Social factors, social support and condom use behavior among young urban slum inhabitants in Southwest Nigeria

Adebola Adedimeji[1]
Nathan Heard[1]
Oluwole Odutolu[2]
Obafemi Omololu[3]

[1]Harvard School of Public Health
[2]Harvard AIDS Prevention Initiative in Nigeria
[3]University of Ibadan, Department of Sociology

Corresponding author:
Adebola A. Adedimeji
Harvard School of Public Health
665 Huntington Avenue,
Building I, 12th Floor
Boston, MA 02115
Tel: 617-432-1700
Email: aadedime@hsph.harvard.edu

Abstract
Despite widespread knowledge that condoms offer protection against STIs/HIV when used correctly and consistently, many young people do not regularly use condoms, thus leading to new HIV infections. Data from 448 boys and 338 girls selected through multistage sampling techniques were used to examine factors that determine condom use among sexually active young people living in urban slums in Nigeria. Generally, there is widespread knowledge and low levels of condoms use, despite high levels of risky sexual behavior. Although, half of boys and one third of girls report ever using condoms, a considerably lower proportion of male and female adolescents regularly use condoms. Logistic regression models show that among girls, those who perceived social support from peers and non-parental figures were more likely to use condoms while among boys, earning an income, high risk perception and self efficacy were associated with higher odds of condom use. Programs aiming to increase condom use among young people need to address these factors through community-based strategies.

Key words: Condoms; young people; urban slum residence; social support; Nigeria.

Background

The UNAIDS 2004 report on the status of the global AIDS epidemic indicates that adolescents, and increasingly girls, still account for most cases of new HIV/AIDS infections in sub-Saharan Africa despite huge investments to address their sexual and reproductive health needs. Many Nigerian adolescents, like their counterparts elsewhere, engage in high-risk sexual behavior (Amazigo, et. al., 1997; Smith, 2000; UNAIDS, 2002; Arowojolu, et. al. 2002; Slap, et. al., 2003; The Allan Guttmacher Institute, 2003; NPC/ORC Macro, 2004), consequences such as unwanted teenage pregnancy, unsafe abortion, high prevalence of HIV and other sexually transmitted infections (STIs) (UNAIDS, 2002) are rife.

The prevalence of HIV suggests that Nigeria may become one of the worst affected countries in sub-Saharan Africa. Within a period of 10 years, sentinel survey data (1991-2001) indicate that HIV prevalence rates increased from 1.8% in 1991 to 5.8% in 2001 with many existing and new infections occurring among female adolescents. Although, prevalence rate is low, the absolute numbers of people infected in Nigeria is one of the highest in the world (UNAIDS, 2002). Results of the 2003 sentinel survey data (FMoH Sentinel Survey Report, 2003) indicate that more than 5 million Nigerians are infected with HIV and in the absence of a cure, hopes for reducing the spread of the infection continue to rest on propositions for abstinence and adoption of protective behavior among those who are sexually active.

Concern about young people's vulnerability to new HIV infections has led to a deluge of youth-oriented reproductive health programs focusing on protective behavior, especially condom promotion (Brieger et al. 2001), as a means of stemming the tide of infection. The theoretical assumptions for these programs (health belief model, social cognitive theory, social inoculation theory, AIDS Risk Reduction Model and Stages of Change Model) is that the adoption of protective behavior is based on an individuals' perceptions of their susceptibility to infections and the benefits of behavior change. People are seen as rational beings who logically consider various courses of action before acting once they have adequate information and see the benefits of change. Some studies (Green 2003; Odutolu 2005), however, contend that applying such theories in the African setting may not be that simple considering that in many societies, peoples' capacity to initiate health enhancing behavior are mediated by power relations, poverty, gender inequality and socialization processes that are beyond the control of individuals. In addition, many existing program strategies do not account for important socio-economic, educational, biological and cultural differences among adolescents, especially those that have implications for their abilities to avoid risky sexual relationships, adopt and sustain protective behaviors and access reproductive health services.

The situation is graver for adolescents who live in slum dwellings and whose opportunities to safeguard their sexual health are particularly limited. This is in view of conditions of extreme deprivation and poverty in such areas, which compel some young people to engage in risky sexual behavior for economic survival. Brockerhoff and Brennan (1998), report that in general the urban poor are even more disadvantaged in terms of health and education than their rural counterparts. The research of Zulu and colleagues (2002) similarly indicates that the health disadvantages of the urban poor extends to sexual health, with women who live in slums beginning sexual intercourse earlier and having more sexual partners than their non-slum counterparts.

Condoms are highly effective in preventing pregnancies and slowing the spread of HIV and some other sexually transmitted reproductive health problems (Gardner, et. al., 1999; World Bank, 1997; Trussell, 1999; Cates 2001). When used correctly and consistently, male condoms can provide as much as a 94% reduction in risk of HIV transmission (Holmes, et. al. 2004). Condoms have therefore been promoted as a major public health strategy to combat unwanted pregnancies and the rising rates of STIs, including HIV/AIDS. To derive maximum benefit, condoms must be used correctly and consistently; however

consistent use requires long-term commitment and a reliable distribution network that provides condoms even to the poorest groups (World Bank, 1997).

Available literature indicates a widespread knowledge of condoms among Nigerian adolescents (Peltzer, 2000; NPC/ORC Macro 2004; Smith, 2003a,b; Onoh, et. al. 2004; Olaseha, et. al., 2004), but knowledge alone does not determine use. These studies show that despite universal awareness and knowledge that consistent use of condoms largely protects against infection with STIs and HIV, the level of condom use is relatively low among sexually active adolescents. The 2003 Nigerian Demographic and Health Survey data show that among men aged 15-19 and 20-24 years, the proportion reporting ever using condoms was 9.8% and 30%, while among women in the same age groups, the proportion was 6.5% and 14.8% respectively.

Studies (Shelton and Johnston, 2001; Allen, 2002; Hearst and Chen, 2004) reported a high level of inconsistency in condom use among current users despite intense condom promotion, and some studies (Mann et al. 1988; Darrow 1989; Taha et al. 1996; Ahmed et al. 2001) have noted that inconsistent use of condoms increases the risk for HIV infection. As Hearst and Chen (2004) suggested, this is probably why huge increases in condom promotion and distribution have not resulted in corresponding adoption of safe behavior nor significant decreases in the prevalence of HIV in sub-Saharan African countries worst hit by the epidemic. This scenario underscores the need to understand the pathways and dynamics of condom use or non-use among adolescents. Armed with such knowledge, policymakers can plan and execute relevant and context specific strategies to encourage condom use and scale down risky behavior.

Available literature suggests that the social environment of adolescents is an influential factor in the decision to use condoms (Wilson and Lavelle, 1992; Akande, 1994; Estrin, 1999; MacPhail and Campbell, 2001; Smith, 2003a; Ezumah, 2003) or avoid risk taking behavior (Bongaarts and Cohen, 1998; Slap, et. al., 2003). Individuals form their own views in consonance with or in opposition to the dominant norms of their peers, family and society. Young people tend to feel more comfortable discussing sexuality with their peers, though the information circulating among adolescents might not be accurate. Barker and colleagues (1992) reports on prevalent misconceptions among adolescents about the efficacy and side effects of condoms. Still, peer support for condom use may exert a powerful influence on individuals. In addition, other studies (Meekers and Klein, 2002) found that parental support was a significant predictor of condom use among adolescents in urban Cameroon, especially for young women. Social support is therefore critical, given the strong influences that the social environment exerts on adolescent sexuality especially in developing societies (Gage, 1998). The relative influence of these social forces on condom use is, however, unknown.

This study uses survey data to examine the effect of social factors and social support on condom use among economically disadvantaged adolescents living in urban slums in Ibadan, Nigeria. It examined the extent to which beliefs and self efficacy about condoms, risk perception and perceived social support act as predictors of use or non-use of condoms among those sexually active young people aged 15-24 years. The data is derived from a large-scale project that investigated the knowledge of STIs/HIV/AIDS, perception of risks and preventive behavior among slum dwellers in Ibadan metropolis, Nigeria.

Study setting

Ibadan, one of the largest indigenous metropolitan areas in sub-Saharan Africa has an estimated population of about 2 million inhabitants made up of people from different parts of Nigeria and other parts of the world. The city, located on a major transport route to the northern parts of Nigeria, is the largest of contemporary traditional Yoruba towns.

The residential structure of the city can be divided into three homogenous groups: the core, the periphery and the intermediate areas. The core area is the traditional area of the city; characterised by high levels of poverty, high population density, lack of physical planning, dilapidated buildings, poor sanitation, inadequate health facilities, slum settlements, high level of illiteracy and low level of socioeconomic activities. The intermediate areas, including Molete, Oke-Ado, Mokola, Eleyele, Agbowo, etc., are areas of late development and are mainly inhabited by migrants from other Yoruba towns and other ethnic groups or those who moved out of family compound houses which were once favoured at the inception of the city. Population density here is moderate than those of the traditional areas and housing is also moderately scattered although, these are not well laid out as those found in the peripheral areas. Apart from Yorubas from other towns who reside in these areas, people from other ethnic groups: Efiks, Igbos and Hausas also reside in these areas. The periphery, including Bodija Housing Estates, University of Ibadan, Jericho and Iyaganku Government Reservation Areas and other emerging well planned areas of the city are inhabited mostly by the elite and is characterised by well laid out residential apartments, low population density and the availability of essential social services. Health care needs of the population of the metropolis is provided by the University College Hospital, two State Hospitals and several private medical facilities in addition to traditional medical practitioners scattered all over the city.

Ibadan metropolis used to be under one local government; the Ibadan Municipal Government, before it was split into 5 distinct local government areas (LGA) in 1991. The five LGAs are Southeast, Northeast, Southwest, Northwest and North Central. Respondents for the study were drawn from selected enumeration areas in two of the five local government areas, Northeast and Southeast. These two LGAs contain the largest slum areas in the city. The characteristics of these two LGAs which fit the criteria set for selection of slums include, high population density, inadequate social amenities and services including health and educational facilities, crowded residences, poor sanitation at both individual and community level, inadequate and inaccessible road network, lack of potable water, and erratic electricity supply. Residential patterns in these areas show no distinction between buildings, located in large family compounds (with up to three or four families in one building). Buildings are lumped together and there are no clearly demarcated streets or well laid out neighborhoods, making it easy to move from within the area by crossing compounds. Environmental sanitation is poor and in most parts of the communities, human and animal waste, waste products from food and other consumables litter pathways and households.

The population structure of these communities consists of predominantly young people with the majority between the ages of 15-30, and most of these are involved in trades such as cobblers, seamstresses, tailors, barbers, and other handicrafts. Although indigenous inhabitants are predominantly Moslem with the largest Central Mosque in the city located in one of the communities, there is an active worship of deities among the people. Overall, majority of young people in these communities have some form of education, but most are currently out of school. Though there were several primary schools scattered around communities, very few of the communities have secondary schools situated within them.

The lack of government health facilities is obvious within these communities and, in places where they exist there are few qualified staff and equipment to run the facilities. The most reliable government hospital that inhabitants patronize is the state-owned general hospital[1], and this is several kilometers away from many of these communities. Consequently, patent medicine stores, (chemists) and itinerant medicine sellers serve the health needs of residents in these communities. Often, only emergencies force

1. Adeoyo Maternity Hospital is the nearest state government owned health facility that is available to the communities. It is nearer than the more popular federal government owned University College Hospital, where special services are rendered.

people to go the distance of the general hospital. Similarly, leisure or recreational facilities are non-existent in all the communities except for open spaces within secondary schools, which are converted to football fields by young people in the areas. The absence of recreational facilities might be responsible for the strong community organizations found in the areas and these cooperative societies afford residents the opportunity to come together and implement community development activities.

Data and Methods

Sampling

This study is based on survey data collected between March and June 2002. The survey gathered information from a sample of young people aged 15-24 living in 8 slum communities in the Northeast and Southeast local government areas of Ibadan metropolis and asked a range of questions about reproductive health issues including knowledge of STIs/HIV/AIDS, risk perceptions and preventive behavior.

Participants were selected through multi-stage sampling techniques. Stage one involved a purposive selection of 2 Local Government Authorities (LGAs) within which there was a high density of slum communities. Stage two involved a mapping exercise to generate a list of communities in the 2 LGAs. This mapping yielded a list of 72 communities from which 8 communities: Ita-Ege, Esu-Awele, Isale-Ijebu, Odinjo, Agugu, Ode-Aje, Irefin and Aworawo were selected by systematic sampling. Systematic sampling techniques were further applied to select 5 enumeration areas (EAs) from each selected community. With this procedure, a total of 40 enumeration areas were selected. Forty respondents equally divided between males and females and age groups 15-19 and 20-24 years were selected from each EA making a total of 200 respondents from each community. Individual participants were selected by simple random techniques from a list of households containing at least one eligible respondent.

Instrument

A self administered questionnaire, containing one hundred and fourteen items on sexual experience, reproductive health knowledge, knowledge of STIs/HIV/AIDS, condom knowledge, attitude and use, risk perception and health seeking behavior was used in obtaining information from subjects. The questionnaire was pre-tested on 30 adolescents within the selected age range to ensure that it was clear, unambiguous and acceptable. Study participants were briefed on the objectives of the study and informed consent was obtained before interviews commenced.

Interviews

Interviews were conducted over a 4-month period. The interviews were conducted by same sex interviewers of the same age as respondents or slightly older. All the interviewers participated in a three-day training workshop prior to data collection. The field team consisted of 32 interviewers (4 per community, consisting of two males and two females) and 8 supervisors. All interviews were conducted in Yoruba, the language commonly spoken in the area. Most interviews lasted between 40 and 55 minutes with an average duration of 45 minutes. The community leaders, parents and young people in the communities were briefed on the objectives of the study and their permission sought before the field work commenced. Informed consent was obtained both from the head of the household and from individual respondents before interviews were administered.

Methods

Data were entered and cleaned using EPI INFO version 6. Analysis was performed using SPSS version 12. The data used in this paper focused on the information obtained from 786 (448 boys and 338 girls) sexually active unmarried respondents reporting sexual activity in the three months before the interview. Both bivariate and multivariate analyses examined the factors that predict ever use and likely use of condoms. Bivariate analysis examined respondents' background characteristics and general

attitudes/beliefs about condoms. The variables used include respondent's sex, religion, current school status, highest educational attainment, income status and indicators of self efficacy and perceived social support measured by responses obtained to questions on peer, parental and community support for adolescent who use condoms.

Measuring condom use, the dependent variable used in the multivariate analysis, is fraught with a lot of problems including self-report bias, re-call bias, participation bias, reliability problems, social desirability responses, and memory error. To minimize these problems, positive responses from three variables of '*ever use*', '*use within the last 3 months*' and '*use during the last sexual intercourse*' were combined to identify participants who were more likely to be consistent in using condoms. The multivariate analysis, using logistic regression models, examined demographic, economic, attitudinal and perceived social support indicators that influence condom use among those who are more likely to be consistent users. Those who reported positively on all three variables of '*ever use*', '*use within the last 3 months before the survey*' and '*use during the last sexual encounter*' (defined as 'likely users') were coded as '1' and '0' if otherwise. The resulting coefficients represent the effect of a one-unit change in the explanatory variables on the indicator of likely condom use. Odds ratios larger than one indicate a greater likelihood of use than for the reference category. The logistic regression function has the form $In(p/q)=B_0+B_1X_1+.....+B_iX_i$, where p is the probability of using condoms; q (or1-p) is the probability of not using condoms; B_0, B_1.....B_i are regression co-efficient; and X_1, X_2.....X_i are factors. The exponent of the regression coefficients of the parameter estimated would give the odds ratios in the logistic regression models. All analyses are estimated separately for male and female respondents to demonstrate important differences that may exist between the sexes.

Study Limitations

Some limitations were identified in relation to the study. The results reported in this paper are based on self-reported information, which is subject to reporting errors and bias. The type of data collection methods used in this case (personal interviews) may have contributed to such errors. For example, several studies have demonstrated that surveys conducted using personal interviews, computer assisted self-interviews (CASI) and audio-computer assisted self-interview (audio-CASI) yield different estimates of levels of sensitive behaviors, although, which of these data collection approaches is most accurate remains to be determined (Turner, et. al., 1998; Van de Wigert, et. al., 2000; Mensch, et. al., 2001). Nevertheless, there is also evidence that self-reported sexual behavior data, though subject to reporting bias, can provide useful data that may help to design targeted intervention, as demonstrated by the often substantial and significant associations between reported risk and HIV infection studies from various African settings (Dare and Clelland, 1994; Nunn, et. al., 1996; Quigley, et. al., 1997).

Another limitation is related to measuring condom use, which is the dependent variable in the study. Some studies (Weirr, et al. 1998a, b; Crosby, 1998) have identified several problems associated with measuring self reported condom use, including self-report bias, participation bias, test-retest reliability problems, social desirability responses, and memory error. Moreover, premarital sex and condom use is a sensitive topic that many adolescents are reluctant to talk about. It is likely therefore that these limitations may also have contributed to the bias in reported condom behavior.

Results

Respondents' characteristics

Table 1 shows the characteristics of the working sample, which is restricted to unmarried males and females across 2 age groups, 15-19 and 20-24 years who reported sexual activity in the three months before the survey. As observed from the table, older adolescents outnumber younger ones and males outnumber females. Although, Nigeria is a multi-religious society, two-thirds of participants are Muslims and indication of the large number of Muslims residing in the areas. Information relating to educational

status shows that males reported higher educational attainment than females in both age groups. Due to the economic situation in Nigeria, many adolescents are involved in economic activities to generate income for themselves or to supplement their family income. One in four participants reported engaging in an income generating activity.

Overall, 75% of participants reported ever using condoms. More males (48.6% among 15-19 year olds and 49.4% among 20-24 year olds) and fewer females (32.6% among those aged 15-19 and 39.4% among those aged 20-24) reported ever using condoms. Among those reporting ever using condoms, 61.7% of males aged 15-19 and 62.1% of males aged 20-24 did not use a condom during the last sexual activity. The proportion among females is 64.8% among those aged 15-19 and 70.1% among those aged 20-24 years. Risky sexual activity was common among participants with 48% reporting multiple sexual partners in the last 30 days preceding the survey. Among males, about 45% of those aged 15-19 and half of those aged 20-24 reported sexual activity with 2 or more partners during this period. The proportions among females were 14.7% of those aged 15-19 years and 10 % of those aged 20-24years.

Generally, boys demonstrated higher condom-related self-efficacy than girls. More than half of boys and less than half of girls reported being confident to *'refuse sex without condoms'*, '*use a condom properly'*, '*use a condom always*' or '*purchase a condom'*. Younger girls demonstrated the least efficacy with regard to condom use. Knowledge about condoms as a protective measure was high among all respondents, with 80% reporting that condoms reduce the risk of HIV infection (not shown). Similarly, the majority of respondents reported that condoms are affordable, the lowest proportion being among girls aged 15-19 years (74.1%). Male respondents make up the majority of those reporting that condoms reduce sexual pleasure (73%), while girls, especially older ones reported that condoms are not needed in serious relationships (65.8% and 72.1%). In addition, while the majority of boys reported that condoms encourage young people to be promiscuous, less than half of girls shared this opinion. Overall, the majority of all respondents reported that condoms do not indicate a lack of trust in one's partner.

Table 1 here

The social environment is an important determinant of the sexual behavior or young people. Thus, perceptions of support from significant others in the community can considerably influence their actions. The proportion of respondents who perceived support for condom use from parents, peers and other adults in the community was higher among girls than boys across age groups. Such perceptions, especially from peers and other adults in the community, may encourage girls to be more enthusiastic and able to use condoms since they are more affected by the negative consequences of sexual activity.

Determinants of condom use

Tables 2 and 3 show logistic regression models calculated to predict adolescents who are more likely to use condom. Separate models were fitted for males and females to control for the effects of gender.

Among females, table 2 shows that younger girls aged 15-19, are more likely to use condoms than older girls. The effect was significant in models 1 to 3. In models 2 and 3, risk perception and believing that condoms reduce sexual pleasure were significantly less likely to determine use. Perceived social support for condom use from peers, parents and non-parental figures in the community was associated with higher odds of condom use, although the effect was only significant when peers and other adults were concerned. Generally girls who are more likely to use condoms are those who believe that serious relationships do not need condoms, that condoms do not reduce sexual pleasure and those who feel that significant others around them support condom use.

Among boys, table 3 shows that age was significantly associated with higher odds of condom use. Younger males, aged 15-19 were one and a half times more likely to use condoms than older males. Those who earn an income were also more likely to use condoms, though the effect was not significant. Unlike females, risk perception was associated with higher odds of condom use among males and the effect was significant. Those who were worried about getting infected with AIDS were two and a half times more likely to use condoms. Believing that condom use is not embarrassing and that condoms are easy to use was significantly associated with higher odds of condom use among boys. Boys who agreed that condoms were easy to use were three times more likely to use condoms compared with those who disagreed. Although perception of social support for condom use was associated with a higher likelihood of use, the effect was not significant among male respondents. Generally among males, age, risk perception, and some beliefs about condoms predict higher odds of use.

Table 2 here

Table 3 here

In table 4, respondents were required to indicate from a list of options why they did not use condoms the last time they had sexual intercourse. Among boys, not wanting to appear promiscuous was mentioned by 55% of younger boys and by 61% of older boys. Other reasons were desire to maximize sexual pleasure (50% vs 49%) and '*being caught in the heat of the moment*' (38% vs 35%), indicating the sporadic and unplanned nature of intercourse. A considerable proportion also mentioned being 'embarrassed to buy condoms (34% vs 28%)' and partner refusal (28% vs 24%). Among younger and older girls 'not wanting to appear promiscuous' (67%), 'embarrassed to buy condoms' (62% vs 54%) and partner refusal (39% vs 35%) were mentioned as reasons for not using condoms at the last sexual intercourse. Condom availability did not appear to constitute a reason for non-use across sex and age categories.

Table 4 here

Table 5 further explored differences in attitudes to condom use among users and non-users. In this case, participants responded to a structured list of common beliefs/opinions about condoms. The responses obtained provide further insights into condom use behavior. Among males, 62% of users believed that a girl who carries condoms care about herself. The corresponding proportion among non-users was 55%. In terms of condom availability, almost all those who are users believed condoms are easily available and affordable (93%) compared with only 26% of non-users. Ninety-four percent of non-users believed condoms promote promiscuity, compared with 26% of users. Among females, 71% of non-users believed that carrying condoms indicate a plan to have sex compared with only 33% of those who are users. While 91% of girls who are non-users believe condoms reduce sexual pleasure, only 28% of users shared this opinion.

Table 5 here

Conclusions

In December 2004, UNAIDS reported that adolescents, especially girls, account for an increasing number of those who are newly infected with the HIV virus. The report highlights the fact that many young people who are sexually active are unable to adopt measures to protect themselves against infection. Apart from abstinence, condoms offer an effective protection against STIs/HIV; as such they have been promoted as a strategy for slowing the spread of infections. In view of the escalating rates of infections among sexually active young people, it is important to re-examine the factors that facilitate or impede condom use behavior.

This study highlights important issues that should be the focus of condom promotion interventions among socio-economically disadvantaged adolescents whose vulnerability to HIV is heightened given the connection between poverty and HIV/AIDS (Schoepf, 1996; Whiteside, 2001). This study showed that condom use behavior of adolescent slum dwellers is similar to what has been reported among the general population of adolescents in Nigeria (Amazigo, 1997; Van Rossem, et. al., 2001; Umaru, et. al., 2001) and elsewhere (Adih and Alexander, 1999; Pletzer, 2000; Ahmed, et. al., 2001; Kapiga and Lugalla, 2002; Meekers, et. al., 2003). That is, a large proportion of adolescents are sexually active, with multiple partners without any form of protection. Whereas knowledge of condoms and its protective effects was high, previous studies (Farmer and Kim, 1991; Sobo, 1995; King, 1999; Macintyre, et. al., 2004) have established that knowledge alone does not change behavior.

Earlier studies (Meekers and Klein, 2002; Kapiga and Lugalla, 2002; Macintyre, et. al., 2001; Peltzer and Oladimeji, 2004) reported that condom use among adolescents is influenced by self-efficacy and self-esteem. Findings in this study show that while this may be true for boys, it may not apply in the case of girls. The likelihood of using condoms is increased among girls who perceive social support from friends and non-parental figures in the community. This highlights the need to adopt different strategies toward increasing condom use among boys and girls living in slum communities. While further research is needed to establish if this is the case among girls in higher socioeconomic groups, programs and policies aiming to increase the number of adolescents who use condoms should seek to increase community support for adolescents' condom use in slum settings. For such programs and policies to be effective adult gatekeepers of young people's sexual health need to acknowledge the connection between unprotected sex and HIV infection and be willing to facilitate the adoption of protective measures by those who are sexually active. Similarly, young people need to be aware that their previous sexual history and those of their partners can increase their susceptibility for acquiring infection. Since increased risk perception is associated with increased likelihood of condom use, programs should aim at dispelling the myths that underestimate vulnerability to HIV.

In the context of HIV/AIDS facilitating social support for sexually active girls is important toward empowering them to adopt protective behavior (Gage, 1998; Estrin, 1999; Slap, 2003). Some studies (Edem and Harvey, 1995; Van Landingham, et. al., 1995) focused on the possible influences of peers and parents on HIV and condom use among adolescents. Van Landingham (1995) shows the potential for peer influence and especially peer group norms on whether individuals condone the use of condoms or not. This body of literature shows that the relative connectedness of adolescents to significant others may be important protective factors, and thus operate as suppressors of risk. Although, studies (Aggleton and Campbell 2000, Perrino, 2000) have documented limited communication about sexuality issues between adults and young people, the results of the study highlight the importance of encouraging communication about sexual health between adults and young people as this is likely to have an effect on perceptions of social support and therefore encourage the adoption of protective behavior among young people who are socio-economically disadvantaged. Other studies (for example Magnani et. al., 2001), however, showed a weak association between adolescent's sexual risk taking behavior and their connection to parents. Nevertheless, it is worthwhile further exploring the effects of these factors among all categories of adolescents in order to design appropriate and targeted interventions.

Clearly, these findings suggest that knowledge about condoms is not the obstacle. Perhaps, availability is also not an obstacle since condoms are freely distributed by many existing non-governmental organizations to the populace. Therefore, the low prevalence of use may be the result of many factors, including underestimation of risks and the constraints in the social environment. Individuals may not be able to protect themselves even if they want to because of socio-cultural constraints or because of economic circumstances or inequalities that characterize the sexual relations between men and women.

Young women are particularly at risk in this regard as the combined effects of gender inequality and poverty may considerably dis-empower them, thereby increasing their vulnerability.

Understanding the dynamics of condom use behavior among young people requires a better understanding of the dynamics of their sexual relationships and the context within which condom use is (or is not) negotiated. It is necessary however to reevaluate the strategies with which programs that aim to improve sexual and reproductive health of adolescents are delivered. Almost all adolescent reproductive health programs implemented in Nigeria and in Oyo State in particular have been delivered within a school based or clinic based framework with the result that adult gatekeepers in the community and a large proportion of adolescents who do not have access to these settings are excluded from participating in these interventions. Implementing interventions via family or community frameworks may be more useful in reaching adolescents in disadvantaged settings.

References

Adih W. Alexander C. 1999: Determinants of condom use to prevent HIV infection among youth in Ghana. **Journal of Adolescent Health** 24(1): 63-72

Aggleton P. Campbell C. 2000: Working with young people: Towards an agenda for sexual health. **Sex and Relationship Therapy**, 15(3): 283-296

Ahmed S. Lutalo T. Wawer M. et. al. 2001: HIV incidence and sexually transmitted disease prevalence associated with condom use: A population study in Rakai, Uganda. **AIDS** 15(16): 2,171-2,179

Akande a. 1994: AIDS-related belief and behaviors of students: Evidence from two countries (Zimbabwe and Nigeria). **International Journal of Adolescence and Youth** 4(3): 285-303

Allen A. 2002: Sex change Uganda v condoms. **The New Republic Online.** http://www.thenewrepublic.com/docprint.mhtml?i=20020527&s=allen052702

Amazigo U. Silva N. Kaufman J. Obikeze D. 1997: Sexual activity and Contraceptive knowledge and use among In-School Adolescents in Nigeria. **International Family Planning Perspectives** 23(1): 28-33

Arowojolu AO. Ilesanmi AO. Roberts OA. Okunlola MA. 2002: Sexuality, contraceptive Choice and AIDS Awareness among Nigerian Undergraduates. **African Journal of Reproductive Health** 6(2): 60-70

Barker GK. Rich S. 1992: "Influences on Adolescent Sexuality in Nigeria and Kenya: Findings from Recent Focus-Group Discussions." **Studies in Family Planning**, 23(3): 199-210

Bongaarts J. Cohen B. (eds.) 1998: Adolescent reproductive behavior in the developing world**. Studies in Family Planning** 29(2)

Brieger WR. Delano GE. Lane C. et al. 2001: The West African Youth Initiative Project: Outcome of a Reproductive Health Education Program. **Journal of Adolescent Health** 29(6):436-446

Brockerhoff M. Brennan E. 1998: "The Poverty of Cities in Developing Regions." **Population and Development Review,** 24(1): 75-114.

Cates W. Jr. 2001: The NIH Condom report: the glass is 90% full. **Family Planning Perspectives** 33(5): 231-233

Crosby RA. 1998: Condom use as a dependent variable: measurement issues relevant to HIV prevention programs**. AIDS Educ Prev**. 10(6):548-57

Dare OO. Clelland JG. 1994: Reliability and validity of survey data on sexual behavior. **Health Transition Review** (Suppl): 93-110

Darrow WW. 1989: Condom use and use effectiveness in high risk populations. **Sexually Transmitted Diseases** 16(3):157-160

Edem CU. Harvey SM. 1995: Use of health belief model to predict condom use among university students in Nigeria. **International Journal of Community Health Education,** 15; 3-14.

Estrin D. 1999: In Ghana, young men's condom use is linked to lack of barriers, perceived susceptibility to HIV infection. **International Family Planning Perspectives** 25(2): 106-107

Ezumah NN. 2003: Gender issues in the prevention and control of STIs and HIV/AIDS: Lessons from Awka and Agulu, Anambra State, Nigeria. **African Journal of Reproductive Health** 7(2):89-99.

Farmer P. Kim J. 1991: Anthropology, accountability and the prevention of AIDS. **Journal of Sex Research** 28: 203-221

Federal Ministry of Health Nigeria. 2003: National HIV Sero-prevalence Sentinel Survey Technical Report. Abuja. Federal Ministry of Health. April

Gage AJ. 1998: "Sexual activity and contraceptive use: the components of the decision making process." **Studies in Family Planning 2**9(2):154-66.

Gardner R. Blackburn RD. Upadhyay UD. 1999: Closing the condom gap. Baltimore: Johns Hopkins University School of Public Health, Population Information Program. **Population Reports** Series H. No 9.

Green EC. 2003: **Rethinking AIDS Prevention: Learning from Successes in Developing Countries**. Praeger Publishers
Heasrt N. Chen S. 2004: Condom Promotion for AIDS Prevention in the Developing World: Is it working? **Studies in Family Planning** 35(1): 39-47

Holmes KK. Levine R. Weaver M. 2004: "Effectiveness of condoms in preventing sexually transmitted infections." **Bulletin of the World Health Organization** 82:454-461.

Kapiga SH. Lugalla JLP. 2002: Sexual behavior patterns and condom use in Tanzania: results from the 1996 Demographic and Health Survey. **AIDS Care** 14(4): 455-469

King R. 1999: Sexual behavioral change for HIV: Where have theories taken us? Geneva: UNAIDS

Macintyre K. Brown L. Sosler, S. (2001): It is not what you know, but who you knew: AIDS mortality and behavior change in Africa. **AIDS Prevention and Education,** *13,* 160–174.

Macintyre K. Rutenberg N. Brown L. Karim A. 2004: Understanding perceptions of HIV risk among Adolescents in Kwa-Zulu-Natal. **AIDS Behavior** 8(3)

MacPhail C. Campbell C. 2001: 'I think Condoms are good, but aai, I hate those things": Condom Use Among Adolescents and Young People in a South African Township**. Social Science and Medicine.** 52**(1): 1613-1627**

Magnani RJ. Karim A. Weiss L. Bond K. Lemba M. Morgan G. 2001: Reproductive health risk and protective factors among youth in Lusaka, Zambia. **Journal of Adolescent Research**, 30*;* 76–86.

Mann JM. Nzilambi N. Piot P. et al. 1998: HIV infection and associated risk factors in female prostitutes in Kinshasa, Zaire. **AIDS** 2(4):249-254

Meekers D. Klein M. 2002: Determinants of Condom use among Young people in Urban Cameroon. **Studies in Family Planning** 33(4) 335-346

Meekers D. Klein M. Foyet L. 2003: Patterns of risk behavior and condom use among youth in Younde and Douala, Cameroon. **AIDS and Behavior** 7(4) 413-420

Mensch B. Hewett P. Erulkar A. 2001: The reporting of sensitive behavior among adolescents: A methodological experiment in Kenya. Paper presented at the 24th General Conference of the International Union for the Scientific Study of Population, Salvador, Brazil, 18-24 August

National Population Commission and ORC Macro 2004: Nigerian Demographic and Health Survey 2003

Nunn AJ Wagner HU. Okongo JM. Malamba SS, Kengeya-Kayondo JF and Mulder DW. 1996: HIV-1 infection in a Ugandan town on the trans-African highway: prevalence and risk factors. **International Journal of STDS and AIDS**, 7 (2) 123-130.

Odutolu O. 2005: Convergence of behavior models for AIDS risk reduction in sub-Saharan Africa. **International Journal of Health Planning and Management** 20(3):239-252

Olaseha IO. Ajuwon AJ, Onyejekwe OC. 2004: Reproductive health knowledge and use of contraceptives among adolescent mothers in a sub-urban community of Oyo State, Nigeria. **African Journal of Medicine and Medical Science** 33(2):139-43

Onoh HE Mbah, AU, Chukwuka JC, Ikeme AC.2004: HIVAIDS awareness and sexual practices among undergraduates in Enugu, Nigeria. **Nigeria Postgraduate Medical Journal** 11 (2) 121-125

Peltzer K. 2000: Factors affecting condom use among senor secondary school pupils in South Africa*.* **Central African Journal of Medicine** 46(11): 302-308

Peltzer K. Oladimeji Y. 2004: Some factors in condom use among first year Nigerian University students and black and white South Africans. **Psychology Report**. 94(2): 583-6

Perrino T. Gonzallez-Soldevilla A. Pantin H. Szapocznik J. 2000: The role of families in adolescent HIV prevention: A review**. Clinical Child and Family Psychological Review** 3(2): 81-96

Quigley M. Munguti K. Grosskurth H. Todd J. Senkoro K. Newell J. Mayud P. Ka-Gina G. Klokke a. Mabey D. Gavyole A. Hayes R. 1997: Sexual behavior patterns and other risk factors for HIV infection in rural Tanzania: a case-control study. **AIDS**, 11, 237-248

Slap GB. Lot L. Huang B. Daniyam CA. Zink TM. Succop PA. 2003: Sexual behavior of adolescents in Nigeria: cross sectional survey of secondary school students. **British Medical Journal**, 4; 326(7379): 15.

Schoepf B. 1996: Health, Gender relations and Poverty in the AIDS Era: In K. Shelodn (ed): Courtyards, Markets, City Streets: Urban Women in Africa. Boulder: CO: Westview Press. Pp153-168

Shelton JD. Johnston B. 2001: Condom gap in Africa: Evidence from donor agencies and key informants. **British Medical Journal** 323 (7305): 138-139

Smith DJ. 2000: These Girls Today Na War-o: Premarital Sexuality and Modern Identity in Southeastern Nigeria.

Smith DJ. 2003a: Imagining HIV/AIDS: morality and perceptions of personal risk in Nigeria. **Medical Anthropology** 22(4): 343-72.

Smith DJ. 2003b Premarital sex, procreation, and HIV risk in Nigeria. **Studies in Family Planning** 35(4):223-35.

Sobo EJ. 1995: Choosing unsafe sex, AIDS-risk denial among disadvantaged women. Pennsylvania. University of Philadelphia.

Taha TE. Canner JK. Chiphangwi JD et. al. 1996: Reported condom use is not associated with incidence of sexually transmitted diseases in Malawi. **AIDS** 10(2): 207-212

The Allan Guttmacher Institute. 2003: In their own right: Addressing the sexual and reproductive health needs of men worldwide. New York.

Trussell J. Vaughan B. 1999: Contraceptive failure, method-related discontinuation and resumption of use: results from the 1995 National Survey of Family Growth. **Family Planning Perspectives**, 31(2): 64-72 &93

Turner CL. Ku S. Rogers L. Duberstein L. Pleck J. Sonenstein FL. 1998: Adolescent sexual behavior, drug use and violence. Increased reporting with computer survey technology. **Science** 280(5,365): 867-873

Umaru US, Adekunle AO. Bakare RA 2001: Pattern of condom use among commercial sex workers in Ibadan, Nigeria. **African Journal of Medicine and Medical Science** 30(4): 285-90.

UNAIDS 2002: *Nigeria: Epidemiological Fact Sheets, 2002 Update*.
http://www.unaids.org/html/pub/Publications/Factsheets01/Nigeria_EN_pdf.pdf

UNAIDS 2004: Report of the Global HIV/AIDS Epidemic. Geneva UNAIDS

Van Landingham MJ. Supraset S. Grandjean N. Sittitrai W. 1995: Two views of risky sexual practices among northern Thai males: The health belief model and the theory of reasoned action. **Journal of Health and Social Behavior**, *36*(2), 195–212.

Van Rossem R. Meekers D. Akinyemi Z. 2001: Consistent condom use with different types of partners: Evidence from tow Nigerian surveys. **AIDS Education and Prevention** 13(3): 252-267

Van de Wigert J. Padian N. Shiboshi S. Turner C. 2000: Is audio-compuer-assisted self-interviewing a feasible method of surveying in Zimbabwe? **International Journal of Epidemiology** 29(5): 885-890

Weir SS. Roody RE. Zekeng L. Ryan KA. Wong EL. 1998a: Measuring condom use: asking "do you or don't you" isn't enough. **AIDS Educ Prev**. 10(4):293-302

Weir SS. Fox LJ. Bayardo AD. Guerrero GE. Hassig SE. 1998b: Measuring condom use among sex workers in the Dominican Republic. **International Journal of STD & AIDS** 9(4): 223-226(4)

Whiteside A. 2001: AIDS and Poverty: The Links. **AIDS Analysis Africa** 12(2): 1,5

Wilson D. Lavelle S. 1992: Psychosocial predictors of intended condom use among Zimbabwean adolescents. **Health Education Research** 7(1): 55-69

World Bank. 1997: Confronting AIDS: Public priorities in a global epidemic. New York. Oxford University Press.

Zulu, EM. Dodoo FN. Chika-Ezeh A. 2002: Sexual risk-taking in the slums of Nairobi, Kenya, 1993-8. **Population Studies**. 56(3):311-23.

Acknowledgements

The authors gratefully acknowledge the Department for International Development (DfID) and University of Southampton, United Kingdom Small Grants Program on Sexual and Reproductive Behavior of Adolescents in Developing Countries for the funds to conduct the fieldwork; and the AIDS Prevention Initiative in Nigeria/Bill and Melinda Gates Foundation for sponsoring the lead author during his one year Takemi Fellowship at the Harvard School of Public Health. Finally we thank Temple Jagha and all those who participated in the study.

Table 1: Characteristics of sexually active respondents

Characteristics	Male		Female	
	15-19 (n=182)	20-24 (n=266)	15-19 (n=171)	20-24 (n=167)
Socio-demographics				
Religion				
Muslim	61.9	64.7	59.6	59.1
Christian	36.5	34.7	38.9	39.2
Others	1.7	0.6	1.6	1.8
Currently in school	67.4	41.5	58.6	19.3
Economic status				
Earn income	32.4	54.9	24.9	68.9
Sexual behavior				
Ever used condom	48.6	49.4	32.6	39.4
<2 Partners last 30 days	44.6	49.5	14.7	10.0
Did not use condom at last sex	61.7	62.1	64.8	70.1
Self efficacy				
Refuse sex without condom	57.4	55.5	38.9	45.2
Use condom properly	78.5	79.7	52.6	62.8
Use condom always	48.6	49.4	32.6	39.4
Confident to buy condom	83.3	76.2	31.8	46.4
Condom Opinions				
Reduces HIV risk	86.1	80.5	90.1	89.2
Girls using them care about self	60.6	58.4	65.8	66.9
They are affordable	92.0	89.3	74.1	78.5
Not needed in serious relationships	59.6	63.7	65.8	72.1
Indicate lack of trust	44.1	39.1	33.3	24.7
Encourage promiscuity	65.4	71.0	49.2	44.2
Reduces sexual pleasure	73.3	73.4	57.8	60.2
Perceived Social Support for condoms				
Parents support use	9.6	11.4	10.6	13.9
Friends support use	57.2	50.3	60.1	64.2
Community support use	41.9	39.9	76.3	71.6

Table 2: Odds ratios (standard error) of likely condom use among Females

Variables	Models 1	2	3	4
Background Variables				
Age				
15-19	1.68(.236)*	1.59(.238)*	1.60(.246)*	1.48(.256)
20-24 (r)	-	-	-	-
Religion				
Islam	0.85(.195)	0.89(.197)	0.98(.204)	0.95(.214)
Christian(r)	-	-	-	-
Currently in school?				
Yes	1.10(.255)	1.13(.257)	1.14(.264)	1.16(.289)
No (r)	-	-	-	-
Earn income				
Yes	1.43(.256)	1.35(.259)	1.32(.267)	1.37(.284)
No(r)	-	-	-	-
Risk Perceptions				
Worried about getting AIDS?				
Yes		0.67(.210)*	0.58(.227)**	0.64(245)
No(r)		-	-	-
Condom beliefs and self-efficacy				
Condom reduces risk of STI/HIV?				
Yes			0.85(.333)	0.911(.345)
Don't know (r)			-	-
Serious relationships need no condoms				
Agree				
Disagree (r)			1.45(.222)	1.79(.238)*
Condom use is not embarrassing			-	-
Agree				
Disagree (r)			1.36(.210)	1.65(.222)
Condoms are easy to use			-	-
Agree				
Disagree (r)			0.54(.484)	1.00(.513)
Condoms reduce sexual pleasure			-	-
Agree				
Disagree (r)			0.47(.215)***	0.37(.230)***
			-	-
Perceived social support for condoms from				
Friends				
No				0.41(.283)***
Yes (r)				-
Parents				
No				0.46(.534)
Yes (r)				-
Adults in the community				
No				0.59(.223)**
Yes (r)				-

Levels of significance: * p<0.05 ** p<0.01 *** p<0.001 r (reference category)

Table 3: Odds ratios (standard error) of likely condom use among Males

Variables	Models 1	2	3	4
Background Variables				
Age				
15-19	1.48 (.183)*	1.51(.190)*	1.49(.197)*	1.49(.201)*
20-24 (r)	-	-	-	-
Religion				
Islam	0.85(.177)	0.83(.183)	0.81(.192)	0.83(.196)
Christian(r)	-	-	-	-
Currently in school?				
Yes	0.78(.225)	0.73(.232)	0.73(.237)	0.83(.253)
No (r)	-	-	-	-
Earn income				
Yes	1.11(.223)	1.13(.223)	1.15(.235)	1.18(.245)
No(r)	-	-	-	-
Risk Perceptions				
Worried about getting AIDS?				
Yes		2.40(183)***	2.30(.191)***	2.29(.199)***
No(r)		-	-	-
Condom beliefs and self-efficacy				
Condom reduces risk of STI/HIV?				
Yes			0.97(.257)	1.08(.271)
Don't know (r)			-	-
Serious relationships need no condoms				
Agree				
Disagree (r)			0.85(.194)	0.81(.202)
Condom use is not embarrassing			-	-
Agree				
Disagree (r)			1.70(.212)**	1.65(.220)*
Condoms are easy to use			-	-
Agree				
Disagree (r)			3.23(.343)***	3.42(.360)***
Condoms reduce sexual pleasure			-	-
Agree				
Disagree (r)			0.89(.231)	0.84(.236)
			-	-
Perceived social support for condoms from				
Friends				
No				0.59(.197)
Yes (r)				-
Parents				
No				0.98(.237)
Yes (r)				-
Adults in the community				
No				0.94(.213)
Yes (r)				-

Levels of significance: * p<0.05 ** p<0.01 *** p<0.001 r (reference category)

Table 4: Reasons for not using condoms at last intercourse

	% Male		% Female	
	15-19	**20-24**	**15-19**	**20-24**
Condoms break/unreliable	14	15	14	14
Maximize sexual pleasure	50	49	35	24
Partner refused	28	24	39	35
Used other method	10	8	15	8
Did not discuss condoms	14	21	29	19
Embarrassed to buy one	34	28	62	54
No place to buy one	1	3	-	2
Caught in the heat of the moment	38	35	19	18
Did not want to appear promiscuous	55	61	67	67
Total N	**71**	**119**	**66**	**100**

Table 5: Beliefs about condoms

	Male		Female	
	Likely Users	**Non-users**	**Likely Users**	**Non- users**
Girl who carry condom care about self	61.8	54.8	78.6	53.2
Carrying condoms means plan to have sex	36.8	75.3	33.4	70.7
Condoms are easily available and affordable	93.1	26.0	87.3	40.0
Girls who request condoms loose respect	54.6	53.4	67.5	57.1
Requesting condoms is a sign of mistrust	57.3	62.5	85.8	52.0
Condoms encourages promiscuity	28.0	82.2	81.8	61.5
Reduce sexual pleasure	57.2	93.1	28.4	91.7
Condoms can slip off inside the woman	49.5	80.8	47.9	82.0
Condoms are used for sex during menstruation	70.6	46.6	60.2	51.2
Total N	**138**	**245**	**83**	**124**