

The Knowledge and Determinants of Sexual Health and Sexual Transmitted Infections Among Women in Saudi Arabia: A Nationwide Survey

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Background: Sexual health is a necessary part of any society because it significantly influences the quality of life. Women's knowledge regarding STIs and safe sex practices in Saudi Arabia has not been thoroughly investigated; therefore, this study aims to investigate and measure the knowledge and the determinants of sexual health and STIs among women in Saudi Arabia.

Methods: This study is a nationwide cross-sectional survey conducted through phone interviews in Saudi Arabia in 2021. This study included 1334 female participants aged 18 years or older.

Results: The study's results collectively show that women in Saudi Arabia have limited knowledge of sexual health and STIs. The primary causes are the lack of knowledge of different STIs-communicability, symptoms, and an overall lack of technical proficiency in the subject. The study analyzed factors associated with participants' knowledge of sexual health and sexually transmitted infections. Significant associations were found between knowledge and age, region, educational level, and family income. In the multivariable analysis, participants aged 20–29 had higher knowledge compared to those aged >60. Participants in the Eastern region had higher knowledge than those in the Southern region. Participants with less than a bachelor's degree had lower knowledge than those with a bachelor's degree or higher. Participants earning an average of 16,000 SAR to 19,999 SAR had higher knowledge than those with unstable monthly income.

Conclusion: The study found that women's understanding of sexual health and STIs in Saudi Arabia is low due to a lack of knowledge and awareness. Knowledge levels were correlated with educational levels; therefore, targeted health promotion initiatives are needed to increase understanding, particularly regarding condom use for HIV and STI prevention.

Keywords: women's health, STI, knowledge, sexual health, Saudi Arabia

Introduction

Sexual health is a necessary part of any society because it significantly influences the quality of life. The WHO defines sexual health as “a state of physical, emotional, mental and social well-being related to sexuality; it is not merely the absence of disease, dysfunction or infirmity”.¹ One of the critical indicators of sexual health is the individual ability to engage in safe sexual experiences that are characterized as being free of enforcement, discrimination, and violence.

Engaging in safe sexual experiences reduces the risks of sexually transmitted infections. Sexually transmitted infections (STIs), also known as Sexually Transmitted Diseases (STDs), “are caused by bacteria, viruses or parasites that are transmitted through unprotected sex (vaginal, anal, or oral) and skin-to-skin genital contact”.² STIs can be passed on from one individual to another during the experience of unprotected sex.

The global spread of STIs is a major public health concern, particularly in developing countries. Although most STIs can be treated, they can lead to serious health complications if left untreated.³ A late diagnosis or inadequate treatment of sexually transmitted illnesses can result in serious complications such as premature mortality, infertility, and ectopic pregnancy. Therefore, knowledge of safe sexual practices is valuable to personal and public health, hence, the importance

of addressing it.⁴ Nowadays, STIs have a significant impact on sexual and reproductive health globally. The WHO reported that more than 376 million people are at risk of contracting STIs.⁵ STIs encompass many diseases and conditions, put together from a global perspective, burden healthcare systems financially and socially.⁶

Addressing sexually transmitted infections (STIs) is still considered offensive in Saudi Arabia, where cultural norms pose a serious obstacle to freely discussing such private issues without fear of repercussions and shaming. In the case of Saudi Arabia, it has been posited that adults lack the needed knowledge and education that would help them protect themselves against the transmission of STIs. The diminished knowledge may very much result from the attitude towards the subject and the heightened sensitivity by which Saudi adults approach such topics.

Remarkably, data on sexually transmitted diseases among women in Saudi Arabia and females in other Islamic nations is considered limited.^{7,8} Also, this particular informational shortage has been confirmed by a systematic review conducted by Alomair et al, discussing the knowledge and attitudes of Muslim women worldwide toward sexually transmitted infections.⁷ Most published papers examining Saudi women's sexual health were mainly focused on university students. The researcher of the review posited that Saudi women lack sufficient sexual health knowledge, and their negative attitudes concerning sexually transmitted infections (STIs) created barriers to seeking sexual health information and guidance.

Furthermore,⁹ Albanghali and Othman conducted a study among university students in Abha, Saudi Arabia, in which a lack of knowledge of STDs and a need for educational programs have been reported.⁹ Besides, Balbeesi & Mohizea investigated the knowledge of STIs among Saudi women in 2015. They found that they were more knowledgeable about HIV/AIDS and the modes of transmission than other STIs. The knowledge of STI symptoms was higher among younger, more educated, and more affluent females.¹⁰

Demographic factors such as the level of education and attitudes towards the use of condoms significantly impact the sexual health of most Saudi adults. According to Filemban and his colleagues, educational level is substantially associated with the spread of sexually transmitted infections (STIs).¹¹ This study supports previous research findings by demonstrating that individuals with little or no education are more likely to contract STIs.

Adequate education is required to dispel myths regarding STIs, such as the common misconceptions concerning Acquired Immune Deficiency Syndrome (AIDS). Therefore, health practitioners must identify more effective ways to educate adults about STI prevention, especially regarding protected sexual practices.

Sex education helps adults make educated health decisions by influencing their behavior and increasing their understanding of STDs. Furthermore, sex education enhances awareness of STI manifestations and symptoms, ultimately leading to better detection and earlier medical interventions.¹² Therefore, local public health authorities may find it helpful to disseminate sex education materials in ways that are easy to understand, and that may not be found offensive or insensitive by the targeted audience or the public on a larger scale.

Among the notable and validated tools previously used in researching data related to sexual health and STIs include interviews, observation, and focus groups. Ivanova et al used in-depth interviews to gather detailed information regarding sexual and reproductive health (SRH).¹³ This method's disadvantages include potential time and resource intensiveness, subjectivity, limited generalizability, social desirability bias, and the complexity of the data analysis.¹⁴ Similarly, Svenkerud & Isachsen used face-to-face interviews to question sexually active women's socio-demographic characteristics and STI knowledge.¹⁵

In their studies, Khajehei et al and Zin et al used questionnaires to determine the participants' knowledge of STIs.^{16,17} Also, Chukwu et al utilized self-constructed questionnaires to survey 280 medical students at the University of Maiduguri, Borno State.¹⁸ Such researchers suffer low response rates, potential social desirability bias, inflexibility in adapting to unexpected replies, language and cultural barriers, incomplete or inaccurate responses, and the impact of poorly worded questions associated with using questionnaires.¹⁹

As highlighted previously, women's knowledge regarding STIs and safe sex practices in Saudi Arabia has not been thoroughly investigated. One study conducted among medical students reported that participants had proper attitudes toward dealing with STIs, which could be explained as due to their knowledge as medical students.⁶ Previously published studies are limited to specific sample surveys. Therefore, this study aims to investigate and measure the knowledge of sexual health and STIs among women in Saudi Arabia. This study has two major objectives: 1. To measure the level of knowledge of safe sex practices and STIs among women in Saudi Arabia. 2. To outline the associations between sociodemographic factors and the level of knowledge.

Methods

Research Design

This study is a nationwide cross-sectional survey conducted through phone interviews in Saudi Arabia in 2021.

Sampling and Sample Size

A proportional quota sampling technique was employed to acquire an equal distribution of participants stratified by age and gender across the 13 regions of Saudi Arabia. Based on the median age of Saudi adults (36 years) according to the Saudi General Authority for Statistics, two age groups (18–36 and 37+) were adopted, leading to a sample of 26 strata. The data collection system used, ZdataCloud[®], integrated eligibility, and sampling modules to control the sample distribution. The SDHNS sample size was calculated based on a medium effect size of 0.25. Participants were selected to empower the sample to compare between quota groups, with an 80% power and a 95% confidence level. Thus, each quota (age /region quota) required 50 participants with a total sample of 1300 participants.

Participant Recruitment

Participant recruitment was limited to Arabic-speaking females, Saudi nationals, and residents aged 18 years and older, generated via random phone number lists provided by the Sharik Association for Research and Studies. Participants were contacted by phone up to three times. If a potential participant did not respond to any of the three calls, a new potential participant's phone number was generated, given that the substitute participant demonstrates similar demographics (age group, gender, and region of residence). This process was repeated until the targeted quota was fulfilled.

Variables and Outcome Measures

The collected data included sociodemographic information of participants (age, educational level, marital status, and income). The region of Saudi Arabia was added as a variable due to its valuable insights and contribution to a comprehensive understanding of knowledge of sexual health. Sexual health behaviors and outcomes can vary across different regions due to various factors such as cultural norms, socioeconomic conditions, and access to healthcare services. Also, the outcome of the study will help policymakers to make targeted interventions based on each region. Knowledge was assessed through 5 questions pertinent to types, transmission, symptoms, causes, prevention, and cure of STIs, in addition to knowledge of safe sex practices.

Linguistic validation of the survey questions ensured that the questions and answers were understandable enough to generate the intended results. A focus group of 10 participants was asked to discuss and answer the survey questions, and an updated version was tested again with another focus group. Afterward, the electronic version of the survey was developed on the ZDataCloud, and a pilot test with 30 to 50 participants was interviewed by phone to ensure the survey's accuracy, quality, and data integrity. Per the pilot study results and feedback from the researchers and interviewers, the survey questions were edited further, and an improved version was developed. This process was repeated every time the survey questions were updated and edited.

All questions had to be answered for the responses to be successfully submitted to the database. All data were coded and stored on the ZdataCloud database [12].

Statistical Analysis

The data was analyzed using SPSS software. Frequency and percentage were used for presenting categorical data. Knowledge score was calculated using the sum function, and the cut-off points for categorizing participants as knowledgeable and low in knowledge were calculated using 75 percentiles. The association of knowledge with participants' demographic characteristics was calculated using bivariate analysis (chi-square). Multivariable analysis using logistic regression was used to determine the determinants of sexual health and sexually transmitted diseases among women in Saudi Arabia.

Ethical Considerations

The Sharik Association for Health Research Ethics Committee approved this research project (Approval IRB number 01–2022.) in alignment with the National Research Ethics Regulations. Participants' consent was obtained verbally during the phone interview and was documented on the data collection system. The research complies with the Declaration of Helsinki.

Results

Participant Characteristics

A total of 1660 women were contacted through phone in 2021, 1334 women agreed to participate in the research during the three weeks of data collection (response rate 80.36). As shown in Table 1, Most of the study participants were Saudi nationals (98.4%). More than half of them were between the ages of 20–39 years old (58%). Most of the participants

Table 1 Demographic Characteristics of Study Participants

Variables	Frequency	Percentage %
Nationality		
Saudi	1321	98.4
Non-Saudi	22	1.6
Age		
<19	37	2.8
20–29	477	35.8
30–39	303	22.7
40–49	307	23.0
50–59	147	11.0
>60	63	4.7
Region		
Northern	412	30.9
Middle	204	15.3
Eastern	103	7.7
Western	203	15.2
Southern	412	30.9
Marital status		
Not married	594	44.5
Married	740	55.5
Educational level		
Below bachelor	608	45.6
Bachelor and above	726	54.4
Average family income		
Less than 5999	327	24.5
6000 to 10,999	367	27.5
11,000 to 15,999	255	19.1
16,000 to 19,999	125	9.4
More than 20,000	99	7.4
Unstable	161	12.1

were from the Northern and Southern regions of Saudi Arabia (30.9% and 30.9%, respectively). Regarding marital status, a slightly higher percentage of participants fell in the Married category (55.5%). Regarding education, 54.4% of the participants had a bachelor's degree or higher. Around 28% of participants had an average family income ranging between 6000 SAR and 10,999 SAR.

Knowledge of Participants Towards Sexual Health and Sexually Transmitted Diseases

This domain assessed knowledge of the types, transmission, symptoms, causes, prevention, and cure of STIs. As shown in Table 2, most of the participants were knowledgeable of HIV (77.5%), Syphilis (62.4%), Gonorrhea (43.9%), and Genital herpes (42.1%) as STIs. On the other hand, a majority of the participants were not aware that Chlamydia (15.6%), Pubic lice and Scabies (22.4%), Genital warts (23.9%), Papillomavirus infection (26.1%), Genital ulcer (26.5%), Trichomoniasis (27.5%), Chancroid (29.6%) were types of STIs. A significant percentage of participants

Table 2 Frequency Distribution of Participants' Response to Knowledge of Sexual Health and Sexually Transmitted Diseases

Variable	Yes		No	
	Freq	%	Freq	%
Would you please list any STIs that you know of?				
Gonorrhea	586	43.9	748	56.1
Syphilis	832	62.4	502	37.6
Chancroid	395	29.60	939	70.40
HIV/AIDS	1034	77.5	300	22.5
Genital herpes	561	42.1	773	57.9
Genital ulcer	353	26.5	981	73.5
Trichomoniasis	367	27.5	967	72.5
Chlamydia	208	15.6	1126	84.4
Pubic lice and scabies	299	22.4	1035	77.6
Genital warts	319	23.9	1015	76.1
Papillomavirus infection	348	26.1	986	73.9
Can STIs be transmitted?	1121	84.0	213	16.0
Do you know if the following are considered possible symptoms of STIs?				
Abnormal vaginal discharge	846	63.4	488	36.6
Genital ulcers	689	51.6	645	48.4
Genital warts	411	30.8	923	69.2
Genital itching	697	52.2	637	47.8
Pain during sexual intercourse	625	46.9	709	53.1
Pain during urination	519	38.9	815	61.1
Lower abdominal pain	382	28.6	952	71.4

(Continued)

Table 2 (Continued).

Variable	Yes		No	
	Freq	%	Freq	%
How would you identify abnormal vaginal discharge?				
Greater amount than usual	703	52.7	631	47.3
Odor	1033	77.4	301	22.6
Yellow or green discharge	975	73.1	359	26.9
Powdery liquid	278	20.8	1056	79.2
Foamy liquid	359	26.9	975	73.1
Blood-stained liquid	654	49	680	51
What are the possible Media for STI transmission?				
Bacteria	801	60	533	40
Virus	900	67.5	434	32.5
Fungus	789	59.1	545	40.9
Poor feminine hygiene	705	52.8	629	47.2
Poor masculine hygiene	736	55.2	598	44.8
Using contaminated water	356	26.7	978	73.3
Sexual intercourse	832	62.4	502	37.6
Blood transfusion	545	40.9	789	59.1
Needle sharing	448	33.6	886	66.4
Sharing clothes, personal belongings	289	21.7	1045	78.3
Sharing food	93	7	1241	93
Mother-to-child	287	21.5	1047	78.5

(84%) knew that STIs were transmittable and that treating the infected individual, as well as the partner, was necessary (92.8%).

Regarding the symptoms of STIs, more than half of the participants recognized abnormal vaginal discharge (63.4%), genital ulcers (51.6%), and genital itching (52.2%) as key STI symptoms. Almost half of the participants recognized pain during sexual intercourse as a key symptom (46.9%), and less than half recognized genital warts, pain during urination, and lower abdominal pain as key symptoms (30.8%, 38.9%, 28.6%, respectively). Furthermore, most participants failed to identify vaginal discharge presenting powdery or foamy liquid as an abnormality (20.8%, and 26.9%, respectively). However, more than half of the participants recognized excessive vaginal discharge, odorous vaginal discharge, and green or yellow discharge as abnormal (52.7%, 77.4%, and 73.1%, respectively).

A sweeping majority of participants did not recognize meal sharing as a possible mode for STI transmission (93%). Mother-to-child transmission through sharing clothes and personal belongings was also unidentified by 78% and 78.3% of participants, respectively. On the other hand, most participants recognized that viruses, sexual intercourse, and fungus were possible media for STI transmission. Most participants (73.6%) believed that some types of STIs could be cured.

Participants' knowledge of safe sex practices was measured through five questions. The level of knowledge of safe sex practices was generally acceptable, except for the use of condoms as a preventive measure for STI/HIV transmission, which was correctly stated by only 42.4% of the participants.

The Knowledge Scoring

The calculation of the knowledge score ranged between (0–44). The cut-off points for categorizing participants as knowledgeable and low in knowledge were calculated using 75 percentiles. Low-knowledge participants had a score below 28, whereas knowledgeable participants had a score of 28 and above.

Factors Associated with Participants' Knowledge Level of Sexual Health and Sexually Transmitted Infections

Participants', region, educational level, and family income showed significant associations among the variables examined in the bi-variate analysis. Variables with P-value <0.05 were considered for the multivariable logistic analysis, as shown in Table 3. Age were also added due to it practical significant. In the multivariable logistic analysis, participants aged between 20 and 29 had 2.09 times higher knowledge than those aged >60 (CI 1.03–4.23). Participants in the Eastern Region had 1.93 times higher knowledge than those in the Southern Region (CI 1.23–3.04). In terms of education, participants with less than a bachelor's degree had 0.65 times lower knowledge than those with a bachelor's degree and above (CI 0.51–0.84). Regarding income, participants with an average of 16,000 SAR to 19,999 SAR had 2.51 times higher knowledge than participants with unstable monthly income (CI 1.48–4.26), as shown in Table 4.

Table 3 Association of Knowledge with Participants' Demographic Characteristics

Variables	Level of Knowledge		χ^2	P value
	Low Knowledge N (%)	Knowledgeable N (%)		
Nationality			0.031	0.85
Saudi	976 74.4%	336 25.6%		
Non-Saudi	6 72.7%	22 27.3%		
Age			9.591	0.088
<19	32 86.5%	5 13.5%		
20–29	342 71.7%	135 28.3%		
30–39	224 73.9%	79 26.1%		
40–49	225 73.3%	82 26.7%		
50–59	116 78.9%	10 15.9%		
>60	53 84.1%	10 15.9%		

(Continued)

Table 3 (Continued).

Variables	Level of Knowledge		X ²	P value
	Low Knowledge N (%)	Knowledgeable N (%)		
Region				
Northern	322 78.2%	90 21.8%	14.767	0.005*
Middle	147 72.1%	57 27.9%		
Eastern	62 60.2%	41 39.8%		
Western	154 75.9%	49 24.1%		
Southern	307 74.5%	105 25.5%		
Marital status			0.845	0.358
Not married	449 75.6%	145 24.4%		
Married	543 73.4%	197 26.6%		
Educational level			10.613	0.001*
Less than a bachelor's degree	478 78.6%	130 21.4%		
Bachelor's degree and above	514 70.8%	212 29.2%		
Average family income			34.435	<0.001*
Less than 5999	258 78.9%	69 21.1%		
6000 to 10,999	281 76.6%	86 23.4%		
11,000 to 15,999	191 74.9%	64 25.1%		
16,000 to 19,999	77 61.6%	48 38.4%		
More than 20,000	56 56.6%	43 43.4%		
Unstable	129 80.1%	32 19.9%		

Note: *P-value < 0.05.

Discussion

The findings of this study on the knowledge and determinants of sexual health and sexually transmitted diseases among women in Saudi Arabia suggested that only a quarter of the respondents (25.6%) were considered knowledgeable. Although the overall level of knowledge was considerably low, a significant proportion of this lack of knowledge is referred to the lack of “technical” knowledge pertinent to the types of STIs (only 2 STIs were correctly identified by more than half of the participants), and the causes and modes of transmission, where only 7 out of 12 were correctly identified

Table 4 Determinants of Sexual Health and Sexually Transmitted Diseases Among Women in Saudi Arabia

Variables	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Age		
<19	0.82 (0.26–2.64)	0.66 (0.201–0.160)
20–29	2.09 (1.03–4.23)*	1.74 (0.835–0.63)
30–39	1.86 (0.90–3.85)	1.59 (0.751–3.39)
40–49	1.93 (0.93–3.97)	1.65 (0.786–3.50)
50–59	1.41 (0.64–3.10)	1.22 (0.549–2.73)
>60	I	I
Region		
Northern	0.87 (0.59–1.12)	0.71 (0.51–0.99)*
Middle	1.13 (0.77–1.65)	0.99 (0.67–1.46)
Eastern	1.93 (1.23–3.04)*	1.61 (1.0–2.58)*
Western	0.93 (0.63–1.37)	0.83 (0.55–1.25)
Southern	I	I
Educational level		
Below bachelor	0.65 (0.51–0.84)*	0.81 (0.62–1.08)
Bachelor and above	I	I
Average family income		
Less than 5999	1.07 (0.67–1.72)	1.10 (0.68–1.77)
6000 to 10,999	1.23 (0.78–1.94)	1.20 (0.75–1.91)
11,000 to 15,999	1.35 (0.83–2.18)	1.37 (0.84–2.25)
16,000 to 19,999	2.51 (1.48–4.26)*	2.57 (1.49–4.45)*
More than 20,000	3.09 (1.77–5.39)*	2.96 (1.67–5.25)*
Unstable	I	I

Note: *P-value < 0.05.

by more than half of the participants. The poor knowledge of the role needle sharing plays in STI transmission (33.6%), has been confirmed by another study titled Sexually Transmitted Infections in Saudi Arabia,²⁰ in which the author posits that health promotion in terms of blood-borne infection prevention is not sufficiently carried out in the conservative Saudi society, as much as it may be in other countries around the world. Regarding STI symptoms, 4 out of 7 symptoms were correctly identified by more than half of the participants. Similarly, a systematic review based on eighteen studies of 13 Muslim countries confirmed the findings of this study in terms of the poor knowledge of STI signs and symptoms, which may be due to the diminished openness in offering and receiving information pertaining to sexual practices.^{7,21}

On the other hand, a sweeping majority understood the importance of treating partners (92.8%) and were aware that cures are available for STIs (73.6%), and more importantly, most of the participants demonstrated knowledge of 4 out of 5 safe sex practices. The role of condom use in the prevention of STIs and HIV scored the lowest level of knowledge among the five sex-safe practices, a finding which once more has been confirmed by Madani, where the lack of promotion regarding safe sex practices was associated with conservatism that characterizes the Saudi culture.²⁰ This

was also confirmed by a recent study by Alsubaie, (2020); it was found that 64.3% of the study participants had poor knowledge of HIV and STIs.²²

The results of this study also revealed that participants with lower levels of education had less knowledge of sexually transmitted diseases compared to college degree holders (21.4% compared to 29.2%). This association between the level of education and knowledge of STIs is mirrored in another study by,¹¹ demonstrating the prevalence of STIs among less or non-educated individuals. Synthesis of the findings of both studies confirms that less educated individuals constitute a high-risk group, since STIs are more prevalent among them. Identifying high-risk groups is one of the main opportunities presented by this study to introduce calibrated and focused health promotion programs.

Moreover, the findings of this study revealed that the lowest knowledge score for safe sex practices was attributed to the role of condom use in preventing HIV and STIs (42.4%). This deficiency is particularly worrying from a public health perspective, especially given that other studies have confirmed that STIs are higher among non-condom users.¹¹ According to WHO: Global Strategy for the Prevention and Control of Sexually Transmitted Infection: 2006–2015: Breaking the Chain of Transmission, “condom use is considered the single, most efficient, available means to reduce the sexual transmission of both HIV and STI”. Hence, focusing health promotion programs on the advantages of condom use and how such use is effective in reducing HIV and STI contraction should be a focus for public health officials, especially among high-risk groups.

Another finding in this study is the diminished level of knowledge of sexually transmitted diseases among unmarried women (75.6%).²³ This contrast in the level of knowledge associated with the female’s marital status has been confirmed by another study conducted among women residing in North rural Vietnam.²⁴ Those findings support calibrated public health efforts in identifying high-risk groups.

Significant associations were found between knowledge and age, region, educational level, and family income. In the multivariable analysis, participants aged 20–29 had higher knowledge compared to those aged >60. Participants in the Eastern Region had higher knowledge than those in the Southern Region. Participants with less than a bachelor’s degree had lower knowledge than those with a bachelor’s degree or higher. Participants earning an average of 16,000 to 19,999 SR had higher knowledge than those with unstable monthly income.

Conclusion

In conclusion, this study provides valuable information on the knowledge and determinants of sexual health and STDs among women in Saudi Arabia. One of the main strengths of this study, which could also be viewed from a different perspective as a limitation, is the fact that the study focuses on identifying the level of participants’ knowledge. This is a strength because it enables pinpointing the shortages and gaps in knowledge in terms of different aspects pertinent to sexual health. However, an ensuing limitation may be the lack of deep focus on attitudes and practices. Hence, further studies are needed to address this particular limitation. Another main strength of this research is the usability of the findings in creating targeted health promotion campaigns that are aligned with the clearly identified gaps in knowledge. A future study focused on male knowledge, attitudes, and practices as pertinent to sexual health may be helpful in terms of creating a reference point for comparing and contrasting with the female population in Saudi Arabia.

The study’s findings indicate that women’s general understanding of sexual health and STDs in Saudi Arabia is quite low. The main causes appear to be a lack of knowledge and awareness about the different types of STIs, the means of transmission, and the identification of symptoms. However, many of the participants demonstrated knowledge of the importance of treating partners, the existence of cures, and safe sex practices. Using condoms in STI and HIV prevention was found to have the lowest knowledge score. Knowledge levels were shown to be correlated with educational levels and marital status. These findings demonstrate the necessity for calibrated and targeted health promotion initiatives, particularly those aimed at high-risk populations. Regarding preventive measures and health promotion efforts, public health officials need to focus on raising awareness regarding safe sex practices, especially the role of condom use in reducing HIV and STI transmission.

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