Population based estimation of point and period prevalence of sexully transmitted infections based the iranian symptoms surveillance system

Estimación basada en la población de la prevalencia de punto y período de infecciones de transmisión sexual basada en el sistema de vigilancia de síntomas iraní

Estimativa populacional da prevalência pontual e periódica de infecções sexualmente transmissíveis com base no sistema de vigilância de sintomas iranianos

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Abstract

Sexually transmitted diseases (STDs) are of great international concerns. The aim of this study was to measure the point and period prevalence of reportable STDs in Iran based on syndromes defined by the Iranian STDs surveillance system. In that regard, the population of Marvdasht, the second largest county of Fars province, was selected. This is a population based cross-sectional study, which was conducted among urban and rural residences of Marvdasht county in 2017. In total, among 11763 randomly sampled individuals, 3879 eligible participants in urban and rural areas of Marvdasht county were interviewed. The participants were on average 33 years old. Overall about 33 percent of men and 70 percent of women reported that, since the age of 15 years, they experienced at least one of the symptoms of selected STDs defined by the Iranian center for disease control (CDC) for surveillance of sexually transmitted infections (STIs). Moreover, %9.7 of men and %28.7 of women were suffering from at least one of the defined symptoms at the time of interview.

Resumen

Las enfermedades de transmisión sexual (ETS) son de gran preocupación internacional. El objetivo de este estudio fue medir la prevalencia de punto y período de las ETS notificables en Irán según los síndromes definidos por el sistema de vigilancia iraní de ETS. En ese sentido, se seleccionó la población de Marvdasht, el segundo condado más grande de la provincia de Fars. Este es un estudio transversal basado en la población, que se llevó a cabo entre las residencias urbanas y rurales del condado de Marvdasht en 2017. En total, entre 11763 individuos de muestra aleatoria, se entrevistaron 3879 participantes elegibles en áreas urbanas y rurales del condado de Marvdasht. Los participantes tenían en promedio 33 años. En general, alrededor del 33 por ciento de los hombres y el 70 por ciento de las mujeres informaron que, desde la edad de 15 años, experimentaron al menos uno de los síntomas de las ETS seleccionadas definidas por el centro iraní para el control de la enfermedad (CDC) para la vigilancia de las infecciones de transmisión sexual (ITS). Además, el% 9,7 de los hombres y el 28,7% de las mujeres sufrían al

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Regardless of the etiology of the detected syndromes, the results highlight the importance of access to diagnostic and medical services to achieve on time diagnosis and treatment of the patients. Also, sexual health education is needed to be provided to the rural and urban sexually active population of Iran.

Keywords: prevalence, sexually transmitted infections, population base study.

menos uno de los síntomas definidos en el momento de la entrevista. Independientemente de la etiología de los síndromes detectados, los resultados resaltan la importancia del acceso a los servicios médicos y de diagnóstico para lograr el diagnóstico y el tratamiento a tiempo de los pacientes. Además, es necesario proporcionar educación sobre salud sexual a la población sexualmente activa rural y urbana de Irán.

Palabras claves: prevalencia, infecciones de transmisión sexual, estudio poblacional.

Resumo

As doenças sexualmente transmissíveis (DSTs) são de grandes preocupações internacionais. O objetivo deste estudo foi medir a prevalência pontual e periódica de DST notificáveis no Irã com base em síndromes definidas pelo sistema de vigilância de DSTs iranianas. A esse respeito, a população de Marvdasht, o segundo maior condado da província de Fars, foi selecionada. Trata-se de um estudo transversal de base populacional, realizado em residências urbanas e rurais do condado de Marvdasht em 2017. No total, dentre 11763 indivíduos amostrados aleatoriamente, foram entrevistados 3879 participantes elegíveis nas áreas urbana e rural do município de Marvdasht. Os participantes tinham em média 33 anos de idade. No geral, cerca de 33% dos homens e 70% das mulheres relataram que, desde os 15 anos, tiveram pelo menos um dos sintomas das DSTs definidas pelo Centro Iraniano de Controle de Doenças (CDC) para vigilância de infecções sexualmente transmissíveis (DSTs). Além disso, % 9.7 de homens e% 28.7 de mulheres sofriam de pelo menos um dos sintomas definidos no momento da entrevista. Independentemente da etiologia das síndromes detectadas, os resultados destacam a importância do acesso aos serviços médicos e diagnósticos para alcançar o diagnóstico e tratamento oportuno dos pacientes. Além disso, é necessário fornecer educação em saúde sexual para a população rural e urbana sexualmente ativa do Irã.
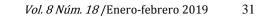
Palavras-chave: prevalência, infecções sexualmente transmissíveis, estudo de base populacional

Introduction

STIs are a group of infections that can be transmitted from one person to another via sexual contacts (Rodríguez Cerdeira et al, 2017; Afsar Kazerooni et al, 2018). There are more than 30 infections which are categorized as STIs. It is estimated that over 1 million STIs are acquired every day worldwide (Newman et al, 2015). In the United States alone, about 20 million STIs occur annually with a cost of about $16 million (Rodríguez Cerdeira et al, 2017). Due to a very high global incidence, STIs are of great national and international concerns. These infections can cause serious complication including pelvic inflammatory disease, ectopic pregnancy, infertility, pelvic pain, neurological and cardiovascular disorders, premature delivery, blindness and infant death. In addition to the physiological problems, those with STDs are more vulnerable to social problems (Newman et al, 2015; Ghorbani et al, 2012; Ghods et al, 2018). This is because, sexually

active individuals, who are mostly between 15 to 50 years of age, are at higher risk of STIs and those with STIs are under social pressures due to the stigmas related to their condition and family disputes (Zarei et al, 2015). With regard to the related social and cultural issues, control of STIs can improve social and individual's wellbeing. Therefore, like many other infectious diseases, early diagnosis and treatment of STIs play important roles in controlling the world wide epidemic and its related side effects (Workowski & Berman, 2011; Aral et al, 1996).

With regard to the epidemiology of STIs, individuals with 15-50 years of age are at a higher risk of STIs compared to the other age groups. Higher rate of selecting new sexual partners, sex trade, substance abuse, unprotected sex, migration and traveling are the main reasons of the higher rate of STIs among younger individuals (Aral et al, 1996). For example, about 2.9% of

the STDs are acquired while individuals are in vacations or are traveling (Leder et al, 2007). In this regard, among the 30 pathogens causing STIs, 5 are more important in the surveillance and epidemiology of STIs. Excluding HIV, the most common agents causing STIs include Chlamydia trachomatis (Chlamydia), Neisseria gonorrhea (Gonorrhea), Treponema pallidum (Syphilis) and Trichonomisiasi vaginalis (Turkonomozyasis) (Gottlieb et a, 2014). Obviously, controlling STIs needs more focus on the diagnosis of the cases and surveillance of the diseases among sexually active individuals along with monitoring their high risk behaviors (LeFevre, 2014; Lin et al, 2008).

Diseases surveillance systems are the fundamental tools for controlling the occurrence of diseases. There are two main strategies for detection and management of STI, i.e. etiologic and syndromic approaches. Both approaches come with strengths and weaknesses especially when we are interested in the completeness and sensitivity of the surveillance systems (Fararouei et al, 2007; Fararouei et al, 2013). For example, as the etiologic approach is based on the detection of STI cases via microbiologic and laboratory tests, patients not only need have the defined syndromes but also to present themselves to a well-equipped medical center (Goya, 2015). As a result, compared to syndromic approach, although etiologic detection of diseases provide more reliable and valid figures, it comes with serious challenges too. First, etiologic surveillance systems need high tech facilities (Khalili & Feyzzadeh, 2006) and, especially in developing countries, diagnosis centers which provide microbiologic or laboratory tests are limited in number. As a result, the services are not feasibly accessible to the public. Second, due to inadequate privacy of the patients in public medical centers, cases of STIs prefer private centers, which have less contribution to the surveillance system, making the representativeness of the registered cases questionable. The syndromic approach, on the other hand, is fast and can be provided by almost any medical center (Nassirian, 2015). Accordingly, despite the debates about its performance (Nejat et al, 2016), due to lower cost and less administrative considerations, syndromic approach is preferable in many developing countries including Iran. The syndromic approach for sexually transmitted diseases (STDs) is designed to detect cases based on the presence of specific syndromes of certain STDs and is vastly used when we are interested in the epidemiology of the diseases in a population. However, this approach comes with several disadvantages too. First, a significant portion of STI cases (especially women) are asymptomatic or suffer from mild symptoms. This makes the condition bearable for the infected individuals so that they would not seek medical services and therefore will not be diagnosed and detected by the surveillance system. Second, self-medication and use of antibiotics for other infectious diseases may hide the infection via weakening or curing the symptoms. Third, many of these signs and symptoms are not exclusive and may appear in several other conditions which makes the sensitivity and specificity of the syndromic strategy questionable.

In Iran, communicable CDC is responsible for detecting and reporting a large group of selected diseases (Kazerooni et al, 2018).With regard to the importance of having valid population based estimates of STIs and the questionable official reports on the epidemiology of STIs as well as the limited number of comprehensive studies on this sensitive subject in Iran, this study was conducted to measure the prevalence of selected STIs syndromes in a population based random sample of reproductive age.

Materials and Methods

This is a population based cross-sectional study on men and women who were in the sexually active age (18 to 50 years of age) in Marvdasht (the second largest county of Fars province).

Data collection: At first, a random sample of houses were selected and the housewives were interviewed by a trained female interviewer at their house doors. Filling up a general questionnaire, the interviewers asked for the name, sex, age and occupation of the householders and for those aged between 18-50 years, cellphone numbers were also obtained from the responders. The housewives asked for help from other householders if they were not able to remember the phone numbers. Due to the low level of literacy among the respondents, a verbal consent was obtained from all respondents at the start of the interview.

At the end of the interview, in which the name and cellphone number of eligible householders (aged 18 to 50 years) were obtained, an "invitation to participate" card providing a brief introduction about the research was left with the housewife to be delivered to the eligible family members. The card was also used to inform the

participants that within two days, a call via a pre-defined landline phone number will be made from the study office based at the Shiraz University of Medical Sciences. This was done to make the eligible family members assured of the legitimacy of the call and confidentiality of the information they provide during the phone interview. The phone interview was conducted by a same-sex trained interviewer who started the interview with introducing himself or herself and explained the aims of the study. The interviewer also assured the participants with the confidentiality of the information they provide. In addition, at the beginning of the interview, after the introduction, a verbal consent was obtained from the participants over the phone and it was insisted that the participants can stop the interview at any time they want to do so. During the interview, the participants answered a wide range of questions including current and past (since age 15) presence of the defined STI syndromes. All eligible members of the family were phone interviewed in almost the same period of time. To those who did not respond to the first call, a second call was made 2 or 3 hours after the first call and in case of no response to the first and second calls, the householder was called for the third time three days later. In case of no answer to the third call, the person were considered as unanswered and were excluded from the study.

Sampling

- Study population. Marvdasht is a county with a city of more than 170,000 residences and 226 villages with about 160,000 rural residents. The houses were selected from a census data provided by the county's health center under the ministry of health. Of the rural and urban populations of Marvdasht county, 100 clusters from urban and 100 clusters from rural areas were randomly selected. As a result, within the county, 200 houses were randomly selected via systematic random sampling. The houses were used as the starting point of a cluster of 15 families (houses) who were living on the right side of the starting points. The sampling distance was determined separately in urban and rural areas by dividing the total number of houses to 100.

- Sample size and statistical analysis. Sample size was calculated in order to obtain the prevalence of the STI syndromes (all) within 5% of confidence interval among male and female residences separately. Sex-stratified descriptive statistical analysis was conducted using measures including frequency distribution of qualitative and mean and standard deviations (SD) of quantitative variables. Statistical tests (chi-square, t-test and ANOVA) were used to measure any association between STI syndromes and demographic variables. To conduct the analysis, SPSS version 19 was used.

Results

In total, 3879 individuals of 18 to 50 years of age (2243 males and 1636 females in both urban and rural areas) participated in the present study. Participants were on average 33 years old (33.85 ± 8.85 in males and 33.83 ± 8.83 years of age in females). The distributions of the demographic characteristics of the participants are presented in table1. In the present study, about 33% of male and 70% of female participants reported that they have had experienced (at least once) one or more of the STI syndromes since 15 years of age (period prevalence). Moreover, 9.7% of male and 28.7% of female participants were suffering from at least one of the symptoms associated with STIs at the time of interview (point prevalence). The highest lifetime prevalence of STI symptoms was abnormal discharge from the genital area (55.8%) among female participants and Pain and burning sensation during urination (21.2%) among male participants. Similarly, the highest point prevalence of STI symptoms was reported for abnormal discharge from the genital area (20.5%) among the female participants and Pain and burning sensation during urination (4.6%) among the male participants (Table 2).

Due to different clinical characteristics of STIs in males and females, no statistical comparison in the prevalence of symptoms was made between male and female participants. Regarding lifetime and point prevalence of STI symptoms in both male and female participants, as expected, those with any STI symptoms were on average older, compared to those with no symptoms (Table 3). As the results suggested, among the male participants, no significant differences were observed in the point and period prevalence of all syndromes with regard to occupation and place of residency (Table 4). However, marital status, education and age were significantly associated with the prevalence of the symptoms. Accordingly, male participants who were had higher rates of point (35.3%) and period (11.2%) prevalence compared to the single male participants (P<0.01). With regard to education,

higher prevalence of the symptoms was observed among participants with primary or less education compared to those with a university degree (P<0.01). Interestingly, both point and period prevalence of the symptoms raised with age among male participants (P<0.01). With regard to the female participants, a higher rate of point prevalence was observed among rural compared to the urban residences (P=0.37), whereas the period prevalence was higher among urban residences (P<0.001). Moreover, higher point and period prevalence of STI s symptoms was reported among married women (P<0.001) and housewives (P<0.001) compared to single and those with other jobs respectively. Significant association was also observed between the level of education and marital status and the prevalence of STI syndromes among the female participants (P<0.05). However, women with no or primary education reported higher period prevalence of STI syndromes compared to those with university degrees (P<0.001).

Discussion

This is a population based cross-sectional study on rural and urban residences of Marvdasht, the second most populated county of Fars province, Iran. Based on the results, one-third of men and more than two-third of women had experienced at least one of the symptoms associated with STIs from age 15 years onward. Moreover, 9.7% of men and 28.7% of women were suffering from at least one of the selected symptoms at the time of interview. According to a study in urban slums of Guntur city, India, the total point prevalence of STI syndromes in women of reproductive age was 32.69% (Vasireddy, 2017), which was much higher than what was reported among the female urban residences of the present study. However, the findings of the current study are more or less in accordance with a study conducted in Kerman, Iran, which suggested that among urban residences at the time of interview, about one sixth of men and one third of adult women had at least one of the symptoms associated with sexually transmitted infections (Nasirian et al, 2015). The point prevalence of STI symptoms in the present study is higher in women, but lower in men compared to what reported by Kerman study. However, it is to be noticed that the participants in Kerman study were not selected based on probability sampling as in that study, men and women pedestrians were interviewed.

With regard to the types of syndromes, the results of the study in Guntur city reported that about 27.88% of women had abnormal vaginal discharge, 3.46% reported lower abdomen pain and 1.34% were suffering from genital wounds (Vasireddy, 2017). The results of current study suggested that since the age of 15, about 3% of men and 56% of women, had experienced genital ulcers and abnormal vaginal discharge respectively. This finding is also not in accordance with the results of another study on 1190 participants who were selected pedestrians around popular marketing areas during busy hours in 4 populated cities of Iran. According to the results of the above study, 4.9% of men and 40% of women had experienced genital ulcers and abnormal vaginal discharge throughout their life (Nasirian et al, 2016).

The observed differences between the results of the present study and the other studies is due to the differences in the methods of sampling strategies (slums or street based vs. probability sampling of general population) and methods of interview (face to face vs. phone interview), and of course, due to the differences between the populations in cultural and socio-economic aspects.

Based on the results of the present study, more female participants reported the defined STI symptoms compared to males. It is possibly due to the fact that compared to men, women are at higher risk of urogenital and reproductive system infections (Pellati et al, 2008).

It is again to be insisted that some of the selected symptoms are also found in other women's (or men's) diseases. Therefore, the presence of the symptoms do not necessarily mean that an individual is infected with STIs (Mlisana et al, 2012, George & Thomas, 2004).

In studies conducted by Deoki Nandan (Nandan et al, 2002) and Savita Sharma (Sharma & Gupta, 2009), it was shown that most women who reported STI symptoms were between 25 to 34 years of age. However, the prevalence of different symptoms which are associated with different infectious diseases were different among different age groups. Several studies reported that point prevalence of STIs is more common among younger individuals, as they are more sexual activity (Vasireddy, 2017). According to another study in Iran, the prevalence of symptoms associated with STIs was lower in older male participants whereas

among female participants no significant association was found between age and STI symptoms (Nasirian et al, 2015). The results of the present study suggested a direct association between age and point and lifetime prevalence of STI symptoms regardless of gender, though the association was weaker among female. The observed pattern could be explained by the fact that several non-STI genital and urinary tract diseases, which occur with symptoms similar to STIs, are more prevalent at older ages especially in men (Nassirian, 2015). It is to be noted that in the present study, some of the less specific STI syndromes which may be caused by diseases other than STIs (Nasirian et al, 2013), (e.g. pain, burning when urinating and excessive urination) were more prevalent among older participants.

It seems that the pattern of sexual behaviors in Iranian population has changed dramatically over generations. As a result, high-risk sexual behaviors have increased before marriage (Pellati et al, 2008). The results of the present study suggested that the STIs related symptoms were more prevalent among married participants rather than singe individuals. This finding is in accordance with the results of studies in Iran and Kenia, suggesting that the prevalence of HIV is more common in married rather than single individuals (Amornkul et al, 2009; Masoudnia & Chenaninasab, 2016). The association between marital status and STIs may be partly explained by more sexual contact and less usage of condom during intercourse among married partners. The results of the present study suggested that regardless of gender, the prevalence of STI syndromes among less educated participants is more than those with higher education. This finding is consistent with the results of a study which suggested that the syndromes of STIs are more common among less educated women (Jindal et al, 2009). This result is expected as the study also found a direct correlation between education and awareness of the routes of sexual transmission of HIV (Goshtasbi & Rezaee, 2006). This is because, less educated women, due to the lower knowledge, have more high-risk behaviors (Niknami et al, 2011).

A comparison between male participants suggested that the prevalence of STI symptoms is not different among urban and rural residences. Whereas, among female participants, a significant difference was observed between rural (with higher prevalence) and urban participants. The results of the present study are in accordance with the results from a study conducted by j .k. kosambya, who suggested that STIs are more common in rural compared with urban communities (Kosambiya et al, 2009). The association may be explained by the lower literacy and socio-economic status of the rural compared to the urban residences especially among women.

Strength and limitations: In this study a population-based sampling approach was used. Therefore, the results are more representative of the general population than those studies with non-probability, non-population-based sampling. Due to the same reasoning, the chance of selection bias is expected to be lower in the present study. When reporting life-time occurrence of the symptoms, participants (especially those with older ages) may experience problems in remembering less severe STI symptoms, as these syndromes occurred years before the interview. As a result, it seems that each syndrome is subject to different degrees of recall bias.

Also, collection of information on sexually transmitted infections and related behaviors face cultural and social constraints that may lead to under-reporting of the symptoms as individuals who are suffering from STIs may fill ashamed and therefore may do not report the symptoms. However, the higher lifetime prevalence of STI symptoms reported in this study, compared to what obtained from other studies with different methods of data collection in Iranian urban population, suggest that methods of selection and interview applied in this study is expected to be relatively more valid compared to the methods applied in other studies. Many defined syndromes are not specific to STIs, as several other urinary and genital diseases normally occur with the similar symptoms. As a result, the prevalence of STI syndromes in this study is not necessarily representing the prevalence of STIs in the Iranian population.

Conclusion

In this study, the estimated prevalence of STI syndromes is relatively high. Regardless of the etiology of the detected syndromes, the results highlight the importance of access to diagnostic and medical services to achieve on time diagnosis and treatment of the infections. Also, sex education is needed to be accessible to the rural and urban sexually active population of Iran.

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Table

Table 1. Demographic characteristics of the participants in the study

Variable		Male N(%)	Female N(%)
Residency	Urban	1119(49.9)	961(58.7)
	Rural	1124(50.1)	675(41.3)
Marital status	Single	737(32.9)	334(20.8)
	Married	1493(66.7)	1208(75.2)
	Widow or divorced	9 (0.4)	64(4)
Education	Illiterate	39 (1.8)	85(5.2)
	Primary	372 (17.5)	410(25.2)
	Secondary	555 (26.1)	290(17.8)
	Diploma	698 (32.8)	511(31.4)
	Academic	461 (21.7)	331(20.3)
Job	Private	926 (44.4)	74(4.6)
	Employed	187 (9.0)	81(5.0)
	Soldier or student	177 (8.5)	81(5.0)
	Unemployed or housewife	188 (9.0)	1390(85.5)
	Employed	308 (14.8)	---------
	Farmer	298 (14.3)	---------
Having sex		1752(78.1)	553(36.5)
History of genital infections		23(1.1)	1032(68.5)
History of urinary tract infections		102(5.3)	439(34.5)

Table 2. Prevalence of STI symptoms with regard to gender of the participants

	symptoms	Prevalence N (%) (CI 95%)	
		Lifetime*	Point**
Men	Pain and burning when urinating	470 (21.2) (19.29 -22.68)	101 (4.6) (3.7 – 5.44)
	Excessive urination ***	216 (9.7) (8.46 -10.94)	67 (3.0) (2.34 – 3.80)
	Genital ulcer****	67 (3.0) (2.34 – 3.80)	7 (0.3) (0.14 – 0.67)
	Abnormal discharge from the Genital area	10 (0.5) (0.25 -0.85)	4 (0.2) (0.06 – 0.49)
	Bleeding or non-blood discharge from rectum ®	96 (4.3) (3.5 – 5.22)	27 (1.2) (0.81 -1.74)
	testicular pain	194 (8.7) (7.54 – 9.91)	38 (1.7) (1.21 – 2.34)
	Swelling and redness in testicles	11 (0.5) (0.26 - 0.9)	17 (0.8) (0.46 – 1.24)
	Painful sexual intercourse	------	27 (1.6) (0.81 – 1.77)
	Pain after sexual intercourse	------	36 (2.1) (1.14 – 2.23)
	All symptoms	732 (33.0) (30.7 – 34.62)	217 (9.7) (8.49 – 10.99)
Women	Pain and swelling in groin	99(6.1)	26(1.6)

	(4.97 – 7.34)	(1.06 – 2.36)
Pain in lower abdomen (except for menstrual pain)	243(14.9)	102(6.3)
	(13.18 – 16.69)	(5.13 – 7.54)
Pain and burning sensation during urination	363(22.3)	114(7.0)
	(20.21 – 24.3)	(5.81 – 8.34)
Excessive urination ***	117(7.2)	86(5.3)
	(5.97 – 8.53)	(4.25 – 6.48)
Vaginal discharge (high volume / bad smell / or abnormal color)	910(55.8)	334(20.5)
	(50.31 – 58.04)	(18.51 – 22.47)
Genital ulcer (any lesions in the genital area) #	44(2.7)	30(1.8)
	(1.98 – 3.63)	(1.26 – 2.64)
Bleeding or non-blood discharge from the rectum ®	33(2.0)	13(.8)
	(1.42 – 2.86)	(0.44 – 1.39)
Any scar on the skin of the rectum	35(2.2)	16(1.0)
	(1.52 – 3.0)	(0.58 – 1.62)
Itching around genital area (inside or outside of the genital area) ©	451(27.8)	173(10.6)
	(25.43 – 29.82)	(9.14 – 12.19)
Painful sexual intercourse	■	132(10.9)
		(8.79 – 12.22)
Pain after sexual intercourse	■	63(5.2)
		(3.85 – 6.33)
Bleeding after sexual intercourse	■	17(1.4)
		(0.81 – 2.18)
All symptoms	1159(70.9)	469(28.7)
	(68.56 – 73.02)	(26.5 – 30.94)

* From the age of 15, ** At the moment, *** urination more than usual, **** painful or painless, throat or non-throat) on the genital / anal skin / or between the genital area to the anus / or the internal parts of the genital area (genital area: male / female, ® rectal: back / stool exit site, # (painful or painless, throat or non-throat) in the genital / genital skin or / between the genital area to the genital / internal genital area (genital area: female / female sexual organs / Skinny), © except itching caused by excessive hair growth, ■ Only in the present time and the married responders were asked

Table 3. Age distribution of participants with and without STI syndromes

	Status	Period		Point	
		Mean±SD	P-Value	Mean±SD	P-Value
Men	Have symptom	35.60± 8.66	<0.0001	36.62 ± 8.83	<0.0001
	No symptom	33.04 ± 8.74		33.74 ± 8.82	
Women	Have symptom	34.21±8.53	0.008	34.60±9.11	0.028
	No symptom	32.92±9.54		33.53±8.73	

Table 4. demographic status of participants with and without STI symptoms

		Male					
		Life prevalence			Point prevalence		
		N(%)			N(%)		
	Variable	Any syndrome	No syndrome	p-value	Any syndrome	No syndrome	p-value
Residency	Urban	361(32.8)	739(67.2)	0.866	107(9.6)	1010(90.4)	0.868
	Rural	371(33.2)	748(66.8)		110(9.8)	1014(90.2)	
Marital status	Single	207(28.2)	526(71.8)	0.001	49(6.6)	697(93.4)	<0.001
	Married	524(35.3)	960(64.7)		167(11.2)	1326(88.8)	
Education	Illiterate / elementary	150(36.7)	259(63.3)		54(13.2)	356(86.8)	
	Primary	210(38.1)	341(61.9)	<0.001	55(9.9)	500(90.1)	0.004
	High school	192(27.7)	500(72.3)		62(8.9)	636(91.1)	
	University	139(30.5)	316(69.5)		28(6.1)	433(93.9)	

		Any syndrome	No syndrome	p-value	Any syndrome	No syndrome	p-value
Age	20>	21(18.1)	95(81.9)		5(4.3)	111(95.7)	
	21-30	210(28.5)	528(71.5)	<0.001	56(7.4)	696(92.6)	0.009
	31-40	228(32.8)	468(67.2)		69(9.9)	630(90.1)	
	41-50	228(41.2)	326(58.8)		67(12)	492(88)	
Job	Private	310(33.5)	615(66.5)		88(9.5)	839(90.5)	
	Employee	61(29.5)	146(70.5)		23(11.1)	185(88.9)	
	Student	103(33.6)	204(66.4)		29(9.4)	279(90.6)	
	Unemployed or soldier	101(34)	196(66)	0.089	33(11.1)	265(88.9)	0.144
	Employed	71(38.2)	115(61.8)		14(7.5)	172(92.5)	
	Farmer	37(23.9)	118(76.1)		6(3.8)	151(96.2)	

Female

		Life prevalence			Point prevalence		
Variable		N(%)			N(%)		
		Any syndrome	No syndrome	p-value	Any syndrome	No syndrome	p-value
Residency	City	672(70)	288(30)	0.373	233(35)	727(65)	<0.0001
	Village	487(72.1)	188(27.9)		236(24.3)	439(75.7)	
Marital status	Single	166(49.7)	168(50.3)	<0.0001	62(18.6)	727(81.4)	<0.0001
	Married	922(76.3)	286(23.7)		379(31.4)	829(68.6)	
Education	Illiterate / elementary	327(24.8)	123(75.2)	<0.0001	185(37.4)	310(62.6)	<0.0001
	Primary	217(25.2)	73(74.8)		98(33.8)	192(66.2)	

	Secondary or diploma	361(29.4)	150(70.6)		122(23.9)	389(76.1)	
	University	204(38.4)	127(61.6)		61(18.4)	270(81.6)	
Age	20>	58(60.4)	38(39.6)	0.008	30(31.3)	66(68.8)	0.017
	21-30	372(67.8)	177(32.2)		132(24)	417(76)	
	31-40	433(74.5)	148(25.5)		168(28.9)	413(71.1)	
	41-50	277(72.1)	107(27.9)		128(33.3)	256(66.7)	
Job	Housewife/ unemployed	1028(74)	362(26)		418(30.1)	972(69.9)	
	Employed	46(56.8)	35(43.2)	<0.0001	13(16)	68(84)	0.011
	Student	35(43.2)	46(56.8)		16(19.8)	65(81.2)	
	Private	45(60.8)	29(39.2)		19(25.7)	55(74.3)	