

Knowledge and attitude regarding HIV/AIDS in general population of Northern region of Saudi Arabia

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Abstract

Introduction: Gap in knowledge and fear of infection with negative attitude towards human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) are common in different cities across Saudi Arabia. The objectives of this study were to determine knowledge and attitude regarding HIV/AIDS among general population in Hail, Northern city in Saudi Arabia.

Material and methods: A cross-sectional study was conducted among general population of Hail, Northern city of Saudi Arabia. A total of 388 participants were selected through multi-stage cluster sampling from different districts of the city. A validated and structured questionnaire was used to determine the knowledge and attitude levels, and logistic regression analysis was applied to define the association of knowledge and attitude levels with sociodemographic characteristics. A p -value < 0.005 was considered statistically significant.

Results: Out of 388 study participants, the majority presented inappropriate knowledge (42.5%) and negative attitude (54.4%). In univariate analysis, age group of 16-25 years and unmarried (OR: 1.93, 95% CI: 1.27-2.92%, $p = 0.002$; and OR: 1.90, 95% CI: 1.23-2.92%, $p = 0.003$, respectively) were significantly associated with inappropriate knowledge level. Age group of 16-25 years, unmarried, and female gender (OR: 2.54, 95% CI: 1.77-3.86.92%, $p = 0.000$; OR: 1.84, 95% CI: 1.22-2.76%, $p = 0.003$; and OR: 2.42; 95% CI: 1.56-3.74%, $p = 0.000$, respectively) were significantly associated with negative attitude towards HIV/AIDS. After adjustment of covariates, age group of 16-25 years and female gender (OR: 2.54, 95% CI: 1.25-5.14%, $p = 0.009$; and OR: 2.14, 95% CI: 1.56-3.30%, $p = 0.001$, respectively) were significantly associated with negative attitude toward HIV/AIDS.

Conclusions: The present study found that general population had negative attitude toward HIV/AIDS. Extensive health education campaign should be provided to the vulnerable groups of the society for rationale control and management of HIV/AIDS.

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Introduction

Human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) is the major public health issue, with 60 million infected humans from the start of the epidemic in 1981 [1]. More than seven thousands new HIV/AIDS infections occur every day, while an estimated 4,000 HIV/AIDS-infected people die every day globally [1]. Out of those who are infected, 95% are not aware of their HIV/AIDS status [1]. Most affected regions are sub-Saharan Africa with the prevalence higher than 5%, while in Eastern Europe, and South and Southeast Asia, it is estimated as 0.8% and 0.3%, respectively [2-4].

A survey study done in Asir region, Saudi Arabia, among primary healthcare (PHC) physicians working in 238 PHC centers in the province, revealed several gaps in their knowledge regarding HIV/AIDS [5]. Another similar study was performed in the same region, with a questionnaire given to two randomly selected groups of students, including experimental group ($n = 335$), in which students were provided with health education regarding HIV/AIDS, and another group of students ($n = 503$), who did not receive health education. The study concluded that students' knowledge about AIDS was inadequate, and the impact of isolated one-session AIDS education lecture was less than satisfactory [6]. As for other cities, a study (2017) was done in Riyadh, Saudi Arabia, showing that there is still scarcity of knowledge about the most important aspects of sexually transmitted infections (STIs), especially the recognition of STIs' clinical features and modes of transmission/spread [7].

The surveillance of HIV/AIDS still faces challenges in Saudi Arabia [8]. The first incidence of acquired immunodeficiency syndrome (AIDS) from the Kingdom of Saudi Arabia (KSA) was reported in 1984, and by the end of 2013, around 1,509 patients were diagnosed with HIV infection. Recently in 2018, the Saudi Ministry of Health released that the incidence of HIV in Saudi Arabia is 3 cases of HIV for every 10,000 of the population [9]. Surveillance of HIV/AIDS have a number of issues in KSA, even good services provided in the management of HIV/AIDS, including anti-retroviral therapy, good diagnostic laboratories, and follow-up of patients during medical therapy. Design of preventive measures and health promotion regarding HIV/AIDS are required as well as the basic understanding of knowledge level and attitudes toward HIV/AIDS. There is no study conducted in the Northern region of Saudi Arabia on HIV/AIDS. Therefore, the objectives of the study were to determine the knowledge and attitude levels among general population of Northern region of Saudi Arabia toward HIV/AIDS.

Material and methods

Study setting, design, and period

This cross-sectional study was conducted in city of Hail, which is a Northern city of KSA, having total estimated po-

pulation of seven hundred thousand residents. The study was conducted from September to December, 2021.

Sample size and sampling technique

Sample was calculated using WHO software for sample size determination in health studies; sample size was calculated based on proportion of knowledge and attitude regarding HIV/AIDS in general populations, measured by a previous study [10], where good knowledge was considered 50% and positive attitude 45%. To measure sample size by using proportions of 5%, 7.5%, and 15% at confidence level 95% and bound of error 3%, the estimated sample size was calculated to be 381 and 388, respectively. Therefore, considering the largest sample, a minimum of 388 participants were included in the study. Sampling technique employed was a multi-stage cluster sampling; first, the cluster and the strata within the cluster were selected, and then the household through systematic random sampling were obtained.

Instrument and data collection

All individuals with age between 16 to 60 years were included in the study. The study instrument was validated questionnaire [11], which comprised of three sections. Part 1 was related to socio-demographic characteristics, and part 2 and 3 were associated with knowledge and attitude regarding HIV/AIDS, respectively. Knowledge of HIV/AIDS of fishermen was assessed by 9 items questionnaire, which included questions regarding transmission of HIV/AIDS. Attitude towards HIV/AIDS were assessed by a 5-item questionnaire, which included questions on information sharing and working with HIV/AIDS patient. The questionnaire was prepared in English version, translated into local language (Arabic), and verified for consistency. Before final data collection, this questionnaire was pre-tested on fifty persons in another Northern city, and the results were used to improve phrasing of questions in this instrument.

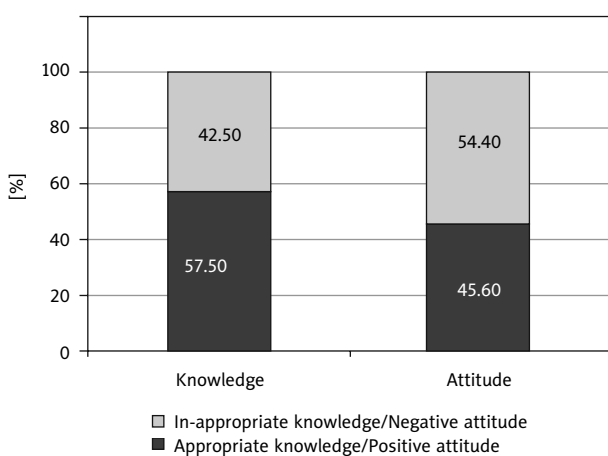
Scoring

The knowledge scale was based on an instrument developed by Eckstein [12], containing statements about disease presentation, transmission, precaution, and prevention, and scored as 'Yes', 'No', with 1 and 0 scores, respectively. Correct responses were summed on a 9-point rating scale, and those who had a HIV knowledge index equal or more than 7 were considered as having appropriate HIV/AIDS knowledge, whereas those who had scores below 7 were considered as having inappropriate knowledge.

The attitude scale was based on an instrument for measuring HIV/AIDS attitudes [13], and comprised of items probing empathic and avoidance behavior. Likert's scale ranging from 'disagreement', 'do not have any idea', and 'agreement', with 0, 1, and 2 scores, respectively, was used. Correct responses were summed on 10-point rating scale,

Table 1. Socio-demographic characteristic of study participants

Variables	Frequency, n = 388	Percentage (%)
Age (years)		
16-25	235	60.6
26-60	153	39.4
Gender		
Male	168	43.3
Female	220	56.7
Marital status		
Single	262	67.5
Married	126	32.5
Education status		
Basic	175	45.1
Higher	213	54.9
Sources of HIV/AIDS information		
Electronic media (social, TV, and radio)	313	80.67
Printed media (newspapers)	75	19.33

**Figure 1.** Knowledge and attitude levels among study participants

and those participants with attitude toward HIV/AIDS index equal to 7 or more were considered as positive HIV/AIDS attitude, and those who scored below 7 were deemed having negative attitudes.

Data analysis

Epi Data Entry software version 1.3 was applied for data entry. Data was entered twice, and then cleaned for any missing variables. Data was analyzed using software SPSS version 23. Descriptive statistics of socio-demographic variables, knowl-

edge, and attitude factors was presented as mean, standard deviation, and frequency percentages. Knowledge and attitude scores were converted into categories, including appropriate/inappropriate knowledge and positive/negative attitude. Logistic regression was utilized to determine the association of socio-demographic characteristics with knowledge and attitude score. *P*-value of less than 0.05 was considered statistically significant.

Ethical considerations

The study was approved by Ethical Review Committee of University of Hail. Before enrolling participants, key stakeholders operating in the study areas were informed about the nature and objectives of the research. Participants were informed about the study objectives and procedures, and informed consent was obtained from every study participant. Interviews were conducted in a private room in order to ensure privacy, no sharing of information, and even the name was not mentioned in questionnaire. Counseling was done after interview, and participants were free to withdraw from the study at any time; also, there was no direct benefits to participants.

Results

The mean age of our data set was 27 years ($SD \pm 1.1$), more than half (60.6%, 57.7%, and 67.5%) of the study participants belonged to the age group between 16 and 25 years, females, and singles, respectively. About 54.9% had higher education and major (80.67%) source of information regarding HIV/AIDS from electronic media (Table 1).

The mean score of knowledge and attitude about HIV/AIDS among the study participants were 6.61 ($SD \pm 1.19$) and 6.31 ($SD \pm 2.29$), respectively. Approximately half (42.5%) of the respondents presented inappropriate knowledge and 54.4% had negative attitude toward HIV/AIDS (Figure 1). 99.5% and 98.5% of the respondents knew that HIV/AIDS can be transmitted through unprotected sexual contact and unsafe blood transfusion, respectively, and only 94.1% knew that it can be transmitted through needle-sharing of infected person. More than two third of the participants (80.2%) reported that HIV/AIDS can be transmitted through placenta from mother to child (Table 2). Age group (range, 16-25 years), female gender, and being single (OR: 1.93, 95% CI: 1.97-2.92%, $p = 0.002$; OR: 2.54, 95% CI: 1.67-3.86%, $p = 0.000$; OR: 1.84, 95% CI: 1.22-2.76%, $p = 0.003$; and OR: 2.42; 95% CI: 1.56-3.74%; $p = 0.000$, respectively) were more than two times more likely to present inappropriate knowledge and negative attitude toward HIV/AIDS. No significant association was observed for inappropriate knowledge and other socio-demographic variables (Table 3).

On multivariate analysis, age group (range, 16-25 years) and female gender were more likely to present negative attitude toward HIV/AIDS among the study participants. There were no significant associations of socio-demographic characteristics with the level of knowledge toward HIV/AIDS after adjusting for covariates (Table 4).

Table 2. Knowledge about HIV/AIDS among study participants

Variables regarding knowledge about HIV/AIDS	Correct response	Frequency, n = 388	Percentage (%)
HIV/AIDS transmits by mosquito bite	False	267	68.8
HIV/AIDS transmits through sharing food utensils with infected person	False	274	70.6
HIV/AIDS transmits through exposure of coughing or sneezing of infected person	False	277	71.4
HIV/AIDS transmits through sharing toilet seat with infected person	False	283	72.9
HIV/AIDS transmits through unprotected sexual contact	True	386	99.5
HIV/AIDS transmits through unsafe blood transfusion	True	382	98.5
HIV/AIDS transmits through sharing needle with infected person	True	365	94.1
HIV/AIDS transmits from mother to child during pregnancy	True	311	80.2
HIV/AIDS transmits through dentistry tool contaminated with infected person	True	306	78.9

Table 3. Comparison of knowledge, attitude, and practices levels regarding HIV/AIDS according to socio-demographic characteristics (unadjusted)

Variables	Inappropriate knowledge	Unadjusted OR (95% CI)	p-value	Negative attitude	Unadjusted OR (95% CI)	p-value
Age (years)						
16-25	80	1.93 (1.27-2.92%)	0.002	142	2.54 (1.67-3.86%)	0.000
26-60	73			62		
Gender						
Female	75	1.16 (0.76-1.74%)	0.461	77	1.84 (1.22-2.76%)	0.003
Male	90			134		
Marital status						
Single	98	1.90 (1.23-2.92%)	0.003	161	2.42 (1.56-3.74%)	0.000
Married	67			50		
Education status						
Basic	66	1.43 (0.95-2.15%)	0.083	101	0.782 (0.52-1.17%)	0.782
Higher	99			110		

Table 4. Comparison of knowledge, attitude, and practices levels regarding HIV/AIDS according to socio-demographic characteristics (adjusted)

Variables	Inappropriate knowledge	Unadjusted OR (95% CI)	p-value	Negative attitude	Unadjusted OR (95% CI)	p-value
Age (years)						
16-25	85	0.61 (0.31-1.22%)	0.169	149	2.54 (1.25-5.14%)	0.009
26-60	80			62		
Gender						
Female	75	1.23 (0.80-1.87%)	0.332	77	2.14 (1.39-3.30%)	0.001
Male	90			134		
Marital status						
Single	98	0.81 (0.40-1.65%)	0.573	161	1.20 (0.58-2.46%)	0.616
Married	67			50		
Education status						
Basic	66	1.19 (0.77-1.83%)	0.420	101	1.07 (0.69-1.66%)	0.752
Higher	99			110		

Discussion

This present study found that significant proportion of general population presented with negative attitudes toward HIV/AIDS, and many gaps in the knowledge and attitude of HIV/AIDS in a survey revealed that considerable proportion of general population have inappropriate knowledge, negative attitude toward HIV/AIDS in different key domain, such as essential components of knowledge and attitude toward HIV/AIDS.

Study results are consistent with the level of HIV/AIDS attitude found in other research among general populations of different countries [14, 15], with a reason for this attitude being social stigma in the society.

Most of our study participants were young (60.6%), and young people continue to be among the groups with the highest risk of HIV infection. This finding is consistent with results of other studies carried out in South Africa and USA [16-18]. When they were asked about mode of HIV/AIDS spread, a high percentage did not know about the source through which the infection could spread; this is also in line with findings reported by other authors [19]. In this study, more than half of the participants were females. These results are in concordance with the level of HIV/AIDS knowledge found in other research in different countries [3, 20-22], suggesting that knowledge among general populations is adequate only due to high level of literacy rate.

In this study, there is no difference among knowledge level group when compared with socio-demographic factors. This is similar to other studies among general population, where education level and age categories were significantly associated with HIV/AIDS knowledge level [23-25]. One reason for the low level of knowledge reported in these studies is that, as a conservative Muslim society, Saudi Arabia has certain social and cultural barriers to discuss and address problems relating to sexuality or STD, including HIV/AIDS.

A majority of respondents believed that HIV/AIDS was a consequence of deviation from moral life. HIV/AIDS as a social problem resulting from immorality, a characteristic of widely shared sense that most of the populations in developing countries has worst issues, such as poverty, inequality, crime, etc. as well as the sense of moral decline in individual precedes of HIV/AIDS [26]. Also, there is more rural than urban populations associated with HIV/AIDS with an immoral lifestyle.

The results of the study showed that the majority of study respondents had negative attitude toward HIV/AIDS, but usually all of them were ready to care for and help HIV/AIDS patients. Other investigators have reported consistent presentation for negative attitude toward HIV/AIDS among general population [27-28].

Study participants blamed shared confidentiality for emotional stress and stigmatization that they experience among HIV/AIDS patients. They felt that patients is powerless, and experience moral dilemmas when dealing with the consequences of not being able to disclose HIV/AIDS status to family, relatives, and partners, which are consistent

with finding of other studies carried out in Uganda, South Africa, and Canada. In these studies, 60% to 80% of HIV/AIDS patients did not disclose their disease to any member of family or relatives [29, 30].

The current study has the following limitations. There is lack of statistical significance between knowledge level and attitude toward HIV/AIDS regarding sexual activity according to socio-demographic characteristics. The study was cross-sectional in nature, which precludes inferring causality. Additionally, as with many epidemiological studies, we relied on self-reporting to measure sensitive risk behaviors. Therefore, our measures of association may underestimate the real effect. Due to various social taboos, and cultural and religious issues, the participants felt embarrassed to discuss problems concerning HIV/AIDS epidemic.

Conclusions

The study identified substantial gap in the knowledge and negative attitude toward HIV/AIDS among general population. Mass education and HIV/AIDS favorable environment among fishermen is urgently needed to prevent spread of HIV/AIDS in this vulnerable group of the society. Most of the respondents reported that they did not hear about HIV/AIDS. The main source of information was found to be the mass media, which is not accessible to every part of the society, particularly in rural areas. This gap should be filled by dissemination of information using schools and health institution wherever they are available, for they seemed to play unsatisfactory role in our study. The use of television and radio for the dissemination of HIV/AIDS information should increase, since most of the fishermen used that medium, as indicated in this study.

Conflict of interest

The authors declare no conflict of interest.

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