expected to observe a significant increase in condom use in 2000/2001. Nevertheless, important for this study's conclusions, this indicator is not associated with a statistically significant difference in condom use between 2000/2001 and 2006.

The Demographic and Health Surveys organization explains that their surveys in low-income settings are prone to sampling errors and incomplete and inconsistent data reporting (Croft n.d.). Furthermore, the fact that the three surveys do not cover exactly the same geographical areas is a limitation for a comparative cross-sectional study such as this. The organization, however, assures its data users that it has considered all of the above and has done its utmost to maximize the reliability and validity of the data collected (Croft n.d.; Uganda Bureau of Statistics and Macro International Inc. 2007). Still, the three surveys show an unusual decreasing trend in persons living in urban areas, when we expected the opposite. However, DHS informed the authors that their samples have improved with regards to representativeness over time, since surveys have increasingly been able to reach and interview those living in rural areas. This may explain the decreasing trend in persons living in urban areas. Ultimately, a comparative cross-sectional study does not allow us to establish why there were changes in sexual behaviour over time. For instance, in Uganda the rate of condom distribution varies quite significantly between 1995 and 2006 – a major limitation when citing "condom use" as a proxy for high-risk sexual behaviour. By 1996 the number of condoms delivered in Uganda had risen to nearly 10 million, from 1.5 million in 1992 (Timber 2011). However, condom scarcity, as a result of a nationwide recall of faulty products in 2004 (Kirumira 2006) and a shift in prevention policy toward PEPFAR-backed abstinence-only programs may erroneously be

read as an increase in high-risk sexual behaviour in this study. That said, access to condoms was facilitated in mid-2006 with an influx of 80 million condoms for free access (Kirumira 2006).

Conclusion

All sexual behaviour indicators demonstrate that males and urban populations are strongly associated with an increased likelihood of using condoms. Younger age groups and those who have attained a higher education are also associated with increased condom use, although these findings were not consistent across all of the sexual behaviour indicators.

For all sexual behaviour indicators, the rate of increase in condom use between 1995 and 2000/2001 was far greater than between 2000/2001 and 2006. Although a comparative cross-sectional study cannot establish causality, the authors suggest that this wane in condom use may be a result of the decreased access to condoms between 2000/2001 and 2006. This wane may also be as a result of the large-scale influx of ARV's (thanks to the PEPFAR initiative implemented in 2004), which may be lowering the anxiety associated with HIV/AIDS.

Policy makers are urged to intensify public health campaigns addressing risky sexual behaviour and HIV and to promote the practice of safe sex. Uganda had promoted a comprehensive ABC approach to tackle the HIV epidemic since the late 1980's, but the promotion of condom use was dropped in 2004 when PEPFAR began supplying ARV's to the country. The importance of condom use needs to be emphasized with renewed fervour in order to challenge the decreasing rates of condom use this research outlines. Furthermore, although the supply of condoms was boosted by the free distribution of 80 million condoms in 2006 (Kirumira 2006), a shortage was again reported in 2010 (IRIN PlusNews 2010). Health systems need to assess ways in which to improve the efficiency of procurement processes, delivery systems and storage facilities in order to ensure a consistent distribution of condoms to the general public.

Authors' Contributions

Zaake De Coninck conceptualized the research idea, is the main author of the manuscript and was involved in all aspects of the study. Gaetano Marrone also conceptualized the research idea, provided statistical support, supervised the analysis and edited the paper.

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Engaging Men in Family Planning Services Delivery: Experiences Introducing the Standard Days Method® in Four Countries

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Abstract

Family planning is often regarded as the woman's responsibility, but there is growing recognition of the need to involve men in family planning programs. Since 2001, the fertility-awareness-based Standard Days Method® (SDM) has been introduced in more than 30 countries, providing a natural, effective birth control option. SDM requires the cooperation of the male partner, and its introduction created an opportunity to test innovative strategies to engage couples in family planning. Such strategies included couple counselling, outreach activities that encouraged men to participate in family planning and integration of family planning into traditionally male programs. Due to the SDM's intrinsic characteristics as a couple method, SDM providers are sensitized to the importance of exploring other critical sexual and reproductive health topics, including intimate partner violence, HIV, sexuality and partner communication. This paper presents several case studies describing how men were engaged in SDM introduction activities in four countries.

Background

Family planning has traditionally been viewed as the woman's responsibility, but there has been a growing recognition of the need to involve men in family planning programs as a means of achieving reproductive health objectives, as well as attaining greater gender equity. The 1994 International Conference on Population and Development (ICPD) in Cairo made an explicit call for programs and policies to educate and enable men to play a more active role in reproductive decisions, including contraceptive method choice and use (Boender et al. 2004; Gribble 2003). Since the ICPD, this more expansive, gendered perspective on the goals and mandates of family planning programs has led to the design and implementation of a range of strategies to involve men in family planning service delivery.

Simultaneously, the proliferation of new contraceptive technology has increased the range of family planning options available to men and women around the world. However, since the method mix is dominated by female methods (such as the patch, implants, injectables or oral contraceptive pills), their mere availability has not automatically supported the broader goal of involving couples in family planning services and decisions. The introduction of the fertility-awareness-based Standard Days Method® (SDM) in 2001 created an opportunity to simultaneously test innovative strategies for engaging men in family planning service delivery, as well as to promote male participation in contraceptive use. Developed by Georgetown University's Institute for Reproductive Health (IRH), the SDM is a method that entails avoiding unprotected sex during a woman's fertile phase of her menstrual cycle. Unlike the rhythm method, SDM is a modern method that has been tested in rigorous efficacy trials, yielding a typical use effectiveness rate of 88%. SDM is appropriate for women whose menstrual cycles range from 26 to 32 days; SDM users avoid unprotected sex on days 8 to 19 (Arévalo et al. 2002). To help couples monitor cycle length and identify fertile days, IRH also developed a mnemonic device (CycleBeads®) consisting of a strand of colour-coded beads that correspond to fertile and "safe" days. SDM has been introduced in 30 countries and is included in the family planning norms in 16 countries; the World Health Organization recognizes it as an effective, modern method (Gribble 2003).

The overall aim of this paper is to present case studies of how couples have been engaged in efforts to integrate SDM into a variety of programs, and to explore the impact of those strategies on reproductive health and gender outcomes of interest. We begin with a broad overview of the extant literature on male involvement in family planning. Next, we synthesize relevant project reports and peer-reviewed articles to describe initiatives to involve men in SDM introduction activities in El Salvador, India, the Philippines and Guatemala.

Male Involvement in Family Planning

One strategy for involving men in family planning decisions has been to provide counselling and education to couples rather than just to women. In a review of published studies on family planning interventions aimed at couples, Becker (1996) found that in most cases, couple interventions were more effective than those aimed just at women in terms of family planning outcomes such as contraceptive use or continuation, pregnancy or abortion. A 2007 evaluation of couples' sexual and reproductive health educational sessions in Los Angeles and Oklahoma City found that participants in the intervention had more positive attitudes about partner participation in contraceptive use, compared to those in the comparison groups (Kraft et al. 2007). However, recognizing the potential financial and logistical difficulties of offering counselling to men and women at the same time, family planning programs have also employed a host of other innovative strategies to engage men. These include the use of male providers or health volunteers, extended service hours to accommodate men's work schedules, behaviour change communication (BCC) activities promoting male participation in family planning, provision of family planning information and services in traditionally male settings, and offering gender sensitivity training to providers (Boender et al. 2004; Rottach et al. 2009; United Nations Population Fund 2003). Even in those cases where the male partner is not directly targeted by services, there are other ways to engage him, both directly and indirectly. For example, the California Male Involvement Program reached men and boys by offering sexual

and reproductive health educational sessions in alternative/continuation and mainstream schools, juvenile detention centres and migrant work camps (Brindis et al. 2005).

The various outcomes of interest for these interventions range from pregnancy and contraceptive prevalence (i.e., demographic goals) to spousal communication and gender-equitable attitudes. For example, in a pre-ICPD study, Terefe and colleagues (1993) compared modern contraceptive use among Ethiopian couples receiving family planning home visits with and without husband participation, concluding that at the 12-month follow-up, couples in the husband-participation group were nearly twice as likely as those in the wife-only group to be using modern contraception. More recently, in a randomized study testing the efficacy of using "male motivators" to encourage family planning in Malawi home visits, Shattuck and colleagues (2011) found that the pre–post increase in contraceptive use was greater in the intervention arm than in the comparison arm.

The interventions introducing SDM involved men in family planning services by using a number of innovative strategies to improve family planning attitudes (including gender attitudes), increase contraceptive knowledge and bolster intra-spousal communication. The following sections describe four SDM introduction projects that involved men from both the supply side (e.g., training male volunteers as community health workers) and the demand side (e.g., targeting men in BCC campaigns).

Male Involvement in SDM Introduction Projects

Between 2001 and 2006, IRH implemented SDM introduction projects that took a variety of approaches to involving men in family planning. A description of these projects is presented below, along with descriptions of how we attempted to assess the interventions' impact on outcomes of interest.

Promoting Men's Interest in Family Planning in Rural El Salvador

Building on previous pilot projects demonstrating the potential effectiveness of involving men by integrating family planning into non-health activities, between 2001 and 2002, IRH collaborated with Project Concern International (PCI) to introduce family planning content into PCI's "male friendly" water and sanitation program in El Salvador. Specifically, in 13 rural villages with existing water and sanitation projects, project staff trained PCI volunteers and staff to add family planning to ongoing health education group talks, underscoring the relationship between fertility and sustainability of natural resources. The intervention also consisted of two home visits by PCI volunteers, the first of which covered the relationship between natural resources and health, as well as the benefits of family planning and joint decision making as a couple. The second home visit, which took place a week later, covered fertility awareness, the menstrual cycle and family planning methods (including SDM). To increase access to men who worked during the day, PCI volunteers went to fields to reach men during work hours and also conducted meetings in the evenings and on weekends. In addition, IRH worked with the Comité de Integración y Reconstrucción de El Salvador (CIRES) to train its network of community volunteers to add family planning (including SDM) to its service offerings in 24 rural communities. CIRES volunteers conducted household visits and, for couples who opted for SDM, returned for follow-up visits after the first cycle and then after every third cycle for up to 13 months.

As discussed by Lundgren and colleagues (2005), one of the strategies for evaluating the feasibility and impact of this intervention was to conduct baseline (n=341) and endline (n=364) household surveys in the study areas. An analysis of these data revealed that men who had participated in the intervention had significantly higher knowledge levels regarding male fertility and contraceptive methods, compared to non-participating men. Specifically, at follow-up, men demonstrated a significant increase in understanding about male fertility, with 80% of participants understanding that men are always fertile (as opposed to having cyclic fertility as women do), compared to 65% of non-participants. Furthermore, 65% of participants had heard of injectables, compared to 50% of non-participants; 18% were aware of the IUD, compared to 6% of non-participants; and 30% of participants were aware of SDM, compared to 7% of non-participants. In the endline survey, 29% of respondents stated that they had received a household visit from a provider, and of those, 25% of the visits were just with men, 33% with just women and 40% with the couple together.

The research team also conducted a prospective study of 143 SDM users, which consisted of an admission interview, a follow-up visit after one cycle, and then subsequent follow-up visits every three cycles for up to 13 cycles. Family planning knowledge improved over the course of the intervention, and at the end of the study, 138 (95%) of the participating men reported that they had received SDM counselling from various sources. The most common sources of SDM information were their wives (44%) and a provider (40%), followed by community volunteers (11%). The fact that a plurality of men reported that their wives informed them about SDM is a testament to the fact that male involvement does not necessarily need to consist of direct consultation with a provider (Lundgren and Monroy 2006).

In terms of the project's impact on intra-spousal communication, in interviews and focus group discussions, health promoters and community volunteers described the increased acceptability of discussing family planning, and that men were more engaged in the conversation. For example, a CIRES health promoter reported:

> First we speak just to the woman; later we talk to them both, so the wife has already mentioned it to him. You arrive with their trust because the wife says to the husband, "This and that is what the CIRES promoters explained to me," so when we arrive it is not a surprise, and they already are expecting us. (Lundgren and Monroy 2006: 72)

According to the household survey data, overall contraceptive use increased across non-participants and participants alike, from 45% at baseline to 58% at endline. Among men, reported contraceptive use increased from 44% to 63%. A notable finding from the SDM user study is that users who had been counselled as a couple had fewer pregnancies compared to those whose husbands heard only part of the counselling or who had been informed only by the wife. Of the 17 women who got pregnant during the study, based on exit interviews at the time of pregnancy, just three had husbands who had participated fully in the SDM counselling. Although the number of pregnancies was small, given that 16 of the 17 were due to incorrect SDM use, this finding suggests that male participation in the counselling could promote correct method use (Lundgren and Monroy 2006).

Promoting Family Planning with Male Volunteers in Uttar Pradesh, India

To test the feasibility of involving men in the introduction of SDM in rural villages in the Sitapur district of Uttar Pradesh, IRH collaborated with CARE India on an operations research study that compared a woman-focused model (in which female volunteers provided family planning information to residents) to a male involvement model (in which male and female volunteers provided counselling). CARE organizers trained female community volunteers to lead monthly educational meetings with groups of women, describing the different available family planning methods and introducing SDM. Male volunteers led similar meetings with both women's and men's groups. Both male and female volunteers also did home visits to clients to review instructions for use, check that the band was on the correct bead and the calendar was marked correctly (or check whether women were tracking their menstrual cycle correctly), and reinforce the couple's efforts to avoid unprotected sex on the fertile days. In both models, the volunteers provided counselling to women, men and couples when possible. During the two-and-a-half year study period, the woman-focused model was implemented in 24 villages (i.e., the Khairabad block) and the male involvement model took place in the remaining 24 villages (i.e., the Misrikh block).

In a prospective study of SDM users, 482 couples participated across the Khairabad and Misrikh blocks. In Misrikh, where male volunteers were active, 40% of men received SDM counselling from a female volunteer and 40% were counselled by a male volunteer. This is in stark contrast to the reported source of SDM information among Khairabad men, of whom 88% learned of the method from their wives. In interviews and focus groups with men, those in the Misrikh block felt they understood SDM better since it was explained by male volunteers (Das and Nandan 2004). The use of male volunteers to provide SDM counselling successfully reached men in the experimental villages, increasing their knowledge of a new natural family planning method.

Male volunteers also appeared to succeed at improving attitudes about family planning and men's roles in reproductive decision making. In the Misrikh block, among SDM users, nearly twice as many men would recommend the method, compared to those in the female-focused block (Johri et al. 2005). Furthermore, the qualitative assessment of SDM users' experiences suggests that male providers helped to reduce male opposition to family planning, since both users and providers felt that men were more comfortable discussing sexual issues with other men.

Qualitative research also suggests that intra-spousal communication was facilitated by male volunteers. Interviews with SDM users indicated that male cooperation was more evident among SDM users from the experimental block (Das and Nandan 2004).

Finally, male volunteers may have played a role in encouraging SDM continuation over the course of the study. Among SDM users, continuation rates were higher among the experimental group compared to the female-focused group, although the differences were only significant starting at seven months follow-up (Johri et al. 2005). In addition, the rate of incorrect SDM use was lower in the Misrikh block (0.3%) compared to the Khairabad block (2.6%), which is reflected in the higher pregnancy rates observed in Khairabad (18.8%) compared to in Misrikh (11.9%) during the follow-up period (Johri 2005). Involving men in SDM services was also a priority in the villages where men were not trained as outreach workers. Men were involved by conducting village meetings with men to orient them on the SDM and by training providers to talk to women about how men influence their use of family planning.

Using Men and Couples as Reproductive Health Educators in the Philippines

In Bukidnon province in the Philippines, IRH introduced SDM in the ongoing reproductive health activities of the Kaanib Foundation, a local non-governmental organization (NGO) that works with subsistence farmers and agrarian reform beneficiaries. In addition to testing the feasibility of teaching Kaanib's male members how to use SDM, the operations research study consisted of testing two strategies to increase male involvement on the supply side: one used couples as SDM counsellors, and the other used only men. The counsellors provided SDM education in their own homes as well as in the homes of clients.

According to a prospective study of 78 SDM users in the study area, SDM knowledge among those counselled by men was not significantly different from that of those counselled by couples (Institute for Reproductive Health/Philippines 2005). Throughout the follow-up period, more than 90% of SDM users were able to correctly explain how to use the method, demonstrating that both men and couples were effective at providing SDM counselling. Furthermore, significantly positive changes in reproductive health attitudes and husband–wife communication were observed among husbands in the intervention area, as reported by husbands and their partners (Rottach et al. 2009).

Involving Men in Family Planning in the Guatemalan Highlands

In this male engagement intervention, IRH supported the promotion of SDM and fertility awareness through community development projects of the local NGO B'elejeb B'atz in the Altiplano region of Guatemala. The project launched with a number of BCC activities to increase awareness of family planning and SDM – including posters, radio spots and television interviews by NGO staff – that were designed with the input of men and with the objective of encouraging men to space their children, support their wife's use of family planning methods and participate in SDM use by using a condom, abstaining from intercourse on the fertile days or helping their wives to track their fertile days. IRH trained B'elejeb B'atz staff and volunteers on SDM, fertility awareness, the menstrual cycle, counselling and other contraceptive methods. To facilitate access to men, supervisors of microfinance projects were incorporated into the project as family planning counsellors. In addition, the counsellors organized men-only educational talks that facilitated male participation in discussions on family planning. Furthermore, to facilitate conversation with men, female health promoters sometimes brought their husbands or older sons to community activities and household visits.

According to SDM user statistics, 51% of SDM clients had received counselling as a couple. Interviews and focus groups with male and female users as well as project staff and volunteers suggest that the intervention successfully engaged men in family planning. One of the male users stated, "If a man counsels me on family planning, he is practising what he preaches, and he wants me to say that it's not just the woman who should deal with this problem" (Suchi 2006: 52). Likewise, another male user remarked,

> The supervisor has explained clearly to us that a man can help his wife with family planning, that he should not be ashamed for this; it's a natural thing. Even though he is a man, you can tell that he is very prepared for these talks. (Suchi 2006: 53)

When Men Are Not Present: Indirect Male Involvement in Family Planning and SDM Provision

As stated previously, there are a variety of ways to involve men in family planning without necessarily requiring direct contact between the male partner and the service provider. In many settings, there may be significant logistical and cultural barriers to having men present at their partner's family planning counselling sessions. This section describes how SDM programs attempted to explore partner dynamics and address relationship issues related to family planning using strategies that did not require direct interaction between family planning services and male partners.

Across all SDM introduction settings, programs emphasized the importance of constructive male engagement in outreach efforts. In order to promote awareness of family planning and encourage male involvement in contraceptive decisions, targeted male involvement messages were included in posters, flyers, radio programs and wall paintings. For example, in Guatemala, IRH partners produced radio spots in local languages that emphasized the role of men in family planning and SDM. In family planning service delivery settings, when couple counselling is not possible or desired, providers trained on SDM can address relationship issues that influence family planning use with the woman alone, since the method's intrinsic characteristics as a couple method facilitate and encourage discussion of topics related to sexuality, such as partner communication, sexual autonomy, sexual pleasure, gender-based violence, alcohol use and STI/HIV AIDs, many of which are rarely addressed during family planning counselling. Thus, incorporating SDM helps programs explicitly address partner and sexuality issues in the context of method selection, method instruction, couple use of the method and follow-up. Research from India, for example, shows significant improvements in condom counselling after incorporating SDM into public sector programs. Similarly, data from Guatemala show that once providers began offering condoms as part of SDM instruction, they felt more comfortable offering it to all of their clients. SDM providers are particularly well positioned to address men and relationship dynamics because they have been trained to:

1. Assess whether the method will work well for the woman and her partner (including discussion of gender-based violence, sexual satisfaction, alcohol use and STIs, woman's autonomy to decide when to have sex);
2. Teach clients to use the method correctly, and consider the man's role in doing so; and
3. Help clients identify possible challenges they may face using family planning, and brainstorm to identify solutions.

Before providers have been trained to offer SDM, many have never given much thought to involving men in family planning; others think it is a fruitless or impossible task. Thus, one of the potential results of introducing SDM is the opportunity for providers to reconsider the paradigm that family planning services are for women only, and to help them reflect on the influence of social and cultural norms and power dynamics on fertility and family planning use.

Conclusions/Recommendations

The SDM is a family planning method that is particularly amenable to involving men in its provision (from the service delivery perspective) as well as in its use. This paper describes various SDM service delivery strategies that engaged men, demonstrating that it is feasible to increase male involvement in family planning education and provision. Such strategies are likely applicable to all family planning methods, and offering SDM has helped to motivate providers to broaden the traditional female-centred paradigm for family planning services and programs. Furthermore, these operations research studies suggest that, compared to traditional family planning programs that solely address and engage women, interventions that involve men can lead to better outcomes in terms of attitudes about family planning and gender, family planning knowledge, intra-spousal communication, and family planning use and continuation.

As these projects demonstrate, male involvement strategies for family planning programs are not restricted to couple counselling, where the man and woman receive information and education at the same time and place. Although there are substantial benefits to counselling men and women together as a dyad (Greene and Levack 2010), couple interventions are not always appropriate or feasible, as was illustrated in some of the SDM introduction projects. For instance, if home visits are the foundation of a family planning intervention, it may be difficult to find a time when both the husband and wife are home together. Furthermore, providers who counsel couples must be adequately trained to ensure that both parties are willing to participate in a couple counselling session, and that both the man and woman share equally in the decision-making process. Otherwise, providers may run the risk of unintentionally reinforcing the man's dominant role or inadvertently displaying a bias toward either sex (Greene and Levack 2010). When couple counselling is not always possible, alternative approaches to involving men include men-only educational talks, male health promoters, BCC activities targeting men, and the integration of family planning content into non-health activities (such as agriculture and sanitation projects). Furthermore, providers can take care to address couples issues in counselling, even when only the female client is present.

There is a growing body of evidence that demonstrates that male engagement in family planning programs can improve both reproductive health and gender outcomes (Boender et al. 2004; Rottach et al. 2009). However, the rigour of the evaluations of these interventions is variable, and it can be difficult to distinguish between the effects of male involvement and the effects of the family planning intervention itself. This difficulty may be particularly acute in the case of the SDM, which is a method that requires male involvement. There remains a need for a strategic analysis of opportunities, advantages and disadvantages of involving men in various program elements, ranging from outreach and counselling to provider training. Nevertheless, this overview offers several examples of how we operationalized male involvement initiatives within the context of broader family planning introduction activities. These SDM projects may be useful models to inform future efforts to promote male involvement in the promotion of family planning more generally, integrated into activities promoting any contraceptive method. Furthermore, these case studies demonstrate the feasibility of engaging men in family planning interventions – as well as inherent challenges. Our hope is that this synthesis contributes to the growing experience base of public health practitioners, donors and healthcare providers seeking to involve men as equal partners with women in reproductive decisions.

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