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ABSTRACT

Intimate partner violence (IPV) is a public health concern in Tanzania because of its prevalence and documented negative effect on pregnancy outcomes. There has been limited information available in Tanzania on the relationship between IPV and women's use of reproductive and maternal health services. This study uses data from the most recent DHS survey in Tanzania to examine the associations between IPV, women's empowerment, and use of reproductive and maternal health services, taking into account the effects of key socio-demographic variables.

The study analyzed the data on 4,471 currently married or cohabiting women age 15–49 interviewed with the domestic violence module in the 2010 Tanzania Demographic and Health Survey (TDHS). Thirty-nine percent of the women reported physical or sexual violence by their current partner at least once. Thirty percent of the women were defined as "empowered" according to participation in household decision-making.

After controlling for other factors, women's empowerment was found to be associated with 1) use of modern contraceptive methods, 2) having four or more antenatal care visits, and 3) use of a skilled birth attendant during delivery. No significant associations were found between IPV and the use of any of these three reproductive and maternal health services.

The findings suggest that in Tanzania women's empowerment has a strong influence on their use of reproductive and maternal health services. To improve women's health and that of their children there is a need for multi-sector collaboration in developing programs and interventions to improve women's empowerment, increase educational attainment, and reduce gender-based violence.

Keywords: intimate partner violence, women's empowerment, contraceptive use, antenatal care, skilled birth attendant, Tanzania

1. INTRODUCTION

Maternal, newborn, and child mortality are still major public health problems in developing countries. Globally, from 1990 to 2010 maternal and neonatal deaths declined by 47% and 29%, respectively, yet many countries in sub-Saharan Africa and South Asia continue to have an unacceptably high mortality burden (WHO and UNICEF 2013). Recent estimates show that 287,000 women die worldwide from complications of pregnancy and childbirth, with 87% of these deaths occurring in sub-Saharan Africa and South Asia (WHO and UNICEF 2013). According to the 2010 Tanzania Demographic Health Survey (TDHS), there was a non-significant decline in the maternal mortality ratio (MMR) from 578 per 100,000 live births in 2004–05 to 454 per 100,000 live births in 2010 (NBS and ICF Macro 2011). Tanzania, however, is far from reaching the Millennium Development Goal 5 (MDG 5) target of 193 deaths per 100,000 live births by 2015 (MOHSW 2014; WHO and UNICEF 2013).

Studies have shown that morbidity and mortality among women and children can be significantly reduced when there is access to, and use of, the following reproductive and maternal health services: 1) modern contraceptive methods, 2) four or more antenatal care visits, 3) skilled birth attendant during pregnancy, childbirth, and the postnatal period, 4) emergency care for obstetric and newborn complications, and 5) receipt of all required vaccinations (Bongaarts et al. 2012; MOHSW 2014; NBS and ICF Macro 2011; WHO and UNICEF 2012; WHO et al. 2009). A skilled birth attendant (SBA) is defined as ‘‘an accredited health professional such as a midwife, doctor, or nurse who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth, and the immediate postnatal period and in identification, management, and referral of complications in women and newborns’’ (WHO 2004). Access to modern contraceptive methods can avert 22% to 30% of maternal deaths (Bongaarts et al. 2012; Ronsmans et al. 2006), while access to a skilled attendant during childbirth and emergency obstetric care prevent up to 60% of maternal deaths and 40% of intrapartum-related neonatal deaths (Lawn et al. 2010; WHO et al. 2009; WHO and UNICEF 2012). Therefore, any factor restricting access to these services affects maternal and child health.

Several factors influence the use of reproductive and maternal health services by women of reproductive age. Studies have shown that socio-demographic characteristics like education,

residence, employment, income, and exposure to media influence care-seeking behavior regarding contraceptive and antenatal and delivery services (Goo and Harlow 2012; NBS and ICF Macro 2011; Rahman et al. 2012; Wado 2013; WHO et al. 2009). Also, markers of women's empowerment, autonomy, and decision-making power in using earned money have been shown to positively influence the use of contraception, antenatal care, skilled birth attendant, and vaccination services (McCloskey et al. 2005; Rahman et al. 2012; Tuladhar et al. 2013; Wado 2013). However, few population-based studies have evaluated the influence of intimate partner violence (IPV) or spousal violence on use of reproductive and maternal health services in Tanzania.

Intimate partner violence is a serious public health problem in Tanzania (Garcia-Moreno et al. 2006; McCloskey et al. 2005; NBS and ICF Macro 2011; Stockl et al. 2010). IPV involves physical, sexual, or emotional/psychological violence by a husband or partner (Garcia-Moreno et al. 2006; NBS and ICF Macro 2011). The WHO multi-country study on violence showed high prevalence of lifetime physical violence, sexual violence, or both, by a husband or partner in Tanzania—between 41% and 56% of women were affected (Garcia-Moreno et al. 2006). Results from the 2010 TDHS corroborated the WHO findings. Among ever-married women age 15–49 39% experienced physical violence, 17% experienced sexual violence, and 36% experienced emotional violence by their current or most recent husband/partner. In total, the report showed that half (50%) of ever-married women in Tanzania reported having experienced some form of violence (i.e., physical, sexual, or emotional) by their husband/partner (NBS and ICF Macro 2011).

Previous studies have reported strong associations between IPV and negative pregnancy outcomes. Women who reported ever experiencing physical or sexual violence by spouses have been shown to have higher odds of unintended or unwanted pregnancies (Hindin et al. 2008; Pallitto et al. 2013; Salazar and San Sebastian 2014; Silverman et al. 2007). Lifetime experience of IPV has also been associated with higher odds of having a non-live birth—i.e., having a pregnancy ending in a miscarriage, induced abortion, or termination (Alio et al. 2009; Emineke et al. 2008; Hindin et al. 2008; Silverman et al. 2007; Stockl et al. 2012).

Studies of the association between IPV and use of reproductive and maternal health services have had inconsistent results. While some studies have shown a strong association

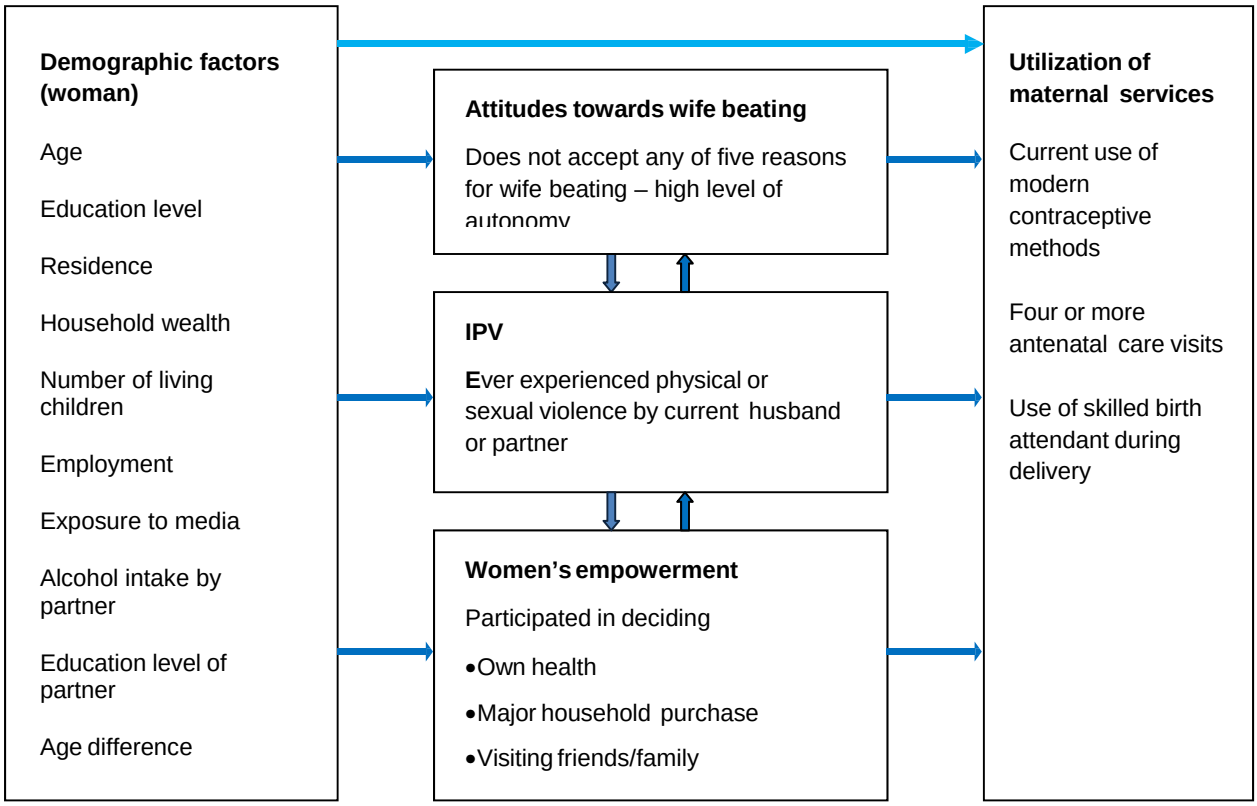
between ever use of contraception and lifetime experience of physical or sexual violence, this association is not clear when assessing the influence of IPV on current use of contraception (Emineke et al. 2008; Hindin et al. 2008; Kishor and Johnson 2004). Studies in India, Bangladesh, and Nepal have shown that women who experienced either physical violence alone or both physical and sexual violence have lower odds of receiving antenatal care, compared with other women (Ahmed et al. 2006; Rahman et al. 2012; Tuladhar et al. 2013). Kishor and Johnson, in their 2004 review, found no association between use of antenatal care and IPV. Hindin et al., in a review of DHS data from 10 countries, found an association between use of antenatal care (ANC) and IPV in 2 of the 10 countries (Hindin et al. 2008). Likewise there are inconsistent results between use of a skilled birth attendant (SBA) during childbirth and IPV. Some researchers have shown decreasing odds of using an SBA during childbirth when there is a history of IPV (Goo and Harlow, 2012; Hindin et al. 2008; Rahman et al. 2012), while others have found no association (Hindin et al. 2008; Kishor and Johnson 2004).

The influence of demographic characteristics on IPV has been assessed before in Tanzania but there is limited research on the associations between IPV, women's empowerment, and use of reproductive and maternal health services. This study explores the association of spousal violence, women's empowerment, and underlying socio-demographic factors related to health- care-seeking for family planning, antenatal care, and delivery services in Tanzania. The information will help policymakers and providers increase women's utilization of reproductive and maternal health services by facilitating development of strategies to address the issues of spousal violence and women's empowerment.

2. CONCEPTUAL FRAMEWORK

The conceptual framework for this study is shown in Figure 1. Intimate partner violence (IPV) is usually defined as ever experience (lifetime) of physical or sexual violence from one's current husband or partner. The 2010 TDHS collected information on the experience of three types of violence perpetrated by the woman's husband or live-in partner: physical violence, sexual violence, and emotional violence. In this study, IPV is defined as lifetime experience of physical or sexual violence by the current spouse, which is consistent with the definition used in many previous studies (Garcia-Moreno et al. 2006; Hindin et al. 2008; Salazar and San Sebastian 2014; Stockl et al. 2012; Tuladhar et al. 2013).

Figure 1. Conceptual framework of relationships between IPV, women's empowerment and utilization of reproductive and maternal health services



IPV is a proximate determinant for utilization of reproductive and maternal health services. IPV may influence utilization of services through several mechanisms. Women who are in abusive relationships have higher rates of ever use of contraception (Hindin et al. 2008). It may be that women who have ever experienced physical or sexual violence use contraception more often than other women because they do not want to give birth to a child while in such a relationship. Studies have shown that women who report a history of physical or sexual violence tend to have higher rates of unintended pregnancy either because they are forced to have unprotected sex or because they are prevented from using contraception continuously by their violent spouse (Emenike et al. 2008; Hindin et al. 2008; Salazar and San Sebastian 2014; Silverman et al. 2007).

It is well documented that unintended pregnancies are associated with less care-seeking for maternal and child health services (Bongaarts et al. 2012; NBS and ICF Macro 2011; WHO and UNICEF 2012). Physical trauma from spousal violence may limit access to and use of reproductive and maternal services in two ways: 1) by limiting physical mobility and 2) by causing women seek to hide the physical effects of violence due to stigma (NBS and ICF Macro 2011). Women who experience physical or sexual violence may suffer in silence and not make use of reproductive and maternal health services because they are experiencing mental health problems like depression and anxiety (Ellsberg et al. 2008). Additionally, the limited financial resources of many women in developing countries can put them in and keep them in abusive relationships. Combinations of these factors lead to reduced utilization of reproductive, maternal, and newborn health services.

The experience of IPV, women's empowerment, and women's attitudes toward wife beating are interrelated factors that can directly influence the utilization of reproductive and maternal health services. Defining women's empowerment is complex and different authors have used different definitions (Tuladhar et al. 2013; Wado 2013). In this paper three decision-making indicators together define women's empowerment: 1) participation in decisions on seeking care for their own health, 2) participation in decisions on making major household purchases, and 3) participation in decisions on visiting friends or relatives (NBS and ICF Macro 2011). Empowerment and attitudes toward wife beating can increase IPV or be protective factors against it, thereby influencing care-seeking behavior regarding health services. On its own, empowerment can influence the use of reproductive and maternal health services because women

who make decisions about their own health care are more likely to be able to access contraceptive methods or a health facility for antenatal or delivery services.

In a few places, higher levels of education, access to resources, and women's empowerment have been associated with marital conflicts and increased reports of IPV, which may limit access to care (Armendariz and Roome 2008; Hindin et al. 2008). Women's attitudes toward wife beating have been shown to be associated with IPV, empowerment, and use of reproductive and maternal services in some settings, but the association was not observed in other settings (Hindin et al. 2008; Tuladhar et al. 2013; Wado 2013).

Several socio-demographic and economic factors such as age, education level, residence, household wealth status, exposure to media, and husband's education have been shown to influence both IPV and utilization of reproductive and maternal health services (Hindin et al. 2008; Mpembeni et al. 2007; NBS and ICF Macro 2011). Male partner behavior, such as alcohol intake, has also been shown to influence women's experience of IPV. The analysis in this paper takes all of these factors into account when assessing the associations among women's experience of IPV, their empowerment, and their utilization of reproductive and maternal health services.

3. DATA AND METHODS

3.1 Data

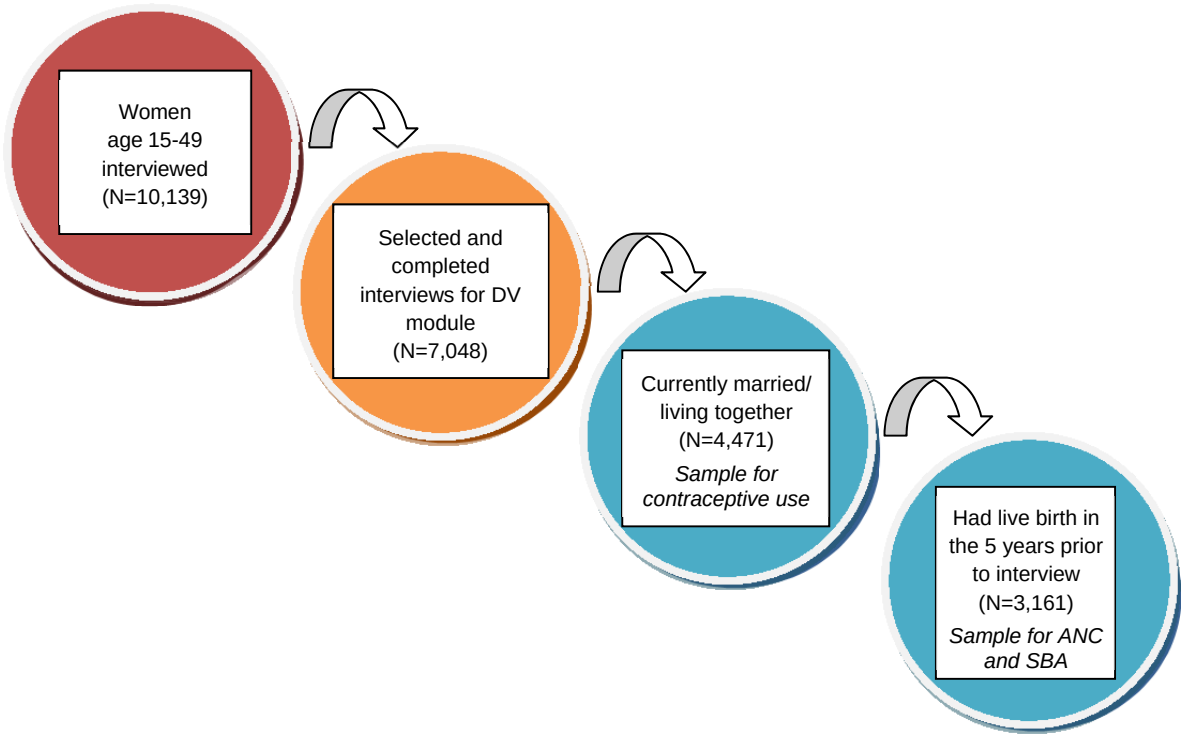
This study is a secondary analysis of data from the 2010 TDHS. The survey was organized and conducted by the National Bureau of Statistics and ICF International in collaboration with organizations and development partners in Tanzania (NBS and ICF Macro 2011).

The 2010 TDHS was a nationally representative survey with a two-stage cluster sampling design. The first stage involved selection of 475 enumeration areas or clusters from the eight zones in the country, with households being selected in the second stage. The final sample size for the survey was 9,623 households, in which 10,139 women age 15–49 were successfully interviewed. The survey collected detailed information on respondents' demographic characteristics including fertility, use of family planning, maternal and child health, nutrition, malaria, HIV, female genital cutting, women's empowerment, and gender-based violence.

This study focused on currently married or cohabiting women—together referred to here as "currently married women"—age 15–49 who completed the domestic violence module in the 2010 TDHS questionnaire. In DHS surveys, a Kish Grid is used to randomly select one eligible woman per household to participate in the domestic violence module, in accordance with the maximization of respondent security and maintenance of confidentiality (NBS and ICF Macro 2011). The total number of women who completed the domestic violence module was 7,048. Of these, the subset of currently married women was 4,471.

All currently married women were asked about their use of modern contraceptive methods. Therefore, a total of 4,471 currently married women completed the domestic violence module and were asked questions about their use of contraception. Women's use of ANC and use of a skilled birth attendant at delivery was assessed for 3,161 women who completed the domestic violence module, were currently married, and had a live birth in the five years preceding the interview. Figure 2 shows the derivation of the analysis samples.

Figure 2. Derivation of study samples



3.2 Definitions of Variables

3.2.1 Dependent variables

There are three main outcome variables measuring women's utilization of reproductive and maternal health services: 1) current use of modern contraceptive methods, 2) four or more ANC visits, and 3) use of a SBA during most recent birth.

Women were asked whether they were currently using any contraceptive method. Their responses were re-categorized and coded as "0" for women not using any method or using a traditional method and "1" for women currently using any modern contraceptive method.[1]

Women who gave birth in the five years preceding the survey were asked if they received antenatal care for their most recent birth and the number of ANC visits they had. The data were compressed into two categories: women who had four or more ANC visits (ANC 4+), who were

[1] Modern contraceptive methods refer to pills, injection, male condoms, IUD, Norplant, female sterilization, male sterilization, and lactational amenorrhea.

coded as “1,” and all other women, who were coded as “0.” For delivery care, women who were attended by a medical doctor, assistant medical officer, clinical officer, nurse midwife, or maternal and child health aide, were categorized as having used a skilled birth attendant during delivery and coded as “1”; all other women were coded as “0.”

3.2.2 Independent variables

The key explanatory variable in this study is intimate partner violence (IPV), measured as lifetime experience of physical or sexual violence by the current husband.

Physical violence was measured based on women’s responses to seven questions that asked a woman whether her husband/partner ever 1) pushed, shook, or threw something at her; 2) slapped her; 3) twisted her arm or pulled her hair; 4) punched her with his fist or with something that could hurt her; 5) kicked or dragged her or beat her up; 6) tried to choke her or burned her on purpose; or 7) threatened her or attacked her with a knife, gun, or any other weapon. Responding “yes” to any of these questions constituted lifetime experience of physical violence.

Sexual violence was measured using two questions that asked a woman whether the husband/partner physically forced her to have sex without her consent and whether he forced her to perform any other sexual acts without her consent. A “yes” response to either of the two questions constituted lifetime experience of sexual violence.

A composite dichotomous measure of physical or sexual violence (IPV) was constructed by coding women who responded “yes” to at least one of the nine questions—7 regarding physical violence and two regarding sexual violence—as “1” (ever experienced physical or sexual spousal violence) and other women, who did not respond “yes” to any of the questions, as “0” (never experienced physical or sexual spousal violence).

The second independent variable was women’s empowerment, which was measured by assessing women’s participation in household decision-making. Women were asked: who in your family makes decisions on your own health care, on large household purchases, and on visits to family or relatives?” There were four possible responses to each question: respondent alone, respondent and husband or partner, husband or partner alone, or someone else. For each decision, a woman was coded as “1” if she had a say in the decision and “0” if she had no say. The final

composite empowerment variable used for this analysis was created by coding women who had a say in all three household decisions as empowered, coded with "1," and women who had a say in less than three household decisions as not empowered, coded with "0."

Attitudes toward wife beating were evaluated based on the respondent's agreement with five statements. The statements are "A husband is justified in hitting or beating his wife 1) if she goes out without telling him; 2) if she neglects the children; 3) if she argues with him; 4) if she refuses to have sex with him; and 5) if she burns the food." Respondents were asked if they agreed with the statement and responded "yes" or "no." A dichotomous variable was created by grouping women who rejected all justifications of wife beating and coding them "1" versus "0" for women who accepted any of the justifications of wife beating.

Other socio-demographic and partner-characteristic variables that were included in the analysis are shown in Table 1 because they may influence IPV, empowerment, or outcome variables.

3.3 Data Analysis

Data were analyzed using Stata 11. Frequency distributions and percentages of socio-demographic and key outcome variables were estimated with univariate analysis. Bivariate analysis was conducted to examine the unadjusted relationships between independent variables and outcomes. Multivariate logistic regression was used to obtain adjusted associations between IPV, women's empowerment, current use of modern contraceptive methods, having four or more ANC visits, and delivery with a SBA. Odds ratios (ORs) with their 95% confidence interval (95% CI) were used to assess the strength of associations between independent and dependent variables. Factor analysis was performed to check the contributions of individual items to a composite IPV index. We decided to assign them equal weights because of their similar contributions. The domestic violence sample weight was applied in all analyses.

Table 1. Operational definition of variables

Variable	Definition
Dependent	
Current use of modern contraceptive method	Yes vs. no
Four or more antenatal visits during last pregnancy	ANC 4+ vs. other
Skilled birth attendant (i.e., medical doctor, assistant medical officer, clinical officer, nurse midwife, or maternal and child health aide) during last delivery	SBA vs. other
Independent	
Women's empowerment/participation in household decision-making	Has a say in all three household decisions (on own health care, on major household purchases, and on visits to family or friends). Categorized as having a say vs. no say
Attitude toward wife beating	Rejected all five wife-beating justifications (disagree) vs. (agree with one or more) (attitudes: goes out without telling him, neglects children, argues with him, refuses to have sex with him, burns food)
Current age	15–24; 25–34; 35–49 years
Education level (woman or partner)	None (0 years), primary (up to 7 years), secondary and above (8 or more years)
Employment in past 12 months	Not employed, employed not for cash, employed for cash
Household wealth	Poor, middle, rich
Residence	Urban, rural
Exposure to media (newspaper, radio, TV, at least once per week)	At least one source vs. others
Age at first marriage	< 20 years vs. 20 or more years
Number of living children	0, 1-2, 3+ children
Partner's alcohol intake	Yes vs. no
Age difference between partners	None, woman older, man older by < 10 years, man older by 10+ years

3.4 Permission to Use the Data

Permission to use the data was obtained from ICF Macro before analysis. Ethical clearance was not sought for this study because clearance had been obtained by the National Bureau of Statistics and the ICF Macro Institutional Review Board before commencement of data collection.

4 RESULTS

4.1 Characteristics of the Participants

The mean age of the 4,471 women included in the analysis was 31.3 years (SD ±8.4). The majority of women (75.1%) lived in rural areas, were employed in the past 12 months (88.9%), had a primary education (69.5%), and were exposed to one or more forms of media at least once a week (63.2%). Table 2 shows other socio-demographic characteristics of the respondents.

Table 2. Percent distribution of currently married women interviewed for domestic violence, by selected socio-demographic characteristics (N=4,471), Tanzania 2010

Variable	N	Percentage
Age in years		
15-24	1,125	25.2
25-34	1,721	38.5
35-49	1,625	36.4
Education level		
None	1,028	23.0
Primary	3,108	69.5
Secondary or higher	335	7.5
Residence		
Urban	1,113	24.9
Rural	3,358	75.1
Wealth index		
Poor	1,753	39.2
Middle	923	20.6
Rich	1,795	40.1
Employment in past 12 months		
Not employed	497	11.1
Employed not for cash	2,172	48.6
Employed for cash	1,802	40.3
Exposure to media (TV, radio, newspaper)		
No	1,647	36.8
Yes	2,824	63.2
Number of living children		
0 children	300	6.7
1-2 children	1,619	36.2
3+ children	2,553	57.1

(Continued...)

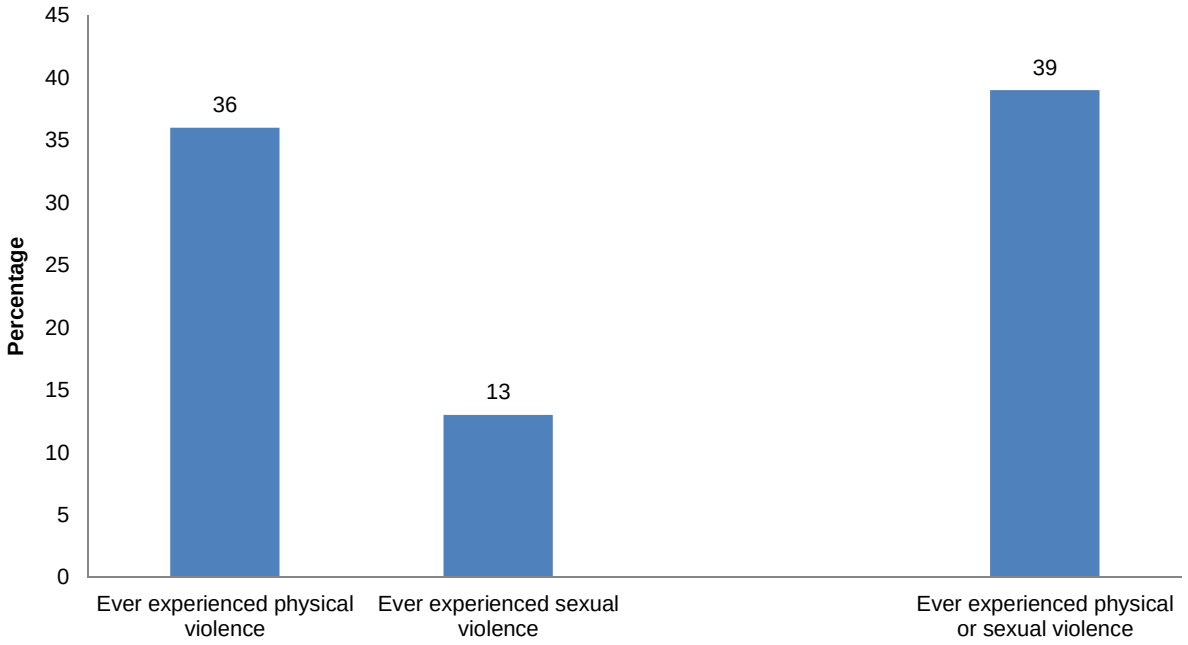
Table 2. – *Continued*

Variable	N	Percentage
Age at first marriage		
< 20 years	3,167	70.8
20+ years	1,304	29.2
Partner's education level		
None	680	15.2
Primary	3,265	73.0
Secondary or higher	526	11.8
Partner's alcohol intake		
No	2,823	63.1
Yes	1,648	36.9
Age difference between partners		
None	139	3.1
Woman older	169	3.8
Man older <10 years	2,987	67.1
Man older 10+ years	1,156	26.0

4.2 Prevalence of IPV, Empowerment, and Attitudes toward Wife Beating

A total of 36% of currently married women in the study reported ever experiencing physical violence by their current husband/partner and 13% reported ever experiencing sexual violence. Nearly 4 of 10 women had ever experienced physical or sexual violence by their current spouse (Figure 3).

Figure 3. Prevalence of physical and sexual violence among currently married women who were interviewed for domestic violence in the 2010 TDHS



Almost one-third (29.9%) of the women were categorized as "empowered"; that is, they had a say in all three household decisions on their own health, major household purchases, and visiting family/friends (Table 3). About 4 of 10 women were categorized as "empowered" because they disagreed with all five reasons justifying wife beating.

Table 3. Percentage of currently married women interviewed for domestic violence, by empowerment in family decision-making and attitude toward wife beating (n=4,471), Tanzania 2010

Variable	N	Percentage	Total
Family decision-making			
Decide on own health	2,699	60.4	4,471
Decide on major household purchases	1,736	38.8	4,471
Decide on visiting family/friends	2,216	49.6	4,471
Empowered (has a say in all three decisions)	1,337	29.9	4,471
Attitude toward wife beating			
Reject wife beating for all five reasons	1,939	43.4	4,471

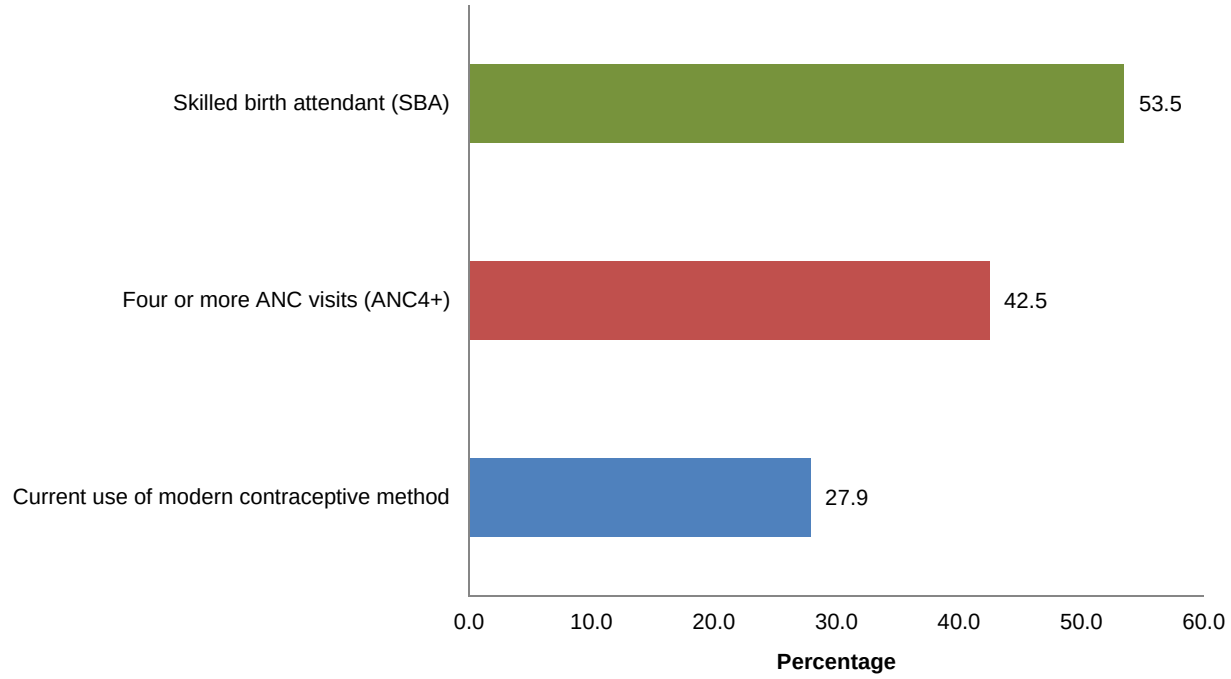
4.3 Utilization of Reproductive and Maternal Health Services

A total of 27.9% of currently married women reported that they were current users of modern contraceptive methods (Figure 4).

While nearly 98% of the currently married women with a live birth in the past five years received antenatal care (ANC) at least once for the most recent birth, only 43% attended ANC four or more times, as recommended. Of those who received ANC services, 14.9% had their first ANC visit during the first four months of pregnancy, 71.6% had the first visit between four and six months of pregnancy, and the rest had their first ANC visit at seven to nine months of pregnancy.

Nearly 54% of currently married women with a live birth in the past five years were assisted by a skilled birth attendant (SBA) during their most recent birth.

Figure 4. Percentage of currently married women interviewed for domestic violence who used specific reproductive and maternal health services: modern contraceptive methods, four or more antenatal care visits (ANC 4+), and skilled birth attendant (SBA)



4.4 Utilization of Maternal Health Services by Socio-Demographic Characteristics, IPV, Empowerment, and Attitudes toward Wife Beating

Table 4 shows how women's use of reproductive and maternal health services varies by socio- demographic characteristics. The three indicators of service utilization—use of modern contraceptive methods, four or more antenatal care visits, and delivery assisted by a skilled birth attendant—do not necessarily have the same association with each socio-demographic characteristic. For example, younger women age 15–24 were significantly less likely to use a modern contraceptive method than women age 25–49. However, among women with a birth in the past five years, it was the younger women who were most likely to have a skilled birth attendant at delivery. Likewise, women with three or more children were significantly more likely to use a modern contraceptive method but less likely to have a skilled birth attendant at delivery, compared with other women.

In the bivariate analysis, women with secondary education and with husband/partners who had secondary education, women in urban areas, women in wealthier households, and women exposed to the media tended to have significantly higher rates of use of modern contraceptive methods, ANC 4+, and use of skilled birth attendants during delivery, compared with other women (Table 4).

Table 4. Bivariate analysis of women's use of reproductive and maternal health services by selected socio-demographic characteristics, Tanzania 2010

	Current use of modern contraceptive method N = 4,471			Four or more antenatal care visits (ANC 4+) N = 3,161			Skilled birth attendant (SBA) during delivery N = 3,161		
Variable	**Total**	**N**	**Percentage**	**Total**	**N**	**Percentage**	**Total**	**N**	**Percentage**
Age in years									
15-24	1,125	243	21.6	936	373	39.9	935	527	56.4
25-34	1,721	527	30.6	1,412	628	44.5	1,411	780	55.3
35-49	1,625	477	29.3***	813	342	42.1	812	384	47.3 ***
Education level									
None	1,028	200	19.5	749	262	35.0	749	269	35.9
Primary	3,108	934	30.1	2,214	961	43.4	2,211	1,252	56.6
Secondary or higher	335	113	33.7***	199	120	60.3 ***	199	170	85.4 ***

(Continued...)

Table 4. – *Continued*

	Current use of modern contraceptive method N = 4,471			Four or more antenatal care visits (ANC 4+) N = 3,161			Skilled birth attendant (SBA) during delivery N = 3,161		
Variable	**Total**	**N**	**Percentage**	**Total**	**N**	**Percentage**	**Total**	**N**	**Percentage**
Residence									
Rural	3,358	380	25.8	2,448	962	39.3	2,446	1,080	44.2
Urban	1,113	867	34.1***	713	380	53.3 ***	712	611	85.8 ***
Wealth index									
Poor	1,753	372	21.2	1,324	474	35.8	1,322	460	34.8
Middle	923	217	23.5	667	261	39.1	667	336	50.4
Rich	1,795	658	36.7***	1,170	608	52.0 ***	1,169	894	76.5 ***
Employment in past 12 months									
Not employed	497	135	27.1	367	177	48.2	365	234	64.1
Employed not for cash	2,172	492	22.7	1,621	595	36.7	1,620	669	41.3
Employed for cash	1,802	621	34.5***	1,174	571	48.6 ***	1,174	788	67.1 ***
Exposure to media (TV, radio, paper)									
No	1,647	358	21.7	1,232	469	38.1	1,231	511	41.5
Yes	2,824	889	31.5***	1,930	874	45.3 ***	1,927	1,180	61.2 ***
Number of living children									
0 child	300	8	2.7	19	8	42.1	18	11	61.1
1-2 children	1,619	449	27.7	571	266	46.6	570	398	69.8
3+ children	2,553	791	31.0 ***	1,317	502	38.1 ***	1,316	558	42.4 ***
Age at 1st marriage									
< 20 years	3,167	874	27.6	2,256	923	40.9	2,255	1,126	49.9
20+ years	1,304	374	28.7	904	419	46.3 **	903	565	62.6 ***
Partner's education level									
None	680	106	15.6	505	179	35.4	504	148	29.4
Primary	3,265	956	29.3	2,343	979	41.8	2,342	1,281	54.7
Secondary or higher	526	185	35.2***	312	184	59.0 ***	312	262	84.0 ***
Partner's alcohol intake									
No	2,823	747	26.5	2,027	875	43.2	2,026	1,123	55.4
Yes	1,648	501	30.4**	1,134	467	41.2	1,132	568	50.2 **
Age difference between partners (4,451)									
None	139	38	27.3	101	46	45.5	100	51	51.0
Woman older	169	34	20.0	92	49	53.3	91	53	58.2
Man older < 10 years	2,987	2,987	30.1	2,168	907	41.8	2,166	1,158	53.5
Man older 10+ years	1,156	1,156	23.6 ***	786	336	42.7	786	420	53.4

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

Empowered women who had a say in the three household decisions (i.e., own health care, major household purchases, and visiting family or relatives) reported significantly higher levels of current use of contraception, antenatal care attendance (ANC 4+), and use of a skilled attendant during delivery (Table 5).

There was no association between women who have ever experienced physical or sexual violence, or both, by their spouses, current use of contraception, frequency of antenatal care attendance, or use of a skilled attendant during delivery.

On the other hand, women who disagreed with the five statements justifying wife beating were significantly more likely to use modern contraceptive methods, to have four or more ANC visits, and to use a skilled birth attendant during delivery, compared with women who agreed with all the statements (Table 5).

Table 5. Bivariate analysis of women's utilization of reproductive and maternal health services by IPV, empowerment, and attitude toward wife beating, Tanzania 2010

	Current use of modern contraceptive method N = 4,471			Four or more antenatal care visits (ANC 4+) N = 3,161			Skilled birth attendant (SBA) during delivery N = 3,161		
Variable	**Total**	**N**	**Percentage**	**Total**	**N**	**Percentage**	**Total**	**N**	**Percentage**
Physical/sexual violence									
No	2,729	750	27.5	1,885	822	43.6	1,888	1032	54.8
Yes	1,742	497	28.5	1,276	520	40.8	1,273	658	51.7
Empowered (all 3 decisions)									
No	3,134	808	25.8	2,277	934	41.0	2,274	1159	51.0
Yes	1,337	439	32.8***	884	409	46.3**	883	531	60.1 ***
Attitude toward wife beating									
Accepts wife beating for any reason	2,532	646	25.5	1,862	727	39.0	1,860	920	49.5
Rejects wife beating for all reasons	1,939	602	31.0***	1,299	615	47.3 ***	1,298	770	59.3 ***

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

4.5 Results of Logistic Regression Analyses

Table 6 presents the results of logistic regression of IPV, empowerment, wife-beating attitudes, and selected demographic characteristics with current use of modern contraceptive methods, having four or more antenatal care visits (ANC 4+), and using a skilled birth attendant (SBA) at delivery.

Women had significantly higher odds of currently using modern contraceptive methods if they were empowered (p=0.01), had a primary education (p=0.049), lived in wealthier households (p=<0.001), were exposed to the media (p=0.042), had husband/partners with primary (<0.001) or secondary education (p=0.007), or had husband/partners who drank alcohol (p=0.022) (Table 6). IPV and wife-beating attitudes were not associated with use of modern contraceptive methods.

In the logistic regression analysis, women who were empowered, who had secondary education, lived in wealthier households, and were in the older age groups (25–49 years) had higher odds of attending antenatal care four or more times (Table 6), whereas women who were employed but did not earn cash had lower odds of having four or more ANC visits during pregnancy.

Table 6. Logistic regression analysis of factors influencing current use of modern contraceptive methods, four or more antenatal care visits, and use of a skilled birth attendant during delivery, Tanzania 2010

Variable	Current use of modern contraceptive method AOR (95% CI)	ANC 4+ visits AOR (95% CI)	Skilled birth attendant (SBA) during delivery AOR (95% CI)
Physical/sexual violence			
No	1.00	1.00	1.00
Yes	1.02 (0.85–1.23)	0.98 (0.82–1.18)	1.02 (0.83–1.26)
Empowered (all 3 decisions)			
No	1.00	1.00	1.00
Yes	**1.29 (1.10–1.52)**	**1.23 (1.03–1.47)**	**1.39 (1.14–1.69)**
Attitude towards wife beating			
Accepted wife beating	1.00	1.00	1.00
Rejected wife beating for all five reasons	1.05 (0.79–1.40)	2.14 (0.66–6.92)	1.20 (0.96–1.54)

(Continued...)

Table 6. – *Continued*

Variable	Current use of modern contraceptive method AOR (95% CI)	ANC 4+ visits AOR (95% CI)	Skilled birth attendant (SBA) during delivery AOR (95% CI)
Education level			
None	1.00	1.00	1.00
Primary	**1.31 (1.05–1.62)**	1.21 (0.99–1.48)	**1.37 (1.09–1.71)**
Secondary or higher	1.35 (0.91–2.02)	**1.73 (1.12–2.67)**	**2.35 (1.44–3.84)**
Wealth index			
Poor	1.00	1.00	1.00
Middle	0.97 (0.79–1.21)	1.07 (0.86–1.32)	**1.53 (1.18–1.98)**
Rich	**1.67 (1.29–2.16)**	**1.41 (1.09–1.83)**	**2.42 (1.82–3.22)**
Employment in past 12 months			
Not employed	1.00	1.00	1.00
Employed not for cash	0.88 (0.67–1.16)	**0.75 (0.59–0.97)**	0.73 (0.51–1.05)
Employed for cash	**1.32 (1.03–1.70)**	0.89 (0.69–1.13)	1.09 (0.77–1.56)
Residence			
Rural	1.00	1.00	1.00
Urban	0.86 (0.65–1.29)	1.06 (0.82–1.37)	**2.82 (1.63–4.87)**
Age in years			
15-24	1.00	1.00	1.00
25-34	1.05 (0.83–1.33)	**1.31 (1.03–1.65)**	1.12 (0.82–1.52)
35-49	0.92 (0.71–1.20)	**1.37 (1.01–1.86)**	1.20 (0.82–1.75)
Exposure to media (TV, radio, paper)			
No	1.00	1.00	1.00
Yes	**1.25 (1.05–1.49)**	0.99 (0.82–1.18)	1.21 (0.92–1.37)
Number of living children			
3+ children	1.00	1.00	1.00
0 child	**0.05 (0.02–0.12)**	1.01 (0.36– 2.80)	1.18 (0.28 – 4.93)
1-2 children	**0.69 (0.56–0.86)**	**1.38 (1.04–1.83)**	**1.85 (1.32–2.59)**
Partner's education level			
None	1.00	1.00	1.00
Primary	**1.57 (1.22–2.03)**	0.95 (0.74–1.23)	**1.64 (1.22–2.20)**
Secondary or higher	**1.59 (1.12–2.26)**	1.08 (0.74–1.59)	**2.54 (1.63–3.96)**
Partner's alcohol intake			
No	1.00	1.00	1.00
Yes	**1.22 (1.04–1.44)**	0.96 (0.82–1.14)	1.04 (0.85–1.28)
Age difference between partners			
Man older < 10 years	1.00	1.00	1.00
None	0.88 (0.59–1.33)	1.21 (0.77–1.91)	1.03 (0.67–1.59)
Woman older	**0.54 (0.37–0.80)**	1.51 (0.92–2.50)	**1.66 (1.05–2.61)**
Man older 10+ years	**0.75 (0.62–0.90)**	1.05 (0.87–1.28)	1.08 (0.88–1.33)

Women who were empowered had higher odds of having an SBA during delivery, compared with other women (OR=1.39; 95% CI 1.12–1.71). Having primary or secondary education or having a husband/partner with primary or secondary education, urban residence, living in a wealthier household, having one to two children, and being older than her partner were significantly associated with SBA use during childbirth. IPV and wife-beating attitudes were not associated with SBA use.

5 DISCUSSION

The results of this study of intimate partner violence and women's use of reproductive and maternal health services in Tanzania showed that women's empowerment, as measured by their participation in household decision-making, was positively associated with current use of modern contraceptive methods, receipt of four or more ANC visits during pregnancy, and use of a skilled birth attendant (SBA) during delivery. Women's experience of intimate partner violence (IPV) (physical or sexual violence) and attitudes toward wife beating were not associated with any of the three health services utilization outcomes (i.e., contraceptive use, ANC 4+, SBA at delivery). Women's education, household wealth, and small family size were significantly associated with all three services utilization indicators, but the direction of the effect differed among outcomes.

The prevalence of ever experiencing IPV (physical or sexual) was high (39%) among currently married women in Tanzania, showing that it is a serious problem that requires urgent attention (MOHSW 2014). The high level IPV found in the study is similar to levels reported in 1) the WHO multi-country study of women in two cities in Tanzania (41% to 56%), 2) among ever- married women in five other SSA countries (27% to 48%), 3) among married women in Kenya (46%), and 4) among currently married women in Bangladesh (48%) (Garcia-Moreno et al. 2006; Goo and Harlow 2012; Hindin et al. 2008; Rahman et al. 2012). A review of IPV during pregnancy among ever pregnant and partnered women showed that physical or sexual violence during pregnancy is a common problem in African countries, with prevalence ranging from 3.8% to 13.5% (Devries et al. 2010). IPV has been shown to be associated with unintended pregnancies, induced abortions, and pregnancies ending with a non-live birth (Emenike et al. 2008; Hindin et al. 2008; Rahman et al. 2012; Silverman et al. 2007; Stockl et al. 2012). Given the high levels of maternal morbidity and mortality in Tanzania, there is a need for strategies to integrate screening for IPV during ANC visits in order to offer timely care and avert morbidity (MOHSW 2014).

Despite its prevalence in Tanzania, IPV was found not to be associated with any of the three reproductive and maternal health services utilization indicators: current use of modern contraceptive methods, having four or more antenatal care visits during the most recent pregnancy, and use of an SBA during delivery. The findings are similar to those from the 2011

Nepal DHS survey, where, after adjusting for empowerment and other demographic variables, IPV was found not to be associated with four or more antenatal care visits or use of an SBA during delivery (Tuladhar et al. 2013). In 2004, Kishor and Johnson did not find an association between IPV and ANC use in seven of the nine countries reviewed in their study but they did observe that IPV influenced the use of ANC during the first trimester. Lack of consistent associations between ever experience of IPV and use of antenatal care or institutional delivery has been shown in a review by Hindin et al. (2008). This review contrasts with the results from Rahman et al. (2012) who, using the 2007 Bangladesh DHS survey data, found that women's experience of physical and sexual violence was associated with 31% and 52% lower odds of utilizing antenatal care during pregnancy and SBA services during delivery, respectively. Hindin et al. (2008) found that Rwandan women who experienced IPV had 29% lower odds of delivering in health facilities. In Tanzania, factors other than IPV are strongly correlated with utilization of maternal health services and should be targeted in interventions.

The women's empowerment indicator, i.e., participation in household decision-making, was shown to be associated with all three reproductive and maternal health services utilization indicators: use of modern contraceptive methods, four or more ANC visits, and use of an SBA during delivery. Decision-making autonomy has been shown as positively associated with ever use of contraception among married women in Ethiopia (Wado 2013), while in Nepal, highly empowered women were significantly more likely to have four or more ANC visits during pregnancy and an SBA attending during delivery, compared with women with low or moderate empowerment (Tuladhar et al. 2013). In this study, while only 30% of Tanzanian women were empowered and participated in all three major household decisions, 60% reported that they had a say in care-seeking for their own health. Use of contraception is a sensitive issue in many patriarchal societies, and women often need communication or negotiation with husbands before adopting a contraceptive method (NBS and IFC Macro 2011). To access and use health facilities during delivery, especially in a large country like Tanzania where SBAs are located in health facilities, women may need to obtain cooperation from their husband/partners or to negotiate with them for permission to travel, transportation costs, financial help in case of emergencies, and health facility costs. Strengthening women's empowerment should be a priority in Tanzania—using several mechanisms inside and outside the health sector—given that only 30%

of currently married women participated in no household decisions, 22 % participate in one decision, and 18% participate in two decisions (NBS and IFC Macro 2011).

The socio-demographic variables that most influenced women's utilization of the three reproductive and maternal health services in this study were education and household wealth. Similar to the findings presented here, the results of other Tanzanian studies and studies from other developing countries have consistently shown that women who are educated, who live in wealthier households, and who live in urban areas have higher utilization of antenatal care, SBA during delivery, and postnatal care, compared with rural and less educated women (Hindin et al. 2008; MOHSW 2014; Mpembeni et al. 2007; NBS and IFC Macro 2011; Wado 2013; WHO and UNICEF 2012). These distal determinants of health influence access to care, and the health sector alone cannot tackle them. There is a need for a multi-sectoral approach in addressing these factors to improve overall health and outcomes for women and their children.

The study has strengths and limitations that need to be discussed. First, key variables such as IPV and utilization of reproductive and maternal health services rely on women's self-reporting, and underreporting of sensitive issues such as physical or sexual violence can occur, given that more than 45% of all women who ever experienced physical or sexual violence and did not seek help from any source (NBS and IFC Macro 2011). This may result in underestimating the prevalence of IPV. The study also measured ever experience of lifetime physical or sexual violence, and this measurement may not reflect the current situation. The cross-sectional nature of the DHS surveys does not allow inference of causal relationships between the independent and outcome variables. Despite this limitation, use of DHS data has several strengths. Women are sampled from the whole country; hence, the results can be generalized for all women age 15–49. Second, tools used for data collection have been standardized, piloted, and used in different settings, thus increasing validity and comparability of results.

In conclusion, the study found that in Tanzania, women's empowerment—but not spousal violence—is related to utilization of reproductive and maternal health services and health outcomes, with empowered women having higher levels of service utilization. Utilization of services is also affected by women's education, partner's education, and household wealth status. These findings underscore the importance of interventions that increase women's education,

position, and level of empowerment in order to improve maternal and child health outcomes. The interventions should involve a variety of stakeholders and be implemented at both the facility level and the community level. Further, there is a need to improve coverage of reproductive and maternal health services in rural areas, given the disparity shown in use of SBAs (MOHSW 2014).

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