Power, Self-efficacy, and Condom Use in the Era of HIV/AIDS: The Case of Zimbabwe Female Young Adults.

Abstract:

A UNAIDS (2002) report indicates that in 2001, Zimbabwe had an adult HIV/AIDS prevalence rate of 34%, unprotected sex being the primary mode of infection. Traditional gender roles including lack of women's empowerment are seen by many as important contributors to HIV transmission in Africa. We use data from the Zimbabwe Young Adult Survey of 2001-2002 to study the association between empowerment and self-efficacy of condom use and condom use in sexual relations of young women in Zimbabwe. The objective was to determine whether or not self-efficacy mediated effect of power on condom use. Data for the current study includes 2288 sexually experienced females 15-29 years of age, who had sexual relations within 12 months of the survey. Bivariate results indicate that 17.1% used condoms during their last sexual contact and that self-efficacy and empowerment have significant associations with condom use. Multivariate results show significant associations between self-efficacy for condom use and condom use, but there was no evidence of the mediating effect of self-efficacy between power and condom use.

Background:

Zimbabwe, (previously Rhodesia), got its independence and voting rights in 1980. It is a land locked country between Botswana, Zambia, Mozambique and touches Namibia. As of July 2004, Zimbabwe had an estimated population of 12,671,680 http://www.cia.gov/cia/publications/factbook/geos/zi.html, March 2005). The distribution of the

age structure is estimated as 0-14 years 39.4%, 15-64 years is 57%, and 65 years and above is 3.6% while the average life expectancy by 2004 had dropped from 67years in the 1980s to 37.82 years (http://www.indexmundi.com/zimbabwe/life_expectancy_at_birth.html, March 2005).

Figure 1. Zimbabwe

Zimbabwe once had some of the best health indicators in Africa, but these have worsened over the last 10 years. Currently, the infant mortality rate is 67.08 deaths per 1000 live births. In 2002, adult rate of HIV/AIDS was estimated at 34%, with approximately 2.3 million people infected with HIV and/or living with AIDS. During the same year, deaths due to HIV/AIDS were estimated at 200,000.

Zimbabwe is governed under a parliamentary democracy. It has two major cities; Bulawayo and Harare. Under the current government, the economy has deteriorated and Zimbabwe now faces a wide variety of economic challenges; an unsustainable fiscal deficit, an overvalued exchange rate, soaring inflation, and bare shelves. The commercial farming sector which was been the traditional source of exports and foreign exchange earner has been badly damaged by the land reform program. Current political and civil unrest has led to soaring unemployment rates, estimated at 70% in 2002 and continuing to grow. The current economic situation is worsened by increasing number of internally displaced people who are forcibly evicted from farmlands. The collapse of the once vibrant political and economic system further predisposes most Zimbabweans to the risk of contracting HIV.

High rates of HIV/AIDS in Zimbabwe, especially among adolescents and young adult females, are of great concern (Beckel, 2004). By 2002, AIDS was believed to be the leading cause of mortality, with heterosexual contact as the principal mode of transmission (UNAIDS, 2002). Results from the recent national Young Adult Survey conducted in 2001, young women ages 15 to 29 were twice as likely to be infected by HIV as men of the same age (Zimbabwe Ministry of Health and Child Welfare, Zimbabwe Family Planning Council, and U.S. Centers for Disease Control and Prevention, 2002). These differences in infection rates are not surprising due to factors that predispose women to higher risk of infection than men, specifically, physiological, behavioral and cultural factors (Beckel, 2004).

Current high rates of HIV infection among women and within the entire population of Zimbabwe continue to perplex interventionists, especially when effective HIV prevention methods such as condom use are available. Consequently, it is not unusual for researchers and prevention practitioners to surmise that important dimensions of HIV/AIDS prevention may have

been overlooked in the process of developing existing prevention methods. While condoms have been shown to be very effective in prevention of HIV infection and transmission, they are a male controlled barrier method. Also, their successful use depends on agreement between the male and the female partner. Most sexual relationships tend to be continuous with different motivations such as trust, faithfulness, desire to belong and economic security, for partners to stay or abandon the relationship. These motivations may directly or indirectly affect the decision to negotiate or not to negotiate use of condoms during a sexual encounter. Consistent condom use is very low among women (2002), and ability of women to negotiate safe sex may be influenced by cultural norms, gender roles, and economic security which can constrain or encourage negotiation for condom use (Soler, et al., 2000).

Literature Review:

HIV prevention

HIV/AID has infected over 33 million people worldwide with the most infected group being women ages 10-25 (Pulwerwitz, Amaro, DeJong, et al., 2002; Reel and Thompson, 2004). Daily infection rates are currently estimated at 16,000 (Reel and Thompson, 2004). Despite these alarming rates of HIV infection and awareness of both risks of unprotected sex and effectiveness of condoms to prevent HIV and STD infections, heterosexuals continue to engage in unprotected intercourse with multiple partners (Wulfert and Wan, 1993; Debro, Campell, Peplau, 1994; Gomez and Marin, 1996; Pulerwitz, et al., 2002; Reel and Thompson, 2004;).

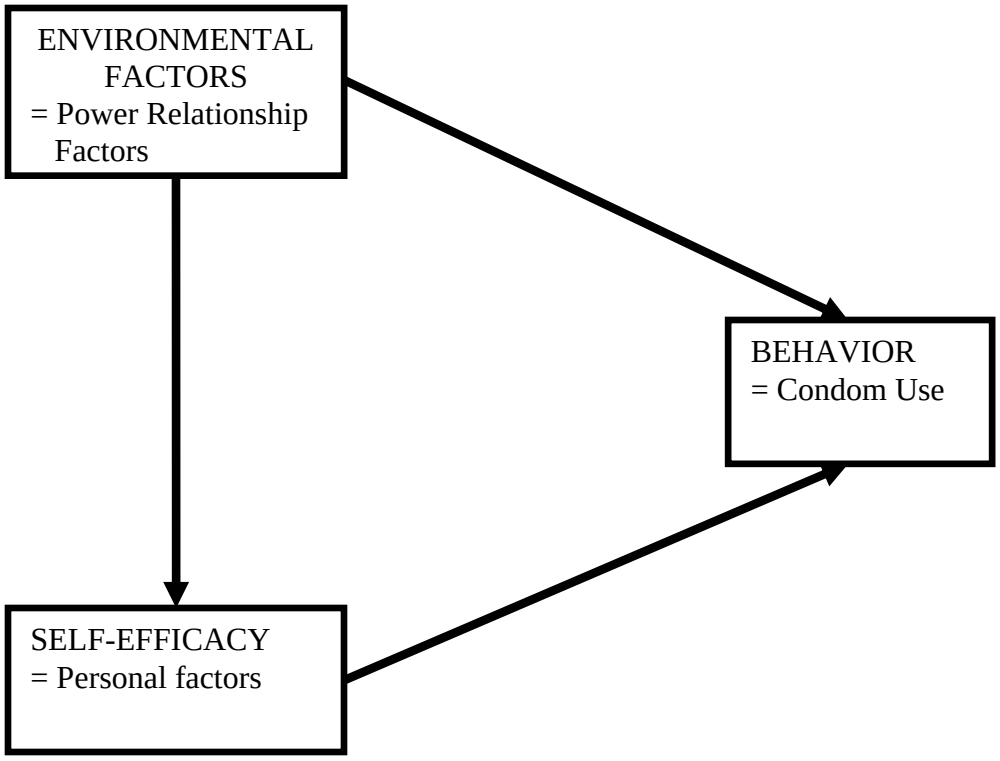
Behavioral theories have been used to identify risk factors for contracting HIV. These theories do not adequately resolve the gap between knowledge and awareness of effectiveness of condoms and actual use of condoms during a sexual encounter between heterosexual couples.

These theories are based on the assumption that individuals have control over their behaviors, which are a result of individual rational decision-making (Gutierrez, Oh, and Gillmore, 2000; Campbell and MacPhail, 2002). It is obvious that condom use is not an individual decision or behavior, but rather a joint decision that results from negotiation between sexual partners (De Bro et al., 1994; Reel and Thompson, 2000; Bruhin, 2003). Knowledge of male condom use is not translating into increasing or consistent condom use. According to Adetunji and Meekers (2001), male condom use campaigns increase knowledge of condoms but do not increase consistent condom use, especially among females. Efforts to understand this disconnect have led to incorporation of the construct of power in condom use prediction models with varying success.

Social Cognitive Theory:

The social cognitive theory was developed from the social learning theories whose origin is the discipline of psychology. It differs from the social learning theory in its focus on cognitive concepts. The social learning theories share three basic tenets: 1. Response consequences influence the likelihood that a person will perform a particular behavior again in a given situation, 2. Humans can learn by observing others, in addition to learning by participating in the act personally, and 3. Individuals are most likely to model behavior observed by others they identify with. The central concept of Bandura's social cognitive theory is cognition (Bandura, 1986). Other important concepts of the social cognitive theory include reciprocal determinism and self-efficacy. Reciprocal determinism is a triadic and reciprocal interaction of the environment, personal factors, and behavior (see figure 1). It is this relationship that we attempt to model in our study.

THE SOCIAL COGNITIVE THEORY



Self-efficacy

Self-efficacy is defined as a person's judgment of their capabilities to organize and execute a course of action required to attain a designated type of performance (Bandura, 1986). According to social cognitive theory and the construct of self-efficacy, individuals' behaviors are better predicted by the beliefs they hold about their capabilities than by what they are actually capable of accomplishing (Pajares, 2005). Self-efficacy beliefs can enhance human accomplishment through the influence of factors such as choices individuals make, amount of effort expended in an activity, and how long they will persevere when confronting obstacles.

They have been highly correlated with behavior changes and outcomes in a variety of research settings (ibid). Self-efficacy has often been presented as a mediating "person" variable in the triadic reciprocity model. Other components of the triadic reciprocity model are behavior and environment. Sustained success in behavior change with respect to self-efficacy has been seen in cases that foster individual decision-making such as physical activity, substance abuse, better nutrition, smoking cessation, etc. These successes have not been achieved in the area of sexual behavior, especially when the adoption of the behavior is dependent on the willingness and self-efficacy of the partner and other dynamics such as various dimensions of power that are not captured or may be irrelevant to behaviors that foster individual decision-making.

Power

Power dynamics have been a neglected dimension of AIDS prevention for women (Gomez and Marian, 1996; Gutierrez et al., 2002). Gutierrez et al, argue that the power to negotiate, struggle, and accept despite the larger social context is an integral aspect of health practices. They refer to three dimensions of power: personal power, which involves experiencing oneself as an effective and capable person; interpersonal power, which is the ability to influence others with social power; and political power, which is ability to influence the allocation of resources in an organization or community through formal and informal means. Page and Czuba (1999) suggest that power is created in relationships, and define it as the capacity to implement decisions that affect their own lives, their communities, and their society. Cultures that perpetrate certain sexual stereotypes and gender role beliefs that support risky behaviors sexually disempower both men and women (Gomez and Marin, 1996; Davila and Brackley, 1999; Campbell and MacPhail, 2002; Marin, 2003).

The ability to negotiate safer sex is vital to protection of women against HIV and STDs especially those in stable relationships who continue to face increasing risks to HIV and STD infections (Soler, Quadagno, Kara, et al., 2000; Gomez and Marin, 1996; Campbell and MacPhail, 2002; Bruhin, 2003). Their negotiation may encounter barriers such as cultural and gender role expectations (Solar et al., 2000; Marin, 2003). Gender based imbalances in relationship power (also referred to as gender inequality, gender inequity, unequal status, and women's lack of autonomy) and the fear of a partner's response can prevent women from initiating safer sex practices including negotiating condom use (Gomez and Marin, 1996; Pulerwitz, Gortmaker, and DeJong, 2000; Campbell and MacPhail, 2002; Luke, 2003; Bruhin, 2003; Kaler, 2004). Relationship power can be expressed via decision-making dominance, the ability to engage in behaviors against a partner's wishes or control a partner's actions on the basis of the dependence of one partner on another, the amount of valued resources owed by one partner compared to another, and whether potential alternatives to the current relationship are perceived to exist (Pulerwitz et al, 2000). Thus, large differentials in power limit the ability of the weaker partner to control sexual encounters (Luke, 2003).

From a social cognitive perspective, knowledge and skills to exercise self-protective behaviors are necessary but not sufficient for sexual risk reduction (Wulfert and Wan, 1993). Self-efficacy, a construct within social cognitive theory, has been understood to facilitate changes in health behavior (Levine, Britton, James et al., 1993). Self-efficacy is defined as an individual's judgment or confidence in the ability to take action and persist in the action; individuals with high self-efficacy for a skill are more likely to perform the skill (Bandura, 1986). Self-efficacy has at times been equated to intrapersonal and psychological dimensions of power.

The sex ratio theory suggested by Guttentag and Secord (1983) incorporates elements of exchange theory to illuminate the societal sex ratio to women's economic, familial, and educational opportunities. The sex ratio theory is based on the thesis that, members of the sex that is in short supply are less dependent on their partners because a greater number of alternative relationships are available to them. Consequently members of the sex in short supply have dyadic power over members of the sex in relative oversupply, are less committed to, and frequently leave relationships for alternatives perceived to have more favorable outcomes (South, 1988). Members in the oversupply are in a dependent position, and adapt to this weaker position by going out of their way to satisfy their partner by making personal sacrifices to conform to the partner's demands and desires. In many societies today, it is the female sex that is in oversupply.

Effects of dyadic power when women are in short supply are tempered by structural power (the control over the political, economic and legal structures of society) that rests almost universally with men (South, 1988). In societies where dyadic power rests with women, virginity will be prized, monogamy will be emphasized, and marriage is mainly patriarchal (Simmons, 2003). At the same time, men simultaneously limit women's life choices by activating structural power (South et al., 1988). In societies where men have dyadic power and women have low structural power, the lack of non-marital opportunities may lead women to embrace traditional roles (South, 1988)

Interpersonal power is a central concept in feminism that underlies what appear to be gender differences in behavior (Yoder and Kahn, 1992). It is considered an aspect of dyadic interaction where one individual has the power to influence another (ibid). Apparent gender differences in communication patterns reflect differences in access to and utilization of power (ibid). Power differentials are characteristics of various situations, such as position, status, or

gender, with groups that are in low status and power being stereotyped by the dominant group as having short-comings in areas traditionally valued by the powerful group (Vescio, Snyder, and Butz, 2003).

The contemporary African woman in Zimbabwe and elsewhere in Africa is in the unfortunate position of being a member of the sex that is in relative oversupply, lacking both dyadic and structural power while at the same time embracing traditional values of virginity and gender sex roles. Male power further complicates condom use and may further expose women with less power and traditional female identities to the risk of not using condoms (Bruhin, 2003)

Our main objective is to determine whether or not self-efficacy for condom use was a mediator of the relationship between power and condom use during a sexual encounter. We hypothesize that self-efficacy for condom use has a mediating effect on power on condom use behavior.

Methodology:

The Sample:

This study uses data from the 2001 Zimbabwe Young Adult Survey (YAS), a national survey that was a joint effort between the Zimbabwean Ministry of Health and Child Welfare, The Zimbabwean National Family Planning Council, and the United States Centers for Disease Control and Prevention. The goal of the survey was to gather baseline data for epidemiologic surveillance and the monitoring of reproductive health and HIV/AIDS indicators. The survey sample was selected using a multi-stage stratified household probability sample, with a total of 7,500 households selected for the male sample and 6,900 for the female sample. The country was stratified into four strata, Harare, Bulawayo, other urban, and rural areas of Zimbabwe. Primary

sampling units were census enumeration areas while secondary sampling units were households. Eligible individuals within households formed the tertiary sampling unit. Household response rates were 82% and 88% respectively for males and females. The survey samples comprised 4,809 women and 4,204 men between the ages of 15 to 29. Our study used a sub-sample of 2514 young adult females who had experienced sexual activity, had been sexually active within the last 12 months prior to the interview, and had no missing data for the variables used in the analysis.

Data analysis:

Data was analyzed using SPSS software. Frequencies measures and correlations were computed to assess degrees of association and multicollinearity. Measures of reliability of scale variables were computed using the scale reliability analysis procedure. Bivariate analysis was conducted for selected control variables. Three multinomial logistic regression models were used to identify associations between dimensions of personal power, self-efficacy, and condom use. Three multinomial logistic regression models were analyzed; the full model included all predictor and control variables, the power model excluded self-efficacy as a predictor variable, while the self-efficacy model, excluded the dimensions of power as a predictor of condom use.

Outcome variable

The outcome variable (condom use) measured whether or not the respondent and her last partner used condoms during their last sexual encounter which must have occurred within 12 months prior to the time of interview. Condom use was coded as a binary variable; 0 = No, if the

respondent did not use condoms during their sexual encounter with their last sex partner and 1 = Yes, if they did.

Predictor variables

Two types of predictor variables were used; self-efficacy and power variables. Self-efficacy was a scale computed from Likert scale questions coded 1= agree, 2=no opinion, 3=disagree and 8= do not know. We recoded "do not know" to "no opinion," because it was reasoned that those who indicated that "do not know" were probably similar to those who indicated "no opinion" about the items. Three items were used to compute the self-efficacy scale: "I feel sure that I could use a condom even if…" a) "…I was drunk or had been drinking" b) "…I had to buy them or get them myself," and c) "…I had to talk about it with my partner." The self-efficacy scale measure was computed for each respondent by adding values of items that had been recoded to ensure that high scores corresponded with high levels of self-efficacy.

Four variables representing various dimensions of power were used individually in the model: work for pay, completed secondary school, age difference with last sex partner, and traditional sex role values. Work for pay was a variable that indicated whether or not the woman worked and was paid for the work. This variable is hypothesized to measure aspects of a woman's economic power. Completed secondary school was used as a measure of individual or personal power. Age difference with last sex partner was used as a measure of relationship (dyadic) power with last sex partner, while traditional sex/gender roles, a scale variable was used to measure the degree to which a woman held traditional values with respect to gender roles. A traditional value scale was used to measure personal power from a number of items about gender role values. The gender role questions had the following item responses: 1= yes, 2= no and 8=

don't know. Again, we recoded those who responded don't know as yes, because this would be made up of the group that probably holds traditional values about gender roles. The questions were: a) "Do you think a man must have more than one partner to be sexually satisfied?" b) "Do you think a woman should be a virgin when she gets married?" c) "Do you think only the man should take the initiative to have sex?" d) "Do you think dry sex (woman's use of herbs) is a good practice?" e) "Do you think it is acceptable for a man to have sexual relations outside marriage?" and f) "Do you think it is acceptable for a women to hit his wife if she has misbehaved?" A low score would indicate strong traditional values about gender roles, while a higher score would indicate weak traditional values about gender roles.

Control variables

Control variables used were socio-demographic, knowledge, perception, and outcome expectations variables.

Socio-demographic variables comprised a) Age of respondent, measured as age at the time of interview. This ranged from 15 to 29 years. b) Marital status was measured as a dichotomous variable whereby individuals who were currently married or living with a partner at the time of the interview were coded 1= yes while those who were not married or living with a partner were coded 0=No. c) Residence variable (urban/rural) was coded 1= urban residence and 0 = rural residence. d) Socioeconomic status was coded into four categories i) low, ii) medium low, iii) medium high, and iv) High.

Knowledge, perception, and outcome expectations variables were composite variables computed from various questions. The knowledge scale was computed from items that measured knowledge about appearance of a person infected with HIV and how a person can avoid getting

HIV. Two questions sought information on the respondents' knowledge of HIV/AIDS. The first question was: "Is it possible for a person to appear completely healthy and still have HIV?" The responses were coded 1=yes and 0=no. Respondents who responded "don't know" were presumed to be similar to those who selected "no" and their responses were combined with the latter category. Thus those who chose the correct response were coded as 1=yes, and those who did not choose the correct response were coded as 0=no. The second question was: "What can a person do to avoid getting HIV?" This question had a total of three correct responses, which were coded as dichotomous variables: a) don't have sexual relationships, b) always use condoms, and c) only have one partner. For each of the three responses indicating knowledge of HIV, a respondent was coded 1= mentioned (if they mentioned the method as a way of avoiding getting infected with HIV) and 0=not mentioned (if they did not mention the method as a way a person could avoid getting infected with HIV). Responses to the two questions were then compiled into a scale variable by adding up correct responses to all the HIV/AIDS knowledge questions. The knowledge of HIV/AIDS scale had values ranging from 0 to 4, with 0 corresponding to individuals with no knowledge of HIV/AIDS while 4 was the highest level of knowledge of HIV/AIDS.

The variable representing self-reported perceptions of risk of getting infected with HIV was computed from two questions. The first question asked individuals if they thought that they were at risk of getting infected with HIV. The responses were 1= yes, 2=no, 3=I have HIV, and 4=don't know. Those who responded 1=yes or 8=do not know, were asked a follow up question that asked if they thought that their risk of getting HIV was low, medium, or high. The responses were coded 1=low, 2=medium, 3=High, and 8= don't know. Those who responded 8=do not know, were recoded as medium risk individuals. Responses to the two questions were

then combined with the following possible responses 0=no risk (for those who indicated no risk of getting infected with HIV), 1=low risk (for those who indicated that their risk of getting infected with HIV was low), 2=medium risk (for those who indicated that their risk of getting infected with HIV was medium), and 3=High risk (for those who indicated that their risk of getting infected with HIV was high).

Outcome expectations (attitudes towards condom use) variable recorded respondents' self reported outcome expectations or attitudes towards condom use. This scale variable was made up of 3 questions. The first question asked whether the respondent thought that if condoms were used correctly for preventing pregnancy, they would actually protect against pregnancy. Responses were recoded as: 0= does not protect, 1=protects some time, 2= protects most of the time. The second question asked whether the respondent thought if condoms were used correctly to protect against diseases, they would protect against diseases. Responses were recoded as; 0=do not protect, 1= protects sometimes, 2= protects all the time. The third question was a 7-item question that asked respondents to indicate whether they agreed, had no opinion, disagreed, or did not know to the following seven statements that completed the statement: "If I used a condom every time I had sex…" a) "…I would get less pleasure," b) "…my partner would think I do not trust him," c) "…I would feel that I am protecting my partners health," d) "…I would feel that I was taking care of myself," e) "…my partner would appreciate it," f) "…I would feel safer," and g) "…my partner would not be satisfied." All negative statements were recoded to reflect positive perception towards condoms. Responses were also recoded to reflect increasingly positive perceptions towards condom use as: 0=disagree, 1= no opinion, 2=agree. A total of 9 items were used to compute the outcome expectations of condom use scale. The

scale had a score ranging from 0 to 18, with 0 indicating negative outcome expectations towards use of condoms while 18 indicated highly positive outcome expectations.

Results:

Demographic variables

Respondents ranged in age from 15 to 29, with a median age of 22.9 years. Table 1 presents distributions of selected socio-demographic variables. Those who had used condoms had an average age of 22.1 years, while those who had not used condoms were older, 23.1 years. Only 16% of the study sample reported never being married or ever lived with a partner, while majority reported being currently married or living with partners (79%). A large proportion lived in urban areas (63%). Almost all respondents reported having been to school with a large proportion having completed 4 years of secondary school education (47%). The distribution by socioeconomic status was relatively even, with the largest proportion (low socioeconomic status) having 30% while the smallest (high socioeconomic status had 19%. The two main languages used to conduct the majority of interviews were Shona (70%) and Ndebele (25%).

Scale variables:

Scale variables were computed using key items related to the concept of interest. A total of 4 scale variables were computed for analysis: Outcome expectations of condom use, knowledge of HIV, attitudes towards traditional sex roles, and self-efficacy. Self-efficacy was made up of three items. The item with the highest (71%) of agreement was item number three: "I feel sure I could use a condom even if I had to talk about it with my partner", followed by the second item: "I feel sure I could use a condom even if I had to buy it myself" (59%). The lowest

agreement was recorded for the first item: “I feel sure I could use a condom even if I was drunk or had been drinking” (42%). The self-efficacy scale had a Chronbach’s alpha of 0.814, suggesting that about 81% of variance in the scale is due to true score variance, and that the scale has a high degree of consistency with which it measures the concept of self-efficacy of condom use.

Non-traditional sex role values scale was computed using 3 of its 5 items. Overall, there was low agreement with respect to all items, suggesting relative non-traditional views, except the second item; “a woman should be a virgin when she gets married” (86.6%) (see table 3). This item was later removed from the scale in an attempt to improve the scale consistency. Agreement was slightly higher on the item: “Only a man should take the initiative to have sex” (28%). The non-traditional sex role values scale had a Chronbach’s alpha of .312, suggesting that the scale has a low degree of consistency in measuring the concept of traditional sex/gender role values.

The knowledge of HIV scale comprised of four items. Responses to these items indicate the majority (71%) mentioned abstinence as a way by which HIV infection can be avoided. Only 39% of the respondents mentioned having a single partner as a way to avoid getting infected with HIV. A even smaller proportion (29%) listed using condoms as a way of avoiding infection with HIV. A larger proportion (83%) of respondents agreed with the statement that a person infected with HIV can appear healthy. The Knowledge of HIV scale had a Chronbach’s alpha of 0.003. This indicates that 97% of variance in this scale is due to error score variance, suggesting a very low reliability of these items to measure the concept of HIV knowledge. However, we kept the scale because items used to compute the scale are those that have been recommended by UNAIDS as reliable measure of HIV knowledge.

The outcome expectations of condom use scale comprised 8 items. The majority of respondents agreed with positive statements about outcome expectations of using condoms such as: “I would feel that I am protecting my family” (85%), “I would feel I was taking care of myself” (86%) and “I would feel safer if I used condoms all the time” (82%). Agreement was lower with negative statements about outcome expectations of condoms use e.g. “I would get less pleasure” (29%), “my partner would think I do not trust him” (59%), and “my partner would not be satisfied” (43%). The scale had a Chronbach’s alpha of 0.741, suggesting that 74% of the observed score variance is explained by the true score variance of the scale. This scale has a high degree of consistency as a measure of outcome expectations of condom use by respondents.

Condom Use

A total of 17.1% of women reported that they had used condoms during their last sex encounter (Table 9). Significant bivariate relationships were found between various socio-demographic variables and condom use. Age was negatively associated with likelihood of having used condoms with a main partner. For example each additional year in age reduced the likelihood of having used condoms during their last sex encounter (OR=0.926, P<0.001). Marital status had a large and significant effect on the likelihood of having used condoms during their last sex encounter. Non-cohabiting women were 19 times more likely than their cohabiting counterparts to have used condoms during their last sex encounter.

Other variables used in bivariate analysis were urban residence, education, and socioeconomic status. Urban residence was significantly associated with the likelihood of having used condoms, with women living in urban areas 2.1 times more likely than their rural counterparts to have used condoms during their last sex encounter. Education had a positive and

significant relationship with condom use. As shown in many studies, education had a significant association with the likelihood of condom use. Women who had completed secondary education and women who had completed 1 to 3 years of secondary education were 2 times and 1.5 times more likely than those who had completed less than secondary education to have used condoms during their last sex encounter. Socioeconomic status has traditionally been associated with condom use, with women from higher socioeconomic status having a positive association with condom use. Bivariate analysis indicated that socioeconomic status had a positive and significant association with condom use. Individuals in medium high and high socioeconomic status were 2 times and 4 times ($P<0.001$) more likely to have used condoms during their last sex encounter relative to those in low socioeconomic status. No significant differences existed between women in the low and medium-low socioeconomic levels.

Correlations

A correlation analysis was done to assess the degree of association between independent variables used in the logistic regression. We also used correlation result to assess the likelihood of multicollinearity. High and significant correlations were found between: residence in urban areas and socioeconomic status ($r=0.752^{**}$) (see Table 8). Consequently, the residence variable was not used in the multivariate regression analyses. Correlations between ratio and/or ordinal variables were computed using the bivariate option in SPSS. Significance was tested using Spearman Rho's test statistic. Associations between binary and ratio or ordinal variables were calculated using the point bi-serial correlation measure, and the t-statistic was used to test for significance. Associations between binary variables were computed using Phi-coefficient of correlation. The majority of the correlation coefficients (68%) were significant and in the

expected direction of association. However, the correlations were mostly weak; 42% of the correlations had a correlation coefficient value of less than 0.100, while 31% of the correlations had a correlation coefficient value of 0.200 to 0.400.

We also used correlation coefficients to determine the associations between power, self-efficacy, and condom use (see figures 3 and 4). Independent correlations between power, self-efficacy, and condom use showed significant correlations between self-efficacy and condom use, power and condom use, and self-efficacy and power (see figure 3). Correlation between dyadic power and self-efficacy was not significant, but correlation between personal power and economic power with self-efficacy was significant.

In the joint model power and self-efficacy were both used as predictors. Self-efficacy remained significantly associated with condom use, while only personal power measured by traditional sex role beliefs had significant association but opposite in direction to that hypothesized. Personal power as measured by "completed secondary education" and dyadic power were not significantly associated with condom use.

Multinomial logistic regression

Our hypothesis was that self-efficacy mediates the effect of power on use of condoms to prevent either pregnancy or sexually transmitted diseases. To test this relationship, we computed correlations and analyzed three models: Full Model, Power Model and Self-efficacy Model (see Table 10). We used correlations to examine associations and significance of associations between self-efficacy, condom use, and power. Except for economic power (work for pay), there were significant associations between condom use and our predictor variables (power and self-efficacy) (see Figure 3). Significant correlations were observed between power and self-

efficacy, except for Dyadic power (age difference with last sex partner). When we controlled for socio-demographic and other control variables, there were no significant associations between most of the power variables and condom use (see figure 4). Self-efficacy continued to show significant association with condom use even after we controlled for other variables.

The Full Model comprised of all predictor and control variables, the Power Model omitted Self-efficacy, while the Self-efficacy Model omitted power variables.

Full Model

The full Model had a Hosmer and Lemeshow test of significance had a p-value of 0.540, indicating the model had a good fit to the data. Significant control variables were marital status, and outcome expectations. We found significant differences between cohabiting (married and living with partner) and non-cohabiting women. Women who did not cohabit with their sex partners were 13.7 times ($P<0.001$) more likely than their cohabiting counterparts to have used condoms during their last sex encounter. Significant differences also existed between women in high and low socioeconomic status. Outcome expectations were significant with each additional positive outcome expected from condom use leading to a 1.2 times increase in the likelihood of having used condoms during the last sex encounter.

Once we controlled for socio-demographic and other control variables, self-efficacy and personal power (traditional sex role beliefs) had significant associations with condom use. An increase in self-efficacy scale increased the likelihood of having used condoms with the last sex partner by 1.3 times ($P<0.001$). Traditional sex beliefs had a significant association with the likelihood of having used condoms but the direction of association was contrary to our expectations. Thus, decreasing levels of traditional beliefs were associated with declining likelihood of having used condoms ($OR=0.751$, $P<0.05$).

Power Model

To test for the mediating effect of self-efficacy, the self-efficacy scale variable was dropped from the power model. The goodness of fit statistic indicated a good model fit (P=0.659). Surprisingly, none of the power variables indicated significant associations with the likelihood of having used condoms. The effect of control variables that were significant in the full model remained significant and the association was stronger. Non-cohabiting women were 14.6 times ($p<0.001$) more likely to have used condoms than their cohabiting counterparts. Women in the high and medium high socioeconomic status were more likely (1.7 times, $P<0.05$ and 1.6 times, $P<0.05$, respectively) than women in low socioeconomic status to have used condoms. Positive outcome expectations of condom use were significantly associated with the likelihood of having used condoms (1.3 times, $P<0.001$).

Self-efficacy Model

The self-efficacy model dropped all measures of power as predictors of condom use. The goodness of fit measure indicated a good model fit (P=0.431). Non-cohabiting women, those in high and medium high socioeconomic statuses, and those with more positive outcome expectations of condom use had higher likelihoods (14.1 times ($P<0.001$), 1.5 and 1.6 times ($P<0.05$), and 1.2 times ($P<0.001$)) of having used condoms with their last partner compared to their counterparts who were cohabiting, of low socioeconomic status, and had less positive outcome expectations of condom use. High levels of self-efficacy were significantly associated with the likelihood (1.3 times ($P<0.001$) of having used condoms with the last sex partner.

Results from our multivariate analysis suggest that our data did not support our hypothesis that the effect of power on condom use is mediated by self-efficacy. When we controlled for socio demographic variables, there were no significant associations between all

dimensions of power and condom use or between power and self-efficacy. The joint model surprisingly had personal power, measured as non-traditional sex role values, indicating significant association with condom use, although the direction of association was opposite to the one hypothesized (OR=0.764, P<0.05). Self-efficacy was significantly associated with condom use (OR=1.303, P<0.001) in the joint model.

Discussion

We set out to determine whether the effect of personal power on condom use was mediated by self-efficacy. We controlled for various socio-demographic variables. In our sample, results consistently showed that women who are currently married or living with a partner were less likely to report having used condoms during their last sexual encounter within the last 12 months. Bivariate analysis indicated 53% of non-cohabiting women had used condoms during their last sexual encounter relative to 7% cohabiting women. The marital status effect did not disappear when we included other variables in all the three models. This suggests that married women or women living with partners may generally be less predisposed to using condoms unlike those who do not identify as married or living with a partner.

Marriage is a desirable status in the context of the African woman. The main objective of marriage or cohabitation for women ages 15 to 29 may include economic, social security and procreation. While child bearing is a desirable state for the married or cohabiting woman, it is not desirable for the unmarried/non-cohabiting woman. Therefore, married/cohabiting women may be least motivated to negotiate safe sex with their partners. Also, a culture where a woman is expected to be faithful and submissive to her husband or cohabiting partner, and sexuality is a taboo subject, to suggest using condoms could be interpreted as an indication of unfaithfulness or

lack of submissiveness. This further suggests that married/cohabiting women may be at a higher risk of HIV infection than their unmarried/non-cohabiting counterparts. Consequently, while it is necessary to continue developing appropriate intervention programs targeting the African young adults, special efforts should be made to address the needs of the married or cohabiting woman whose main risk of HIV infection may be her husband/live-in partner.

Many studies have frequently argued that African women, because of culture and power dynamics may be too disempowered to initiate discussions about safe sex with their male partners (Soler, et al., 2000). Cusick (1998) suggests that non condom use among by women can be a way of communicating trust or faithfulness to their partner. Therefore, in an environment where verbal communication about sexuality is taboo, a woman's way of communicating the desire for faithfulness and monogamy may be through choosing not to use condoms.

Previous studies have shown education to be significantly associated with the likelihood of using condoms. Completion of secondary education, a proxy variable of personal power, was not significant in the multivariate analysis. Education, being almost universal in Zimbabwe, may not discriminate between women who have completed and those who have not completed secondary education. Also, age would be somewhat correlated with level of education as the younger women (15 to 19 years) will not have completed secondary education compared to their older counterparts ages 24 to 29 years. Studies have shown significant associations between personal power as measured by completion of secondary education and other socioeconomic variables such as socioeconomic status, with women from high socioeconomic status found to consistently have higher levels of education. These associations may confound the relationship between education and the likelihood of condom use in our model, leading to lack of significance between completing secondary education and the likelihood of having used condoms.

Socioeconomic status remained significant in multivariate analysis even after we controlled for other variables. Current economic conditions in Zimbabwe suggest that this likelihood of women using condoms may decline further as a result of worsening economic conditions. Poor economic conditions limit academic achievements of women, access to health information and supplies, power in the dyadic relationship, and may further predispose them to higher risks of HIV infections (Campbell and MacPhail, 2002).

Social cognitive theory lists outcome expectations as one of its constructs that determines the likelihood of behavior change. In our study, women who had more positive outcome expectations from condom use were significantly more likely to have used condoms, than those who had fewer positive outcome expectations in all multivariate models. Individuals with high positive expectation were associated with a higher likelihood of condom use.

As suggested by social cognitive theory, self-efficacy was positively associated with the likelihood of condom use even after controlling for other variables in both the Full and Self-efficacy multivariate models. Thus, improving self-efficacy of women is an important aspect of interventions targeting women. It is unclear though if self-efficacy scale measured self-efficacy of discussing use of condoms with a partner or the actual skill of using condoms.

The power model surprisingly had power variables indicating no significant associations with the likelihood of using condoms. Of all our measures of power; completing high school education (personal power), working for pay (economic power), age difference with last sex partner (dyadic power), and traditional sex role values (personal power), only the traditional sex role values had a significant association with the likelihood of using condoms in the Full model. Also, the direction of association was opposite to the one hypothesized. This lack of significance

may be explained by the fact that power dimensions were measured by proxy variables, and not through scientifically designed instruments that identify these dimensions of power.

Holding fewer traditional values about sex/gender roles had a negative association likelihood of having used condoms with their last sex partner. It is possible that individuals who hold fewer traditional values about sex or gender roles also strongly advocate for monogamy, in a culture where polygyny has been a common practice. A monogamous relationship of two uninfected partners, where men are not expected to have sex partners outside of marriage or beat their wives, would foster a low HIV risk environment and therefore reduce or eliminate the need for condoms as a method of reducing HIV risk. These considerations may affect the direction of association between declining traditional values and the likelihood of condom use.

Age difference between a woman and her last sex partner, a measure of dyadic power was not significant. Further investigation showed that married women had a slightly higher age difference with their partner (6.2 years) compared to their unmarried/non-cohabiting counterparts (5.2 years). The age difference of 5.2 years may still be above the threshold age difference that may foster safe sex negotiations. Thus dyadic power may be partly explained by the marital status variable thereby affecting its significance with condom use. Also, it may be the norm for women to marry older men, as the average age differences with last sexual partner are relatively high for both married/cohabiting and non-cohabiting women. Consequently, there may be no significant associations between dyadic power and the likelihood of condoms use once we control for marital status, or our indicator for dyadic power may not be appropriate in this culture.

Economic power (working for pay) was also not significantly associated with the likelihood of condom use. Under the current situation in Zimbabwe, with unemployment rates of

up to 70% reported in 2004, jobs may not be gaining women much status especially if they are not the ones who make decisions on how the money they earn is used. Thus, earning an income may not be a good measure of economic power without knowing who controls the money.

Our hypothesis that the relationship between power and the likelihood of condom use was mediated by self-efficacy was not supported by results from our multivariate analysis. When we examined independent associations between our predictor variables, self-efficacy and power, with condom use, there were significant correlations. Simple correlations estimates in the absence of control variables indicate positive personal power measure (completed high school), dyadic power measure (age difference with last sex partner) and intrapersonal power (traditional sex role values) with condom use. Correlations were in the hypothesized direction of association.

Modeling the triadic reciprocal interaction between power, self-efficacy, and condom use was only partially supported by data from Zimbabwe. However, the main limitation to the model was the lack of good measures of power. Our proxy measures of the various power dimensions (personal, dyadic, and economic) may not have adequately represented these dimensions. These limitations were also evident in some of the power scale measures especially traditional sex role variable that had a low Chronbach alpha statistic suggesting low consistency in measuring the concept of personal power.

Conclusions and Recommendations

HIV/AIDS continues to devastate the health and economies of many countries in Africa. Surveillance studies indicate that young adult women are at highest risk of infection. At the same time, studies continue to show that current interventions are not leading to increased and

sustained use of condoms during sex. We hypothesized that power may be an important factor that has been overlooked in the design of existing interventions. It is therefore essential to understand the dynamics of power with respect to the well-known concept of self-efficacy and condom use. We therefore sought to test our hypothesis that self-efficacy mediates the effect of power on condom use.

Modeling the triadic reciprocal interaction between power, self-efficacy, and condom was only partially supported by data from Zimbabwe. It is unclear if self-efficacy mediates the association between all forms of power and the likelihood of condom use. Our analysis did not yield conclusive evidence. Results could also be affected by the fact that we used our model to predict a past event, whether or not a condom was used during the last sex encounter, rather than a future event whether or not they will use condoms in their next sex encounter. Low correlations between explanatory variables may have also contributed to the inconclusiveness of our model.

Literature suggests that empowerment of women, irrespective of age, is a precondition for negotiating safer sex (Campbell and MacPhail, 2002). While dyadic power may not have been significant, studies suggest that it does influence the ability and self-efficacy of a woman to negotiate safe sex, including the use of condoms. According to Luke (2003), age and economic asymmetries limit ability of young women to negotiate safe sex. In our study, age differences between women and their partners, coupled with large differentials in ownership of economic resources or wealth may have limited the ability of women to control sexual encounters or to negotiate safe sex. Also, a culture where sexuality is not openly discussed, a woman is expected to be naïve about sex, and the young/women are expected to submit to and respect the older/men, is not environmentally conducive to for a woman to express her preferences especially in the

area of sexuality. In the current devastated economy, it may be much harder to measure economic power using the current "work for pay" status, but rather a better measured may have been whether or not the woman makes decisions on how the money she earns is used.

Future attempts to study the relationship between power, self-efficacy and condom use might need to consider using appropriate instruments to collect data on various dimensions of power. Such specifically developed measures would be better suited to investigate and assess the reciprocal interaction between power, self-efficacy and condom use in a triadic model.

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