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Sexual behaviors and factors associated with consistent condom use among young male artisanal miners in Kassanda District, Uganda

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Abstract

Artisanal and small-scale mining (ASM) is a significant source of income for tens of millions of people worldwide. Consistent condom use is pivotal in the prevention of HIV/AIDS and other STIs. This study assessed sexual behaviors and factors associated with consistent condom use among young male artisanal miners in Kassanda District, Uganda. A cross-sectional survey was conducted with 304 miners aged 15-24 years. Data analysis included frequency distributions, chi-squared tests, and binary logistic regression. 89% had sexual intercourse in the past year, 55% had multiple partners, 11% engaged in transactional sex, and only 42% used condoms consistently. Married/cohabiting young men (OR=0.41; CI=0.19-0.87), those with a neutral attitude towards condom use (OR=0.30; CI=0.11-0.85), and those with only their mothers as parents (OR=0.37; CI=0.19-0.73) were less likely to use condoms consistently. The study highlights the need for targeted interventions promoting condom use among married young men and those raised by single mothers to reduce the risk of STI transmission. (*Afr J Reprod Health* 2024; 28 [8]: 48-56).

Keywords: Sexual behaviours, consistent Condom use, young male, Artisanal Miners, Uganda

Résumé

L'exploitation minière artisanale et à petite échelle (ASM) constitue une source de revenus importante pour des dizaines de millions de personnes dans le monde. L'utilisation systématique du préservatif est essentielle à la prévention du VIH/SIDA et d'autres IST. Cette étude a évalué les comportements sexuels et les facteurs associés à l'utilisation systématique du préservatif chez les jeunes mineurs artisanaux du district de Kassanda, en Ouganda. Une enquête transversale a été menée auprès de 304 mineurs âgés de 15 à 24 ans. L'analyse des données comprenait des distributions de fréquences, des tests du chi carré et une régression logistique binaire. 89 % ont eu des rapports sexuels au cours de l'année écoulée, 55 % ont eu plusieurs partenaires, 11 % se sont livrés à des relations sexuelles transactionnelles et seulement 42 % ont utilisé des préservatifs de manière constante. Jeunes hommes mariés/cohabitants (OR=0,41 ; IC=0,19-0,87), ceux ayant une attitude neutre à l'égard de l'utilisation du préservatif (OR=0,30 ; IC=0,11-0,85) et ceux dont la mère est seule comme parent (OR=0,37 ; IC=0,19-0,73) étaient moins susceptibles d'utiliser régulièrement des préservatifs. L'étude souligne la nécessité d'interventions ciblées promouvant l'utilisation du préservatif parmi les jeunes hommes mariés et ceux élevés par des mères célibataires afin de réduire le risque de transmission des IST. (*Afr J Reprod Health* 2024; 28 [8]: 48-56).

Mots-clés: Comportements sexuels, utilisation systématique du préservatif, jeune homme, mineurs artisanaux, Ouganda

Introduction

Artisanal and small-scale mining (ASM) is a significant source of income for tens of millions of people worldwide¹. According to current estimates, at least 40 million people globally work directly in the ASM sector, and about 300 million people in more than 70 countries depend indirectly on the sector². Artisanal and small-scale gold mining produces about 10-15% of the world's gold³. ASM refers to small groups and individuals engaged in

low-cost and labor-intensive excavation of minerals using minimal mechanization⁴. In sub-Saharan Africa, a region long scarred by poverty, artisanal and small-scale mining is widespread⁵. Although estimates vary, in sub-Saharan Africa, at least 20 million people are employed directly in the artisanal mining sector, and an additional 100 million individuals depend upon its activities indirectly for their livelihoods⁵. In Uganda, the sector is estimated to support more than 190,000 persons' livelihoods, far more than the roughly 2,000 jobs offered by the

country's formal industrial mining sector⁶. In 2017 artisanal mining and quarrying accounted for around 0.6% of the GDP according to the Uganda Bureau of Statistics⁷. Research further indicates that more than 50% of people working in the ASM sector are young men⁸.

Consistent condom use is important for protection against Sexually Transmitted Infections (STIs) including HIV/AIDS⁹. Safer sex practice is a phrase often used to refer to a combination of measures that include condom use that presents a lower risk of STIs. The maximum protective effect of condoms is achieved with consistent rather than occasional use¹⁰. STIs, majorly HIV/AIDS continue to be a major global public health issue¹¹. Each year, an estimated half a billion new curable sexually transmitted infections occur worldwide; nearly half of the infections occur among young people aged 15–24 years¹². In 2020, an estimated 38.4 million people in the world were living with HIV with over 650 000 deaths¹³. In Uganda, HIV prevalence has increased rapidly over the years. According to the Ministry of Health estimates for 2020, over 1.4 million adults and children are living with HIV. The prevalence among adults (15–49 years) is 5.4%¹³. However, there are considerable regional differences in HIV prevalence and mining communities are particularly affected^{14–16}. In Kassanda district, where several artisanal gold mines are located, HIV prevalence was estimated at 5.9% by 2021¹⁷.

Research indicates that most miners are migrant workers¹⁸. Hence, the prolonged separation from their wives/partners encourages them to engage in sexual relationships with other women many of which are transactional^{19–21}. Owing to the catastrophic and stressful nature of work, many young men seek to optimize pleasure during leisure time²². Popular activities include alcohol consumption and intimate relationships^{23–24}. Sex workers also target these young men because they believe that they are relatively well-paid²⁵. Various studies have identified several predictors of consistent condom use in Uganda and elsewhere^{26–29}. A study in South Africa identified marital status as a key factor in consistent condom use, revealing that married individuals are less likely to use condoms consistently³⁰. Another study among fishing communities in Uganda found that Muslims were more likely to report consistent condom use than Christians³¹. Research among gold mining

workers in Ethiopia showed that those with high perceived susceptibility to HIV were 2.63 times more likely to engage in preventive behaviors³².

Additionally, Ethiopian mining workers who completed secondary and tertiary education were 2.66 and 5.4 times more likely, respectively, to engage in HIV preventive behaviors compared to those who were illiterate³². Most of these studies conducted in mining communities have focused on miners in the formal sector, neglecting the artisanal mining communities that have increased over the years^{33–35}. SRH issues of young men who constitute a big percentage of workers in ASM have not been examined in Uganda. Furthermore, studies in artisanal mining areas in Uganda have majorly focused on sexual and reproductive behaviors of adolescent girls and women but not on young men who occupy a big percentage of the population in the artisanal mining communities. This study examined sexual behaviors and factors associated with consistent condom use among young men (15–24 Years) in the Artisanal mining sector in Kassanda district of Central Uganda.

Methods

Study design

The study employed a cross-sectional study design that entailed a survey among young male artisanal miners.

Study population and study area

The study participants included young men aged 15–24 years who worked in the mines or those who were participating in mining-related activities. The study was conducted in Kassanda district one of the main gold mining areas in Uganda.

Sample size determination and sampling procedure

A sample size of 384 was obtained using the Keish-Leisle formula, however, a total of 304 interviews were conducted indicating a response rate of 79.2%. A two-stage cluster sampling methodology was used to select the targeted respondents for the survey. At the first stage, sub-counties were sampled from the artisanal mining communities. At the second stage, mining sites were identified from each sub-county. Young men aged 15–24 in the

selected mining sites were interviewed (face to face) using a structured questionnaire. Although the questionnaire had sections that targeted all the young men, questions on sexual behaviors and consistent condom use were asked to those who had ever had sexual intercourse as well as those who had ever used a condom (male condoms).

Data collection

Data were collected in the selected artisanal mining communities. The data were collected using an interviewer-administered structured questionnaire designed on mobile tools using the Kobo Collect software platforms. The predominantly pre-coded questionnaire was administered by trained research assistants. Pre-testing the tools was done to establish the probable challenges that could be encountered during the actual data collection. The survey questionnaire captured information about the respondent’s demographic and socio-economic characteristics, sexual activity, multiple sexual partnerships, transactional sex, condom use, and other relevant information on consistent condom use.

Data analysis

Data from Kobo collect was exported to STATA version 17.0 for coding and analysis. The analysis entailed three stages: frequency distributions to describe the characteristics of the respondents; Chi-squared (χ^2) tests; and binary logistic regression. At the bivariate level of analysis, we assessed associations between independent variables and the dependent variable using chi-squared tests. The level of statistical significance was set at $p < 0.05$. All significant variables and variables with a p-value of 0.2 or less at bivariate level were considered for logistic regression after testing for multicollinearity.

Results

Background characteristics of the respondents

The results in Table 1 show that the majority of the respondents (81%) were 20-24 years old, had primary education (69%), were single (65%), and had no children (57%).

Table 1: Background characteristics of the respondents (n=271)

| Variables | Categories | n | (%) |
|--------------------|--------------------|-----|------|
| Age | 15-19 | 51 | 18.8 |
| | 20-24 | 220 | 81.2 |
| Education level | No education | 13 | 4.8 |
| | Primary | 186 | 68.6 |
| | Secondary+ | 72 | 26.6 |
| Religion | Anglican | 58 | 21.4 |
| | Catholic | 74 | 27.3 |
| | Muslim | 52 | 19.2 |
| | Pentecostal | 60 | 22.1 |
| | Others | 27 | 10.0 |
| Ethnicity | Muganda | 53 | 19.6 |
| | Munyankole-Mukiga | 69 | 25.5 |
| | Mufumbira | 32 | 11.8 |
| | Munyolo-Mutoro | 16 | 6.0 |
| | Mukonjo | 22 | 7.1 |
| | Foreigners | 51 | 18.8 |
| | Others | 28 | 10.3 |
| Marital status | Single | 177 | 65.3 |
| | Married/Cohabiting | 80 | 29.5 |
| | Separated/Divorced | 14 | 5.2 |
| Residence | At the mining site | 64 | 23.6 |
| | In the community | 207 | 76.4 |
| Head of household | Respondent | 214 | 79.0 |
| | Parent/Relative | 25 | 9.2 |
| | Employer | 20 | 7.4 |
| | Friend | 12 | 4.4 |
| Lives with parents | No | 258 | 95.2 |
| | Yes | 13 | 4.8 |
| Migration status | Non-migrants | 57 | 21.0 |
| | Migrants | 214 | 79.0 |
| Alcohol use | No | 119 | 43.9 |
| | Yes | 152 | 56.1 |
| Parents are alive | All are alive | 169 | 62.4 |
| | Father is alive | 15 | 5.5 |
| | Mother is alive | 68 | 25.1 |
| | All are dead | 19 | 7.0 |
| Having children | No | 153 | 56.5 |
| | Yes | 118 | 43.5 |

Most of the respondents were household heads (79%), lived in the mining community (76%), had both their parents (62%), did not live with their parents (95%), and were migrants (79%). Concerning religion, the highest proportion were Catholics (27%) followed by Pentecostals (22%), were Banyankole-Bakiga by ethnicity (26%) and consumed alcohol (56%).

Table 2: Sexual behaviours and consistent condom use (n=271)

| Variables | Categories | n | (%) |
|---------------------------------------|---------------------|-----|------|
| Recent sexual activity | Within one year | 240 | 88.6 |
| | More than one year | 31 | 11.4 |
| Relationship with the sexual partner | Spouse/Partner | 112 | 41.3 |
| | Friend/acquaintance | 114 | 42.1 |
| Partner's age | Others | 45 | 16.6 |
| | 12-17 | 49 | 18.2 |
| | 18-24 | 194 | 72.1 |
| | 25+ | 26 | 9.7 |
| Multiple sexual partnerships | No | 122 | 45.0 |
| | Yes | 149 | 55.0 |
| Transactional sex | No | 240 | 88.6 |
| | Yes | 31 | 11.4 |
| Ever used a condom | No | 6 | 2.3 |
| | Yes | 258 | 97.7 |
| Condom use at last sexual intercourse | No | 130 | 50.4 |
| | Yes | 128 | 49.6 |
| Consistent condom use | No | 150 | 58.1 |
| | Yes | 108 | 41.9 |

Sexual behaviours and consistent condom use

The majority of the respondents had ever engaged in sexual intercourse (89%) and had sexual intercourse during the 12 months preceding the study (89%). The median age at first intercourse was 16 years. More than half (55%) of the respondents had more than one sexual partner in the last 12 months. The average number of sexual partners in the last 12 months was about 8 (7.6). On average, young men had about 16 (15.6) lifetime sexual partners. About one in ten men (11%) reported engaging in transactional sex in the last 12 months. The majority of the respondents (98%) had used a condom, and almost half of the respondents (50%) reported using a condom during the last sexual intercourse. Less than half (42%) reported consistent condom use in the last 12 months (See table 2). The main reasons for inconsistent condom use were trusting partners (33%), being married (32%), and dislike of using condoms (20%).

Differentials in consistent condom use

Results in Table 3 show that the association between marital status (p=0.009), alcohol consumption (p=0.035), relationship with the partner (p=0.012), having children (p=0.006), survival status of parents (p=0.011) and consistent condom use was statistically significant. Higher proportions of

consistent condom use were evident among single young men (49%), those who did not consume alcohol (48%), had sexual intercourse with strangers (56%), had no children (49%), and those who had both their parents alive (49%).

Determinants of consistent condom use

According to Table 4, the predictors of consistent condom use among young male artisanal miners in Kassanda district were: marital status, attitude towards condom use, and survival status of parents. Married or cohabiting young male artisanal miners were less likely to use a condom consistently compared to single young men (OR=0.41; CI=0.19-0.87). Young male artisanal miners who had a neutral attitude towards condom use were less likely to consistently use a condom compared to those who agreed that condom use reduces sexual pleasure (OR= 0.30; 0.11-0.85). Concerning parents' survival status, young male artisanal miners who only had mothers as parents were less likely to consistently use a condom compared to those who had both their parents (OR= 0.37; 0.19-0.73).

Discussion

Young male artisanal miners' engagement in sexual intercourse (89%), multiple sexual partnerships (55%), and transactional sex (11%), is higher compared to the general population of young men of the same age in Uganda. The DHS report 2016²⁷ indicates that only 51% of young men aged 15-24 had sexual intercourse during the year preceding the survey, only 14% had more than one sexual partner, and only 6% engaged in transactional sex. Condom use during the last sex was lower among the artisanal miners (50% compared to 57% of young men in the general population). These findings are consistent with the findings of other studies conducted in the mining areas of Nigeria, Mozambique, and South Africa^{22, 28, 36}. A study conducted in South Africa established that mining operations increase the likelihood of multiple sex partners, high-risk sex partners, and condom-less sex³⁶. Another study conducted in Nigeria showed that young men and women in mining communities engage in transactional sex, majorly due to material, financial and social gain²⁸. A study conducted in Mozambique among the migrant miners revealed that 45% of the males reported having at least two sexual partners in the last 12 months²².

Table 3: Differentials of consistent condom use (n=258)

| Study variable | Category | Yes (n) | Yes (%) | p-value |
|---|----------------------|---------|---------|--------------|
| Age | 15-19 | 18 | 38.3 | 0.584 |
| | 20-24 | 90 | 42.7 | |
| Education level | No education | 7 | 53.9 | 0.666 |
| | Primary | 74 | 41.3 | |
| | Secondary+ | 27 | 40.9 | |
| Religion | Anglican | 20 | 36.4 | 0.914 |
| | Catholic | 30 | 44.1 | |
| | Muslim | 22 | 44.0 | |
| | Pentecostal | 25 | 43.1 | |
| | Others | 11 | 40.7 | |
| Marital status | Single | 82 | 48.5 | 0.009 |
| | Married/Cohabiting | 21 | 27.6 | |
| | Separated/Divorced | 5 | 38.5 | |
| Residence | At the mining site | 27 | 43.5 | 0.757 |
| | In the community | 81 | 41.3 | |
| Ethnicity | Muganda | 17 | 34.7 | 0.815 |
| | Munyankole-Mukiga | 33 | 49.3 | |
| | Mufumbira | 13 | 43.3 | |
| | Mukonjo | 6 | 45.0 | |
| | Munyolo-mutoro | 9 | 37.5 | |
| | Foreigners | 19 | 39.6 | |
| | Others | 11 | 39.3 | |
| Multiple sexual partnerships | Yes | 68 | 35.4 | 0.063 |
| | No | 40 | 46.9 | |
| Transactional sex | Yes | 15 | 48.4 | 0.432 |
| | No | 93 | 41.0 | |
| Head of household | Respondent | 83 | 40.7 | 0.480 |
| | Friend/Relative | 13 | 54.2 | |
| | Employer | 6 | 33.3 | |
| | Friend | 6 | 50.0 | |
| Lives with parents | Yes | 7 | 58.3 | 0.236 |
| | No | 101 | 41.1 | |
| Migration status | Non-migrants | 45 | 45.0 | 0.290 |
| | Migrants | 63 | 39.9 | |
| Has children | Yes | 37 | 32.5 | 0.006 |
| | No | 71 | 49.3 | |
| Alcohol use | Yes | 53 | 36.8 | 0.035 |
| | No | 55 | 48.2 | |
| Sexual partner's age | 12-17 | 20 | 43.5 | 0.054 |
| | 18-24 | 72 | 38.7 | |
| | 25+ | 16 | 36 | |
| Attitude on condom use (Condom use reduces sexual pleasure) | Agree | 84 | 43.5 | 0.117 |
| | Neutral | 6 | 23.1 | |
| Relationship with the sexual partner | Disagree | 18 | 46.2 | 0.012 |
| | Partner or spouse | 39 | 37.5 | |
| | Friend, acquaintance | 45 | 40.9 | |
| Whether parents are alive | Others | 24 | 54.5 | 0.011 |
| | All are alive | 79 | 49.4 | |
| | Father is alive | 6 | 40.0 | |
| | Mother is alive | 6 | 25.8 | |
| | All are dead | 17 | 35.3 | |

Table 4: Predictors of consistent condom use (n=258)

| Variable | Categories | P-value | Odds Ratios | 95% CI |
|-----------------------------|---------------------|--------------|-------------|-----------|
| Migration status | Non-migrants* | | | |
| | Migrants | 0.824 | 0.94 | 0.53-1.66 |
| Lives with parents | No* | | | |
| | Yes | 0.339 | 1.92 | 0.51-7.28 |
| Alcohol use | No* | | | |
| | Yes | 0.108 | 0.63 | 0.29-0.94 |
| Attitude towards condom use | Agree* | | | |
| | Neutral | 0.024 | 0.30 | 0.11-0.85 |
| | Disagree | 0.420 | 1.37 | 0.64-2.94 |
| Marital status | Single* | | | |
| | Married/Cohabiting | 0.02 | 0.41 | 0.19-0.87 |
| | Separated/Divorced | 0.52 | 0.66 | 0.18-2.37 |
| Age of partner | 12-17* | | | |
| | 18-24 | 0.456 | 0.76 | 0.36-1.57 |
| | 25+ | 0.335 | 1.73 | 0.57-5.31 |
| Relationship with partner | Partner/Spouse* | | | |
| | Friend/acquaintance | 0.919 | 0.97 | 0.52-1.79 |
| | Others | 0.343 | 1.49 | 0.65-3.40 |
| Multiple partners | No* | | | |
| | Yes | 0.333 | 1.34 | 0.74-2.40 |
| Parents alive | All are alive* | | | |
| | All are dead | 0.70 | 0.87 | 0.28-2.75 |
| | Father is alive | 0.65 | 0.80 | 0.25-2.56 |
| | Mother is alive | 0.004 | 0.37 | 0.19-0.73 |

This highlights the need for targeted interventions to address risky behaviors prevalent in this population³⁷.

The results from the study showed that marital status was significantly associated with consistent condom use, young male artisanal miners who were married/cohabiting were less likely to consistently use a condom as compared to those who were single (OR= 0.41; CI= 0.19-0.87). Married couples often find no reason for consistent condom use in marriage due to trust and the need for childbearing³⁶. This finding is consistent with the findings of a study conducted on South African miners which found out that married, divorced, or widowed individuals were less likely to use condoms as compared to unmarried individuals³⁸. The findings also agree with those of a study conducted in Uganda and South Africa that found out that married individuals are less likely to practice safer sex practices³⁹. The study established that condom use and HIV prevention behaviours include the perceptions that known and/or trusted partners, as well as monogamous relationships, are 'safe', rendering condom use unnecessary³⁹. Besides interventions to improve condom self-efficacy, regular HIV testing and awareness and use

of pre-exposure prophylaxis are among effective interventions for the prevention of HIV and STIs, especially for individuals who find condoms to be inappropriate in their relationships⁴⁰⁻⁴¹. Findings also revealed that young male artisanal miners who had only their mothers alive were less likely to consistently use a condom as compared to those who had all their parents alive. This highlights gendered roles in parenting concerning sex education where young men who lack fathers (figures) are at risk of risky sexual behaviors⁴². Mothers rarely engage boys on sexual and reproductive health issues including condom use and believe that engaging boys on such issues should be a father's role⁴². This finding is consistent with the findings from a study conducted in Eastern Uganda which established that while children and parents commonly discussed sexual abstinence, HIV and AIDS, and bodily changes, the least discussed topics were contraception and condoms⁴³. This was attributed to conservative attitudes towards adolescent sex where parents thought that communicating with their children about condoms and contraceptives connotes sex which makes it an embarrassing and uncomfortable topic as opposed to preventing HIV and sexual abstinence⁴³. This highlights a need to

promote parent-child communication on issues related to sexual and reproductive health. This will enable the young boys to obtain relevant information from their parents on various SRH issues including condom use which will in the end result in consistent condom use⁴⁴.

Relatedly, the young men's attitude towards condom use was statistically associated with consistent condom use, young male artisanal miners who had a neutral attitude towards condom use were less likely to consistently use a condom as compared to those who agreed that condom use reduces sexual pleasure. In this case, a neutral attitude leans towards inconsistent condom use and perhaps social desirability⁴⁵. This finding is in line with findings of a study conducted among Namibian Miners whereby the majority of respondents who agreed that condom use reduces sexual pleasure and also weakens the penis were less likely to consistently use a condom as compared to those who disagreed⁴⁶. Although the study established that most of the participants were aware of condom use, most of them did not use condoms because they trusted their partners, were married, and never liked condoms⁴⁶. Therefore, more needs to be done through behavior change communication to improve consistent condom use among artisanal miners⁴⁷. Awareness sessions need to be conducted on the dangers of unprotected sex⁴⁸. These should also be aimed at removing negative attitudes towards condom use.

Limitations

Due to the busy schedules of respondents, poor road network to the mines as well as unfavorable weather conditions, the sample size was small which might have contributed to the wider confidence intervals and failure of the observed associations to achieve statistical significance.

Also, due to the reliance on self-reporting of consistent condom use, one cannot exclude the possibility of under-reporting of inconsistent condom use owing to the result of social desirability bias. It is also important to note that people with multiple partners may not use condoms with their regular partners but use condoms with their casual partners.

Conclusion and recommendations

The findings showed that whereas sexual activity, multiple sexual relationships, and transactional sex

are markedly higher among young artisanal miners relative to their counterparts in the general population, the level of consistent condom use is low. This increases the risk for sexually transmitted diseases in ASM communities and beyond. Young men who were married/cohabiting, those who had a neutral attitude towards condom use, and those whose surviving parent was the mother were less likely to use condoms consistently. It is important to promote parent-child communication on SRH, and safer sex for both male and female young persons. Awareness raising on the dangers of unprotected sex and behavior change communication to promote responsible sexual behaviors among artisanal miners, including consistent condom use are essential. In addition to improving condom self-efficacy, regular STI and HIV testing and emergency use of pre and post-exposure prophylaxis should be promoted.

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Ethics approval and consent to participate

Ethical clearance to conduct this study was obtained from the TASO Research Ethics Committee (approval number TASO-2023-218) before data collection. Informed verbal consent from young men aged 18-24 before the interview was obtained. For young boys 15-17 years, assent was obtained from them after soliciting for consent from their parents/guardians or caregivers. For emancipated minors who did not live with their parents/guardians, consent was sought from them. This was also guided by the REC₂.

Authors' contributions

All authors conceived and designed the study. Natwijuka Patience conducted data collection, analyzed data, and prepared the initial draft of the manuscript. Stephen Ojiambo Wandera, Hanna Chidwick, Lydia Kaporiri, and Betty Kwagala reviewed and revised the manuscript. All authors approved the final manuscript.

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