JIDC | THE JOURNAL OF INFECTION IN DEVELOPING COUNTRIES

Original Article

Prevalence and behavioral risk factors for STIs/HIV among attendees of the Ministry of Health hospitals in Saudi Arabia

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Abstract

Introduction: Sexually transmitted infections (STI) are a major public health, social, and economic problem leading to morbidity, mortality, and stigma. This study was conducted to determine the prevalence of STIs, investigate behavioral risk factors and the relationship between the STIs/HIV and demographic factors.

Methodology: A cross-sectional survey was conducted between 2013 and 2014 among attendees of the Ministry of Health hospitals.

Results: The total number of participants was 3,994 (2,441 males and 1,553 females), with a mean age of 31.95 ± 9.45 years (range 12 to 77 years). The prevalence of STIs and HIV was 6.2% and 0.05% respectively. The mean age for infected people with STIs was 29.42 ± 7.51, vs. 32.12 ± 9.55 for non infected ($p < 0.05$). There was no diffference between infected and non infected people regarding gender, occupation and marital status. The prevalence of STIs was more commonly reported among non-Saudi (10.9%). Drug use (OR = 4.74; 95%; CI: 3.47–6.48), intravenous drug use (OR = 4.51; 95% CI: 1.45–13.12), illegal sex (OR = 10.7; 95% CI: 7.62–13.32), sex for money (OR = 6.36; 95% CI: 4.52–8.93), sex for pleasure (OR=9.76; 95% CI: 7.29–13.07) were significantly associated with STIs.

Conclusion: The prevalence of STIs including HIV in Saudi Arabia is low compared to other countries in the region and globally.

Key words: Prevalence; STI; HIV; behavioral risk factors; KSA.

J Infect Dev Ctries 2015; 9(4):402-408. doi:10.3855/jidc.5964

(Received 26 September 2014 – Accepted 27 December 2014)

Introduction

Sexually transmitted infections (STIs) are a major public health problem and are one of the most common causes of illness and death in the world [1]. The World Health Organization (WHO) estimated a total of 499 million new cases of curable STIs in adults per annum, mainly in South and South East Asia and sub-Saharan Africa [2]. The most common STIs are gonorrhea, chlamydia, syphilis, trichomoniasis, chancroid, genital herpes, genital warts, human immunodeficiency virus (HIV) and hepatitis B virus [1]. Most STIs are easy to diagnose and treat; however, viral conditions, such as herpes and HIV, are costly and incurable [2]. Most of the published data on the prevalence and incidence of STIs come from developed countries [3]. In the Saudi society, discussing STIs is considered a taboo based on ethical and social factors [4]. Information about STIs in Islamic countries, where non-marital sex and homosexuality are prohibited by religion, is notably limited [5]. The current study was carried out to determine the prevalence of STIs and HIV, investigate behavioral risk factors and determine the relationship between the occurrence STIs/HIV and demographic factors.

Subjects and methods

Study design and setting

The current study was based on a cross sectional hospital-based survey, conducted among attendees of the Ministry of Health (MOH) hospitals, Kingdom of Saudi Arabia (KSA) between 2013 and 2014. The study was carried out in five geographical areas; Central, Eastern, Western, Northern and Southern parts of KSA.

Study Sample

Multistage random technique was applied for site selection as follows:

First stage:

KSA was divided into five geographical areas

- Central: three regions (Riyadh, Qaseem and Hail).
- Eastern: one region (Eastern region) and two provinces (Al-Ahsa and Hafr Al-Batin).
- Western: two regions (MakahandAl-Madina) and three provinces (Jeddah, Taif and Qunfiza).
- Northern: three regions (Northern frontier, Jawf and Tabouk) and one province (Al-Quriate).
- Southern: included four regions (Baha, Asir, Jazan and Najran) and one province (Bisha).

Second stage

In each geographical area, one region or province was selected by simple random sampling technique for the study:

- Riyadh region was selected from the Central Area.
- Eastern region (Al-Dammam) was selected from the Eastern Area
- Jeddah province was selected from the Western Area.
- Northern frontier region (Arar) was selected from the Northern Area.
- Asir region was selected from the Southern Area.

Third stage

In each of the selected regions or province 20% of the MOH hospitals were randomly selected and included in the study. The total number of hospitals included in the study was 18.

Data collection

The questionnaire used in the study was prepared and delivered according to WHO guidelines [6] and included demographic and behavioral risk factors associated with STIs and HIV. Training workshop for 2 days was conducted targeting STIs and HIV coordinators from the selected regions for the study aiming to determine the study needs, to evaluate the internal consistency of the questionnaire, to discuss how to distribute and collect the questionnaire from the selected hospitals, as well as how to answer any question related to the study. Field survey was carried out after obtaining approval for conducting the study from the Directorates of Health Affairs and from all hospitals that were chosen for the study. Data were collected through the following clinics: dermatological, obstetrical and gynecological, urological, and infectious diseases. All patients attending the above clinics for any purposes during the period of data collection (between May 1, 2013 to the end of April 2014) were requested to be included in the study. A total of 3,994 patients accepted and signed a written consent before participation in the study. Privacy and confidentiality were ensured during data collection process. Data were collected by health care providers through an interview questionnaire from all participants. All suspected cases of STIs or those having high risk behavior were submitted to rapid test to confirm or disprove diagnosis. The rapid tests were performed using blood samples, vaginal or urethral swabs and ulcer swabs. Every suspected case of STIs was tested for: HIV, Syphilis, Gonorrhea, Chlamydia, Herpes Simplex Virus (HSV) type 2 and Human Papilloma virus.

Data analysis

Quantitative data were expressed as Mean ± SD, while qualitative data were expressed as frequency and percent. Data were entered, organized, tabulated and analyzed using SPSS version 21. Student *t* test was used to measure the difference between means of two quantitative groups, while Chi square (χ^2) was used to assess the relationship between two qualitative variables, with the significant level set at 0.05. Crude odds ratio (OR) and their 95% confidence intervals (CI) were calculated to test the significance of associated factors.

Results

The study included 3,994 participants, 2,441 (61%) males and 1553 (39%) females, with a mean age of 31.95 ± 9.45 years (range 12-77 years). The number of people infected with STIs was 248 (6.2%). The rate of Gonorrhea was (2.7%), Chlamydia (1.6%), Human Papilloma Virus (1.1%), HSV (0.5%), Syphilis (0.3%) and HIV (0.05%). The mean age for STIs infected individuals was (29.42 ± 7.51), compared to (32.12 ± 9.55) years for non infected ($p < 0.05$). STIs were more common in Arar (16.4%), Riyadh (8%), and Asir (5.3%), compared to those living in Dammam and Jeddah respectively (2% and 1.9%) (Table 1). There was no statistically significant diffference between infected and non infected individuals with STIs regarding gender, occupation and marital status ($p > 0.05$).

Table 1. Distribution of studied sample according to general characteristics

General characteristics		Studied sample				Total	*(p)* value
		Infected with STIs		Non infected with STIs			
		No.	%	No.	%		
Age		**Mean ± SD**		**Mean ± SD**			**< 0.05**
		29.42 ± 7.51		**32.12 ± 9.55**			
Regions	Riyadh	96	8.0	1103	92.0	1199	< 0.05*
	Arar	65	16.4	332	83.6	397	
	Asir	63	5.3	1134	94.7	1197	
	Al-Dammam	14	2.0	673	98.0	687	
	Jeddah	10	1.9	504	98.1	514	
Gender	Male	162	6.6	2279	93.4	2441	> 0.05
	Female	86	5.5	1467	94.5	1553	
Nationality	Saudi	204	5.7	3387	94.3	3591	< 0.05*
	Non Saudi	44	10.9	359	89.1	403	
Occupation	Worked	143	6.5	2067	93.5	2210	> 0.05
	Not worked	105	5.9	1679	94.1	1784	
Marital status	Married	145	5.6	2448	94.4	2593	> 0.05
	Single	94	7.7	1120	92.3	1214	
	Divorced	6	5.3	107	94.7	113	
	Separated	2	11.1	16	88.9	18	
	widower	1	1.8	55	98.2	56	
Educational level	Illiterate	24	8.0	277	92.0	301	< 0.05*
	Basic education	86	9.3	838	90.7	924	
	Secondary education	85	5.9	1358	94.1	1443	
	Higher educational	53	4.0	1273	96.0	1326	

*Statistically significant difference.

Table 2. Distribution of studied sample according to some behavioral risk factors and blood transfusion (* multiple responses could be answered for each question)

Variables		Studied sample				Total	OR	95% CI
		Infected with STIs		Non infected with STIs				
		No.	%	No.	%			
Drug abuse	Yes	70	19.6	287	80.4	357	4.74*	(3.47 – 6.48)
	No	178	4.9	3459	95.1	3637		
Oral drug use	Yes	65	20.3	255	79.7	320	4.86*	(3.52 – 6.71)
	No	183	5.0	3491	95.0	3674		
Drugs by injection	Yes	5	22.7	17	77.3	22	4.51*	(1.45 – 13.12)
	No	243	6.1	3729	93.9	3972		
Using razors used before	Yes	25	7.8	296	92.2	321	1.31	(0.83 – 2.04)
	No	223	6.1	3450	93.9	3673		
Illegal sex	Yes	136	25.2	403	74.8	539	10.7*	(7.62 – 13.32)
	No	112	3.2	3343	96.8	3455		
Practice sex for money	Yes	60	25.1	179	74.9	239	6.36*	(4.52 – 8.93)
	No	188	5.0	3567	95.0	3755		
Practice sex for pleasure	Yes	104	28.7	258	71.3	362	9.76*	(7.29 – 13.07)
	No	144	4.0	3488	96.0	3632		
Received blood transfusion	Yes	72	7.4	898	92.6	970	1.30	(0.97 – 1.74)
	No	176	5.8	2848	94.2	3024		

* Significantly associated factors.

STIs was more common among non-Saudi (10.9%), compared to Saudi (5.7%), and more common among illiterates (8%) and less educated people (9.3%), compared to secondary and highly educated individuals, respectively (5.9% and 4.0%).

Drug abuse (OR = 4.74; 95%; CI: 3.47–6.48), oral drug use (OR= 4.86; 95% CI: 3.52–6.71), IV drug use (OR = 4.51; 95% CI: 1.45–13.12), practice of illegal sex (OR = 10.7; 95% CI: 7.62–13.32), practice of sex for money (OR = 6.36; 95% CI: 4.52–8.93), and practice of sex for pleasure (OR = 9.76; 95% CI: 7.29–13.07) were behavioral risk factors significantly associated with occurrence of STIs. On the other hand, using razors (OR = 1.31; 95%CI: 0.83–2.04) and receiving blood transfusion (OR = 1.30; 95% CI: 0.97–1.74) has no association with the occurrence of STIs (Table 2). The prevalence of STIs was more common among non-users of condoms (91/310, 31%), compared to (40/229, 17.5%) among condoms users($p < 0.05$).

The prevalence of STIs was lower among those who had heard of STIs (60/2012, 3%), compared to those who declared that never heard of STIs (188/1982, 9.5%), ($p < 0.05$).The source of information about STIs was available for 2012 participants. The most common sources for STIs information were: TV/Radio (34.5%), internet (21.1%), friends (13.1%), brochures (12.2%), books (11.0%) and magazine/newspapers (8.1%) (Table 3).

The common reasons for not using a condom

Table 3. Distribution of studied sample according to the source of STIs information (* of the total 2012 responses).

Variable		Studied sample	
		No.	%
Source of information about STIs (n. = 2012)	TV/radio	694	34.5
	Internet	425	21.1
	Friends	263	13.1
	Brochures	245	12.2
	Books	221	11.0
	Magazine and newspapers	164	8.1

Table 4. Distribution of STIs cases according to STIs manifestation and using a condom during STIs manifestations (* multiple responses could be answered for each question**)**

Variables		STIs cases	
		No.	%
Reasons for not using a condom (n. = 96)	Dislike the condom	38	39.6
	Sexual partner refuse using it	23	24.0
	Not available	19	19.8
	It never came to their mind	10	10.4
	Expensive	6	6.2
STIs manifestations (n. = 248)	Urethral discharge	84	33.8
	Abnormal vaginal discharge	39	15.7
	Cauliflower mass	35	14.2
	Itching and burning around the opening of the penis	23	9.3
	Lower abdominal pain	19	7.7
	Genital ulcer	16	6.4
	Urge to urinate frequently	15	6.0
	Genital blisters vesicle	14	5.6
	Inguinal swelling	1	0.4
	No manifestations/ asymptomatic	2	0.8
Duration of STIs symptoms (n. = 248)	One week	106	42.7
	2 weeks or more	142	57.3
Using a condom during STIs symptoms (n. = 248)	Users	60	24.2
	Non users	188	75.8
Reasons for using a condom during STIs symptoms (n. = 60)	Protection from STIs including HIV	40	66.7
	To prevent unwanted pregnancy	20	33.3
Reasons for not using a condom during STIs manifestations (n. = 188)	Dislike the condom	94	50.0
	Not available	41	21.8
	The partner refuse using it	40	21.3
	Expensive	13	6.9

during sex were: dislike of condoms (39.6%), sexual partner refusal (24%), nonavailability (19.8%), it never came to their mind (10.4%), and cost (6.2%) (Table 4).

The most commonly reported symptoms were: urethral discharge (33.8%), abnormal vaginal discharge (15.7%), cauliflower mass (14.2%), penile urethral itching and burning (9.3%), lower abdominal pain (7.7%), genital ulcer (6.4%), urge to urinate (6.0%), genital blisters or vesicles (5.6%%), inguinal swelling (0.4%) and no manifestations (0.8%). Of the people infected with STIs, 75.8% did not use condoms during the period of STIs smanifestations. The most common reasons for not using a condom during STIs manifestations were: dislike of the condom (50%), not available (21.8%), sexual partner refusal (21.3%), and cost of the condoms (6.9%). While the most common reasons for using a condom were: protection from STIs including HIV (66.7%), and to prevent unwanted pregnancy (33.3%).

Discussion

STIs represent a major health problem worldwide causing significant morbidity and mortality both in men and women in developing and developed countries [7]. In the current study the prevalence of sexually transmitted infections was 6.2% which is lower than that reported in few studies [8,9], and higher than that reported by other investigators [10,11] indicating differences in methodology, study population and time of the study.

Striking variations in HSV-2 prevalence were noted in different geographic regions. HSV-2 prevalence is in general higher in Africa and the Americas, lower in western and southern Europe, and the lowest in Asia. Age-specific HSV-2 prevalence is usually higher in women than men and in populations with higher risk sexual behavior [12]. In the current study the prevalence of HSV was (0.5%) and is different than those in other studies [13-15]. These studies mainly measure seroprevalence in different groups and in different countries. The same findings hold true for the prevalence of syphilis compared to other studies [16-18].

Estimates by the World Health Organization (WHO) and the Joint United Nations Program on HIV/AIDS (UNAIDS) show that HIV-prevalence is low in the Middle East and North Africa regions (0.2%–0.4%) [19] and the current study revealed even much lower prevalence of 0.05%.

Several factors may explain the discrepancy in the prevalence STIs and HIV among the previous studies such as differences in the population surveyed, demographics, social, cultural, and diagnostic procedures. Impact of adhering to Islamic values on the prevalence of STIs was demonstrated by several studies. According to the United Nations and the WHO, the prevalence of HIV infection in Islamic countries is strikingly low compared to other countries. A survey of published journal articles containing data on HIV prevalence and religious affiliation showed that six out of seven such studies indicated a negative relationship between HIV prevalence and being Muslim [20].

The prevalence of STIs was higher in Arar and Riyadh. One possible explanation of the higher prevalence of STIs in Arar and Riyadh is the fact that Arar is located in an area bordering some of the Arabic countries which has been experiencing internal conflicts and instabilities. People from these countries frequently cross the borders to Arar and interact with local residents and may increase the vulnerability of the local residents to many risks including STIs. Also the presence of large numbers of migrant workers in these regions may play a role in the transmission of STIs as previously reported [21].

The level of education is a factor with a significant effect on STIs [11]. In the current study, STIs were more prevalent among less or non educated people, in agreement with other studies [11]. Similarly, a history of selling sex for money or drugs or pleasure was significantly associated with HBV, HCV, HSV, and syphilis [22-24].

Unprotected sex with an infected partner is by far the most important risk factor for STIs/HIV transmission worldwide. Consistent and correct use of male latex condoms can reduce the risk of STIs transmission. Thus, the prevalence of STIs was commonly reported among non condom users [26]. One of the factors for no-use of condoms is the cost [27], a trustable partner, using an alternate contraceptive method, and dislike for condoms [28,29].

Adequate knowledge is crucial to clearing misconceptions about STIs including the acquired immune deficiency syndrome (AIDS) [30]. The study showed that, the most common source of information about STIs were TV/Radio, internet, friends, brochures, books and magazine/newspapers, in agreement with other studies [4,11].

Conclusions

The prevalence of STIs including HIV in Saudi Arabia is low as compared with other countries.

Factors significantly associated with STIs were presence of migrants, inadequate knowledge about STIs, and low educational level. Drug abuse and practice of illegal sex (for money or pleasure) were behavioural risk factors which were significantly associated with STIs. STIs was low among condom users. The most common reasons for not using a condom were: dislike a condom, sexual partner refuse using it, not available, it never came to their mind, and expensive. While the reasons for using a condom were; protection from STIs including HIV, and to prevent unwanted pregnancy.

Further in-depth studies need to be conducted to explore the prevalence and behavioural risk factors associated with STIs among migrant workers. Intensification of health education campaigns to raise public awareness regarding types, modes of transmission, negative health impact and ways of prevention of STIs should be warranted. Establishment of a hotline to deal with public inquiries and questions about STIs. There is a need for STIs screening program for drug abusers and others at increased risk. Since the pattern of utilization of the Ministry of Health facilities between Saudi and non-Saudi is not well known, there is a possibility that the data might not be generalized to the whole population.

Acknowledgements

We would like to thank all participants who collaborated in the study, the health authorities in the region, data collectors, and everyone who helped us to accomplish this work.

Authors' Contributions

ZAM led conceptualization of the study, ZAM and MHHA conducted the analyses, ZAM, SMF, YAY, JAT and RA wrote the initial manuscript. ZAM and JAT revised and finalized the manuscript and edited the paper. All authors approved the final draft of the manuscript.

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Conflict of interests: No conflict of interests is declared.