

Original Article

Prevalence of Sexual Behaviors among Medical Students in Southeast of IranMohadeseh Balvardi¹ Nasim Dehdashti² **Zahra Imani-Ghoghary**^{3*} Hamideh Bashiri⁴ Fatemeh Alavi-Arjas⁵

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Abstract

Background and Purpose: This study aimed to estimate the prevalence of sexual behaviors and sexting among students of medical science universities in southeast of Iran by indirect method.

Materials and Methods: In this cross-sectional study, using a multistage non-random sampling method, we recruited 3900 students from eight universities of medical sciences from Kerman and Sistan and Baluchestan provinces, Iran, in 2019. The data were collected using indirect (NSU: Network Scale-up) methods. Statistical analysis was performed using the Chi-square test.

Results: Out of 3900 students (mean (SD) age of 22.5 (3.3) years), 48% were male and 41% were from Sistan and Baluchestan Province. The prevalence of watching porn, masturbation, sexting (text, photo and video), extramarital heterosexual intercourse by nonpayment, sex in return for payment, homosexuality, child abuse (sexual and behavioral), and abortion was 22.6% (95% CI: 21.3 – 24.0), 19.5% (95% CI: 18.2 – 20.7), 8.8% (95% CI: 7.9 – 9.7), 11.7% (95% CI: 10.7 – 12.7), 5.7 (95% CI: 5.0 – 6.5)%, 3.0% (95% CI: 2.5 – 3.5), 0.9% (95% CI: 0.6 – 1.2) and 1.01% (95% CI: 0.7 – 1.3), respectively.

Conclusion: According to the results, watching porn, masturbation, extramarital heterosexual intercourse by nonpayment and sexting were more common sexual behaviors among university students. Repetition and addiction to these behaviors can harm physical and psychological health of young people especially in Iranian custom, religion and cultural context. Therefore, the youth should be given appropriate training to correctly react to sexual situations.

Keywords: Sexual behaviors; Watching Porn; Masturbation; Sexting

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1. Introduction

The adolescence and youth are special periods in a person's life, during which sexual relationships begin; the way the person begins their sexual relationships and continues would have a great impact on his future life and the next generation (1). Sexual behaviors refer to different behaviors, such as talking about sex, masturbation, lovemaking, and intercourse (2). Unconventional relationships beyond established norms can create various physical and psychological complications, such as unwanted pregnancies, as well as catching sexually transmitted diseases, and the related complications (3). Two-thirds of STDs sufferers are younger than 25 years, which is probably due to their greater tendency to undertake high-risk behaviors at these ages and lack of their knowledge about its relevant implications (2).

In Iran as a young country (one-fourth of Iranian population is constituted by adolescents and young people) (4), the progressive prevalence of high-risk behaviors among the youth especially students who are mostly in their younger ages has engendered serious concerns (5). Historically, the religious as well as the sociocultural system of Iran reprehend any extramarital or premarital intercourse, and it is considered as a sin among people (6), but extensive use of multiple social networking sites causes behavioral changes among people, especially young, that is incompatible with values and culture (7). As an example, Pornography is a common activity in some western countries (8), but it is reprehensible in religious countries like Iran. Unfortunately, it spreads easily worldwide through global internet. Changes in the value system related to easy access to

information, as well as the economic structure of Iran gradually prepared the conditions for the emergence of uncommon patterns of sexual behaviors among at least part of the Iranian youth (9). Those with unusual sexual behaviors are at greater risk of sexuality and reproductive health problems (10). The data from different studies indicated that STDs have increased among the Iranian youth (6). In Iran, the third wave of AIDS, which is mostly related to disease transmission via sexual contact, is increasing, and recent research shows HIV affliction of 0.15% throughout the entire Iranian population (11).

Studies showed an increase in occurrence of high-risk premarital sexual behaviors in different countries as well as in Iran. In a study in the US, the frequency of extra-marital sexual intercourse has been reported as 80% and 73% among young men and women, respectively (12). In Turkey, it has also been reported that 74% of students have experienced extra-marital sexual intercourse (13). On the other hand, in China, the rate of sexual relationships among students has been reported lower than other countries (15% in male, 8.5% in female), which was related to the culture of China (12). In spite of the existing culture and Islamic religion in Iran, the Iranian society has not remained immune to high-risk behaviors and progressive prevalence of these behaviors is observed (14). In a study in Mashhad, the prevalence of unconventional sexual relationships has been stated to be 7.6% and 32.9% among female and male students, respectively, 24% of whom started sexual relationship at age younger than 15 (15). In another study, in southern Iran, the prevalence of premarital sexual

relationships was reported to be 10.5% and 2.9% among male and female students, respectively (5).

Pornography, having sex at early age, having sex under the influence of alcohol or drugs, having multiple sexual partners and unprotected sexual behaviors are common risky sexual behaviors (16,17). Researchers have considered different factors, such as access to Western culture and technology, emotional states, curiosity, substance abuse, alcohol consumption, and failure to practice self-control as effective factors in this regard (15, 18).

As other types of abnormalities that occur in any society, this social issue is latently lurking in the society with various dimensions and feedbacks, which deserves attention rather than denial. Thus, finding these behaviors can unveil the depth of the issue, so cultural and healthcare authorities try to find appropriate solutions to solve the any possible problem. In spite of increasing these behaviors in society, if people are asked about whether or not they have these risky behaviors, they may refuse to answer because of social stigma. For solving this problem, researchers use indirect but accurate methods to collect data, one of the indirect methods for estimating the correct size of the target groups is the Network scale-up (NSU) Method. This method does not require direct contact of researchers with target groups, and participants will be asked about the behavior of their network members, not themselves (19).

There are limited evidences on prevalence of sexual behaviors among the students of medical sciences in the southeast of Iran through NSU Method. The present study was conducted to investigate the prevalence of sexual behaviors among the

students in this area. Results of this study can help the health managers and policymakers to make preventive decisions.

2. *Materials and Methods*

In this cross-sectional study, a sample of 3900 students was selected from medical science universities in eighth macro-region of Iran (Kerman, Rafsanjan, Jiroft, Bam and Sirjan Universities of Medical Sciences in Kerman Province and Zahedan, Zabol and Iranshahr Universities of Medical Sciences in Sistan and Baluchestan Province) in 2019. The sample size of each university was determined using a multistage non-random sampling. At first, quota sampling method was used to determine sample size at each university based on proportional to size approach. After that, convenience sampling was done for selecting students as they were recruited from all departments. Sample size was calculated according to the results of a pilot study, which reported the watching porn 10.6%. Assuming $P=0.106$ and effect size to be 0.01, we arrived at a sample size of 3,640 at 0.05 significance level. The sample size was increased by up to 10% yielding the maximum sample size of 4,000 participants. Also 2.5% of the questionnaires were removed due to unreliable answers. The final sample size included 2,300 students from Kerman Province and 1,600 students from Sistan and Baluchestan Province.

The questionnaire consists of two main parts. In the first part, the demographic characteristics of the participants (age, sex, marital status, and education) were collected. In the second part, they were asked about the number of close friends during the last year who were engaged in

watching porn, masturbation, sexting (text, photo, and video), extramarital heterosexual intercourse by nonpayment, sex in return for payment, homosexuality, child abuse (sexual and behavioral) and abortion in the past year either for fun or due to continued practice. The validity and reliability of the questionnaire were assessed in a study conducted by Kazemzadeh et al. (20).

Due to the large population size, the researchers trained 25 interviewers for the study. Inclusion criteria included the students who attended the target university at least for one semester and exhibited their willingness to participate in the study. The participants were then asked to introduce some close friends identified as university students whom the respondent recognized by name and face, and communicated with several times a week outside of the class (21). All the data about the sexual high-risk behaviors of the students' close friends were obtained in anonymous questionnaires without disclosing the students' names.

Network Scale-Up (NSU)

This method estimates the proportion of people in the high-risk group in the society based on the average number of people known by respondents in hidden groups as well as the average size of respondents' individual network and includes three stages:

- 1- Estimating the average size of the individual network of respondents
- 2- Asking the respondents about the number of people they know in the target subgroup
- 3- Estimating the size of the target subgroup

Hereby, the formula is as follows:

$$\frac{e_i}{t} = \frac{m_i}{c}$$

Where c stood for the size of the participants' network, m was the number of people who were introduced as those with high-risk behaviors by the participants, and t was the total number of the target population, the students. Based on these three elements, e was estimated as the total number of people with high-risk behaviors (20).

Categorical variables were then presented as the numbers (percent). We employed the NSU Method to analyze the data in this study. We adjusted for the clustering effect of universities in the analysis using survey analysis. All estimates were weighed based on the inverse probability weight of College sampling. Comparison of categorical variables was carried out using the Chi-square test. Statistical analysis was also performed using Excel-2013, and SPSS Software, 19. The significance level was set at 0.05.

3. Results

Comparison of demographic characteristics of 3900 participants, including 2300 students from Kerman Province (1142 males, 49.7 %) and 1600 students from Sistan and Baluchestan Province (730 males, 45.6 %) is presented in Table 1. Most of the participants were between 19-29 years old (95.3%), single (78.4%), and with Bachelor's degree (63.5%). The mean value of close friends for the students of medical universities was found to be 8.1.

Table 1. Descriptive Attributes of participants in the present study, Iran 2019^a

Attribute		Total (n=3900)	Province	
			Kerman (n=2300)	Sistan and Baluchestan (n=1600)
Age	19-29	3718 (95.3)	2196 (95.5)	1522 (95.1)
	30-39	164 (4.2)	95 (4.1)	69 (4.3)
	>40	18 (0.5)	9 (0.4)	9 (0.6)
Sex	Male	1872 (48.0)	1142 (49.7)	730 (45.6)
	Female	2028 (52.0)	1158 (50.3)	870 (54.4)
Marital status	Single	3058 (78.4)	1853 (80.6)	1205 (75.3)
	Married	774 (19.8)	407 (17.7)	367 (22.9)
	Divorced	68 (1.7)	40 (1.7)	28 (1.7)
Education	ASC	814 (20.9)	581 (25.3)	233 (14.6)
	B.Sc.	2478 (63.5)	1304 (56.7)	1174 (73.4)
	M.Sc.	201 (5.1)	139 (6.0)	62 (3.9)
	Ph.D.	84 (2.1)	63 (2.7)	21 (1.3)
	General practitioner	323 (8.3)	213 (9.3)	110 (6.9)

^a Values are expressed as No. (%)

Watching porn (22.6%) and masturbation (19.5%) were the most prevalent sexual behaviours among all students. After watching porn and masturbation, extramarital heterosexual intercourse by nonpayment (11.7%) and sexting (8.8%)

was the more common sexual behaviour. Chi-square test was used to compare sexual behaviors between male and female students. The prevalence of sexual behaviors is reported to be higher in male students ($P < 0.001$). (Table 2).

Table 2. The prevalence of Sexual behaviors in last year among all students according to province and gender, Iran 2019^a

Sexual behaviors	Total n=3900 (CI 95%)	Province		Gender		P-value*
		Kerman n=2300 (CI 95%)	Sistan and Baluchestan n=1600 (CI 95%)	Male n=1872 (CI 95%)	Female n=2028 (CI 95%)	
Watching porn	22.6 (21.3, 24.0)	31.3 (29.4, 33.2)	9.0 (7.6, 10.4)	34.2 (32.0, 36.4)	9.4 (8.1, 10.7)	<0.001
Masturbation	19.5 (18.2, 20.7)	26.5 (24.6, 28.3)	8.5 (7.1, 9.9)	31.8 (29.7, 34.0)	5.3 (4.3, 6.3)	<0.001
Sexting (text, photo and video)	8.8 (7.9, 9.7)	10.5 (9.3, 11.8)	6.0 (4.8, 7.2)	11.5 (10.0, 13.0)	5.3 (4.3, 6.3)	<0.001
Sex in return for payment	5.7 (5.0, 6.5)	6.1 (5.1, 7.1)	5.1 (4.0, 6.2)	8.5 (7.2, 9.8)	1.9 (1.3, 2.5)	<0.001
Extramarital heterosexual intercourse by nonpayment	11.7 (10.7, 12.7)	14.3 (12.9, 15.8)	7.6 (6.3, 8.9)	15.7 (14.0, 17.4)	7.0 (5.9, 8.1)	<0.001
Homosexuality	3.0 (2.5, 3.5)	3.0 (2.3, 3.7)	3.1 (2.2, 3.9)	3.2 (2.4, 4.0)	2.1 (1.5, 2.8)	<0.001
Child abuse (sexual and behavioral)	0.9 (0.6, 1.2)	0.7 (0.4, 1.1)	1.2 (0.6, 1.7)	1.3 (0.7, 1.8)	0.3 (0.04, 0.5)	<0.001
Abortion	1.01 (0.7, 1.3)	0.8 (0.4, 1.1)	1.3 (0.7, 1.9)	No data	1.5 (0.9, 2)	-

^a Values are expressed as No. (%)

* P-value was calculated by χ^2 test.

The results of investigating the prevalence of sexual behaviors among universities is shown in Table 3. Watching porn and Masturbation were the most prevalent sexual behaviors among all students.

Table 3. The Prevalence of Sexual behaviors among the Students of Medical Sciences Universities in Kerman and Sistan and Baluchestan provinces, Iran 2019^a

Sexual behaviors	Watching porn (CI 95%)	Masturbation (CI 95%)	Sexting ^b (CI 95%)	SIR ^c (CI 95%)	EHI ^d (CI 95%)	Homosexuality (CI 95%)	Child abuse (CI 95%)	Abortion (CI 95%)
Kerman University of Medical Sciences (KUMS), n = 1000	19.9 (17.4, 22.4)	14.5 (12.2, 16.7)	7.8 (6.1, 9.5)	6.9 (5.3, 8.6)	15.4 (13.1, 17.7)	3.7 (2.5, 4.9)	0.8 (0.2, 1.3)	1.4 (0.6, 2.1)
Rafsanjan University of Medical Sciences (RUMS), n = 400	41.3 (36.4, 46.2)	42.8 (37.9, 47.8)	9.5 (6.0, 12.4)	3.6 (1.7, 5.4)	5.4 (3.2, 7.7)	0.7 (0, 1.5)	No data	0.1 (0, 0.4)
Jiroft University of Medical Sciences (JUMS), n = 300	44.0 (38.3, 49.7)	33.1 (27.7, 38.5)	19.4 (14.9, 24.0)	6.5 (3.7, 9.3)	23.2 (18.3, 28.1)	1.6 (0.1, 3.0)	0.4 (0.1, 2.0)	0.3 (0, 1.0)
Bam University of Medical Sciences (BUMS), n = 400	48.1 (43.1, 53.1)	38.6 (33.7, 43.4)	15.8 (12.1, 19.4)	6.4 (4.0, 8.9)	17.5 (13.7, 21.3)	4.9 (2.7, 7.0)	1.6 (0.3, 2.8)	0.3 (0, 1.0)
Sirjan University of Medical Sciences (SUMS), n = 200	17.3 (12.0, 22.7)	15.6 (10.5, 20.7)	8.1 (4.3, 12.0)	7.9 (4.1, 11.8)	16.8 (11.5, 22.1)	2.0 (0.02, 4.0)	1.1 (0, 2.5)	0.3 (0, 1.1)
Zahedan University of Medical Sciences (ZUMS), n = 850	9.6 (7.5, 11.6)	8.8 (6.8, 10.8)	6.7 (4.9, 8.4)	6.3 (4.6, 8.1)	9.7 (7.7, 11.8)	3.3 (2.0, 4.5)	1.4 (0.6, 2.2)	1.7 (0.8, 2.7)
Zabol University of Medical Sciences (ZbUMS), n = 450	6.1 (4.0, 8.2)	6.6 (4.4, 8.8)	4.7 (2.8, 6.5)	4.1 (2.4, 5.9)	4.4 (2.5, 6.2)	2.3 (0.9, 3.6)	0.8 (0, 1.5)	0.6 (0, 1.3)
Iranshahr University of Medical Sciences (IUMS), n = 300	11.5 (7.9, 15.2)	10.4 (6.9, 13.9)	5.4 (2.8, 8.0)	1.6 (1.1, 3.0)	4.0 (1.8, 6.3)	3.3 (1.2, 5.3)	0.7 (0, 1.7)	0.9 (0, 2.0)

^a Values are expressed as No. (%).^b text, photo and video.^c Sex in return for payment^d Extramarital Heterosexual Intercourse by nonpayment.

4. Discussion

The results of the present study indirectly indicated the rate of sexual behaviors among the medical sciences students of Iran in the 8th macro region. In this study most of the participants were undergraduate, young (19-29 years old) and single. Based on the results, the incidence of pre/extramartial sexual behaviors was higher among the male students than their female counterparts. Studies have shown that sexual behaviors in women are affected by sexual morality and expectations, and women preferred to have sexual relationships with those to whom they would like to get married; however, men reported a higher level of sexual experiences as well as allowable sexual attitudes compared to women (22). Furthermore, remaining virgin before marriage was found to be more important to women than for men, especially in Iranian cultural context (23).

Based on the results derived from the analyzed data, the major sexual behavior among both male and female students was watching pornographic movies with 22.6%, which was in line with the previous studies in Iran (24-26). Access to technology and communication media, cell phone, and the Internet may justify this issue (24,27). Improper use of media influence sexual behaviors and relationships among young people. Maybe, they do some impulsive behaviors, such as disinhibition and substance use (28). The results of another study showed a link between viewing pornography and tendency to anal sex and sexual coercion among young people, which has negative impact on their physical and psychological health (29).

Masturbation with the frequency of 19.5% was reported as the second most common

premarital sexual behavior. The findings of another study in China in line with the present research, reported masturbation as the second most frequent sexual behavior after watching pornographic movies among students (1). In another study by Kasemy conducted in Egypt as a Muslim country, the main sexual behaviors were reported as watching pornography and masturbation among the youth, which was also in line with the finding of the present study (30). The study results showed these behaviors are more frequent among male students than females. Premarital sexual relations of any kind is reprehended according to Iranian society, and it is considered more negative for girls than for boys (23,31). In a study in the US, masturbation was stated as the most common sexual behavior among the youth, with 92% of men and 48% of women reporting this behavior, respectively (32). The results of another study showed that 73.8% and 48.1% of American adult men and women, respectively, experienced masturbation; the prevalence of this behavior and its frequency increased in these individuals in higher ages (33).

In the present study, the third common sexual behavior among the students was vaginal intercourse with frequency of 17.7% and 7%, respectively, in males and females. Studies conducted in Asian countries, in line with the present study, have reported less occurrence of these behaviors among the Asian youth compared to their western counterparts (12,34). In a systematic review by Khalili (2020), the prevalence of extra/premarital sex among young females and males was reported 24% and 33%, respectively (14). Loss of virginity is a concern especially for girls in Asian cultures, such as Iranian culture, and in many regions it can lead to

crisis in their life (35). Non-vaginal methods were more frequent especially before marriage in those who preferred to keep their virginity but be sexually active (32). On the other hand, extra-marital sex can lead to unwanted pregnancy, social and health problems, school dropout, illegal and unsafe abortion and its consequences, and even suicide, which is more common in religious and traditional communities (36). Results of the current study also showed the prevalence of abortion was 1.5% among university students. There is not found any research that focus on this issue among university female students in Iran, but some other studies estimate the rate of abortion among females to be 6% to 14% (37, 38). A detail focus on this issue is suggested among university students.

Sexting with frequency of 8.8% was other sexual behavior among students. Nowadays, adolescents' problematic use of the Internet and its addiction are the common unhealthy behaviors and predictors of sexting and other related crimes (39). Studies have shown that sending sexual images and texts is common among students, and those who have experienced it previously have greater tendency to repeat it again (40). Other studies have also reported relationships between sexting and unprotected sexual behaviors, sexually-transmitted diseases, and drug abuse (39, 41). Furthermore, these individuals have frequently mentioned sending and receiving erotic images with the person with whom they have sexual relationships (42, 43). In other studies, in line with the results of the present study, sexting has also been observed in males more than females (42). Easy access to new communication technologies, such as cell

phones, messaging, social environments, and social media is one of the reasons for the prevalence of this behavior among students. Meanwhile, the Iranian culture and the constraints in dating may also promote this behavior among youth (35). In a study conducted in China, spending much time surfing the Internet and social networks was reported as an important cause of the incidence of sexual behaviors (12).

Sex in return for payment, homosexuality, and child sexual abuse were reported as other sexual behaviors among university students, which must be considered despite the less prevalence of them compared to those mentioned above. Benoit (2017) pointed to critical life events, such as abuse and neglect in childhood, need for money, and personal appeal as cofactors for choosing sex instead of money (44). Sex in return for payment is a deep root social issue which requires social solutions.

Although in recent years, homosexuality was known as a healthy expression of sexuality in some societies (45) and despite some current efforts for introducing these behaviors as normal sexual behavior in Iran (46, 47), it is yet a social stigma in Iran. Child sexual abuse is an alarming condition for the well-being of children and training in school, and society should be convinced to prevent child sexual abuse (48).

Studies have indicated that there is a correlation between behaviors, such as alcohol or drug abuse and other factors, such as academic failure and different sexual behaviors (12, 49). Prevalence of high-risk sexual behaviors, especially during young ages, when young people's knowledge is poor or incorrect about healthy sexual behavior, causes the risk of

hazardous sexual behavior increase and leads to problems, such as sexually-transmitted infections, unwanted pregnancies, and emergence of psychological and physical harms (35). Therefore, this issue should be considered by policy makers for planning and providing training for parents and adolescents to reduce the frequency of high-risk sexual practices and STIs. With respect to more common sexual behaviors among university students and the physical and psychological effects of these unhealthy behaviors on students, appropriate training should be provided to enhance university students' knowledge as well as the knowledge of society in this regard.

More studies are warranted with regards to the rates of sexual behaviors in communities with different cultural characteristics. There is a need to understand knowledge and attitudes of teachers in universities in providing accurate information related to risky sexual behavior and STIs. Future studies should focus on assessing students' attitudes toward risky sexual behaviors and their complications.

Limitation

Some of the students were worried about sensitive sexual questions and did not want to complete the questionnaire, so at first, the researchers explained the confidentiality and anonymity of the questionnaire. Despite these explanations, some questionnaires had missing data which were excluded from the study.

5. Conclusion

As the results showed, sexual behaviors, such as watching porn, masturbation, extramarital heterosexual intercourse, and sexting were more prevalent than other high-risk sexual behaviors in the young population, though hidden, which may harm themselves, their families, and the society. Training should be given about high-risk sexual behaviors, especially among the Iranian youth who live in a sexually restrained culture. Furthermore, the youth and adolescents should learn how to react to sexual issues, images and texts, so that they would be less harmed. Training families about sexual issues of the youth and the correct methods of establishing communication with young children can enhance the sexual well-being of this group of society.

Abbreviations

NSU: Network Scale-up

STDs: sexually transmitted diseases

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Authors' Contributions

MB and ND contributed to the material preparation, study conception and design, and data collection and interpretation. MB and ZI contributed to the study conception and design, writing the original draft and data interpretation. HB and FA contributed to data collection. The data analysis was performed by MB. All authors read and approved the final manuscript.

Declarations

Ethics approval and consent to participate

This study was carried out by Sirjan Faculty of Medical Sciences under the Ethics code IR.SIRUMS.REC.1397.001

Consent to publications

I give my consent for the publication of identifiable details, which can include details within the text (“Material”) to be published in the above Journal and Article.

Conflicts of Interest

The authors declare that there is not conflict of interest.

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