

# Sexual Behaviors and Vulnerability to Sexually Transmitted Infections in Transgender Women

**Azar Nematollahi**

Tehran University of Medical Sciences

**Safoora Gharibzadeh**

Pasteur Institute of Iran

**Maryam Damghanian**

Tehran University of Medical Sciences

**Saeid Gholamzadeh**

1-Legal medicine research Center, legal medicine organization

**Farnaz Farnam** (✉ [Fz.farnam@gmail.com](mailto:Fz.farnam@gmail.com))

Tehran University of Medical Sciences

---

## Research Article

**Keywords:** Sexual Behavior, Sexual Dysfunctions, Sexually Transmitted Diseases, HIV, Transgender Persons

**Posted Date:** April 16th, 2021

**DOI:** <https://doi.org/10.21203/rs.3.rs-403784/v1>

**License:**   This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

---

# Abstract

**Background:** It is essential to pay special attention to sexual health of transgender women. The aim of this study was to assess sexual behaviors and vulnerability of transgender women to sexually transmitted infections (STIs) including AIDS.

**Method:** A cross-sectional study was conducted using convenient sampling from August 2019 to March 2020 in Iran. 127 transgender women participated in this study. A researcher-made questionnaire was applied for evaluating sexual behaviors, STIs and HIV.

**Results:** The mean age of participants and their age of sexual debut were 27.6 and 16.9, respectively. 92.1% of participants were single with experience of sex and 59.3% had one sex partner in the last 2 years. 96.9% of the participants were heterosexual with 67.2% reporting experiencing orgasm in at least 50% of their sexual intercourse. However, 42.5% reported dyspareunia and the same percentage reported low or very low sexual satisfaction. The majority of participants had little knowledge of the symptoms (33.9%) and complications (44.1%) of STIs. Although 87.4% and 72.4% of participants had never been tested for a STI and HIV, 1.6% were infected with HIV and 18.1% with STIs.

**Conclusion:** Sexual interests of Iranian transgender women were aligned with those of cisgender women. In terms of sexual function, despite the higher rate of orgasm in transgender women, sexual satisfaction was lower in them compared to that of cisgender women due to dyspareunia and body dissatisfaction, which highlights the need to investigate for more effective surgeries and specific sexual counseling interventions in this group.

## Background

Transgender women feel uncomfortable with their biological male gender and identify themselves as female [1]. Few studies have been conducted on sexual behaviors and preferences of transgender people [2-4]. Transgender people may face significant challenges in the type and frequency of sexual activities, pleasure, and sexual satisfaction due to the psychological effects of gender dysphoria, body dissatisfaction, and improper functioning of sex organs [5, 6].

Studies conducted in 2013-14 in Europe indicated that 46 to 80% of transgender people are sexually active [4, 7], most of them are heterosexual [2], prefer anal sex and have multiple sex partners [8]. On the other hand, sexually-active transgender women were less inclined to use condoms during receptive anal sex with their main partner [9] because they wanted to feel intimate with him [10].

Many transgender women are unemployed due to discrimination and stigma and live below the poverty line. Financial problems sometimes make these people involved in high-risk sexual behaviors [11] such as having multiple sex partners, unprotected sex and prostitution [12]. As a result, they are subject to more health problems than the general population [13].

Transgender individuals are at serious risk for AIDS and other STIs, and according to the Centers for Disease Control and Prevention, they are four times more likely to experience HIV infection than the general population [14]. Unsafe hormonal or silicone injections for sex adaptation or drug injections may also put them at risk for HIV infection [12, 15, 16]. As reported by the National Center for Transgender Equality in 2012, about one-third of transgender people and 48% of transgender men in the United States failed to undergo or delayed preventative care, such as pelvic exams and STI screening test due to fear of discrimination or insulting behavior of health care providers [17].

According to official statistics, the prevalence of gender reassignment surgery (GRS) has significantly increased in Iran in recent decades [18]. Although any sexual relationship without marriage is legally prohibited in Iran, some studies suggest that 60% of Iranian transgender individuals have sex while they are single. The high prevalence of sexual activity, having sex with multiple partners [19] and a high percentage of transgender women being involved in high-risk sexual behaviors, including anal sex without condoms, expose this group to serious risk of STIs including AIDS [20].

In order to promote health in this vulnerable group, it is necessary to have accurate information on their sexual behavior, function and STIs. This study is part of a larger project on the reproductive and sexual health needs of transgender women. The frequency of violence, suicide and discrimination [21], as well as their quality of life, anxiety, depression and stress [22] are expressed in separate articles. In this study, sexual behavior of transgender women and their vulnerability to sexually transmitted infections were assessed.

## **Method**

A cross-sectional study was conducted in Shiraz and Tehran using convenient sampling from August 2019 to March 2020. Ethic approval obtained from Tehran University of Medical Sciences with Ethics number of IR.TUMS.FNM.REC.1398.052 on 24<sup>th</sup> June 2019. All methods were performed in accordance with the relevant guidelines and regulations of the Research Ethics Committee.

### **Participants**

Participants were selected from “Support center for Iranian transgender (MAHTAA)” and “Shiraz Forensic Medicine” by convenient sampling. 185 transgender women who were filed in the above-mentioned centers were called. Forty-five women did not answer. Eight individuals failed to meet inclusion criteria and 5 women were not willing to participate in the study. Written informed consent was obtained from 127 transgender women who opted to participate in the study. All questionnaires were completed in the presence of a researcher aware of the subject of the research at the relevant center. Inclusion criteria were all transgender women who had started treatment (hormone therapy or surgery).

### **Research Tools**

Three researcher-made checklists on demographic data, sexual behaviors and STIs were used in this study. The demographic checklist included 6 items on age, marital status, education, employment, economic status, and history of vaginoplasty. Sexual behavior checklist included 10 items on sexual debut age, having sexual experience, number of sex partners, sex partner having sex with other people, sexual orientation, dyspareunia, sexual satisfaction, body satisfaction, effect of body satisfaction on sexual satisfaction and prioritizing sexual behaviors in order of performing them. Transgender women were asked to prioritize sexual behaviors performed during sex from 1 to 8 (including self-stimulation, sexual fantasies, touching the genitals, romantic touching and caressing, kissing, oral sex, anal sex, vaginal sex). Behaviors with the highest frequency were ranked the first and those with lowest frequency were ranked eighth. The "not a priority" option included behaviors that had never been done before. To assess the status of STIs and HIV infection, 14 questions were designed on the knowledge on the ways of HIV transmission, recognizing the signs and symptoms of STIs, history of STIs, seeking treatment, considering oneself at risk for AIDS, the reasons for not being at risk, getting tested for STIs, rectal test, HIV test, reason for not doing HIV test, the feeling the need for condoms, the rate of condom use and the most important reason for condom nonuse. Some items were yes and no questions, some were multiple choice and some items were used to measure sexual satisfaction, body satisfaction and the effect of body satisfaction on sexual satisfaction using a 5-point Likert scale from very high to very low (in the tables, the answers are provided based on the type of question).

Validity of the questionnaires was assessed by content validity index (CVI) and content validity ratio (CVR) using opinions of 11 experts including psychiatrists, reproductive-sexual health, forensic practitioners, and psychologists. In the final questionnaire, the CVR for each question was between 0.63 to 1 and the CVI for each question was above 0.79, which was considered acceptable. Reliability was measured with a test-retest procedure on 25 transgender women with 3 weeks interval. Interclass Correlation Coefficient (ICC) of questions ranged from 0.78 to 1 and the total Cronbach's alpha coefficient was 0.8.

## Statistical Methods

Continuous variables were reported as mean and Sd, question's data were represented by number (%) for each of the questions. All statistical analysis was performed in STATA (StataCorp. 2015. *Stata Statistical Software: Release 14*. College Station, TX: StataCorp LP.)

## Results

The mean and standard deviation of participants' age was  $27.6 \pm 7.3$  and 48% were under 25 years old. 92.1% were single, 77.2% had high School degree and 62.2% were unemployed. 56.7% reported poor financial conditions and 74% did not have vaginoplasty (Table 1).

Table 1  
Baseline characteristics of study participants

	Number (%)
Age groups	
<25	61 (48)
26–34	42 (33.1)
≥ 35	24 (18.9)
Education	
Primary/ secondary	22 (17.3)
High School	98 (77.2)
Under/post graduate	7 ( 5.5)
Occupation	
Unemployed	79 (62.2)
Public sector	8 (6.3)
Private sector	40 (31.5)
Financial conditions	
Poor	72 (56.7)
Good	55 (43.3)
Marital Status	
Single	117 (92.1)
Married	5 (3.9)
Divorced	4 (3.2)
In a relationship	1 (0.8)
Vaginoplasty(yes)	33(26)

Evaluation of sexual behaviors showed that the minimum sexual debut age was 12 and the maximum was 34 with a mean and standard deviation of  $16.9 \pm 3.4$ . 92.2% had sex experience and the majority (59.3%) had one sex partner in the last 2 years. 48.7% were unaware of their partners' potential sexual relationship with other people and 96.9% were heterosexual. 42.5% had dyspareunia, 67.2% experienced orgasm in at least 50% of sexual intercourse and 41.6% had very little or low satisfaction with their sex

life. About 60% of women were moderately satisfied or dissatisfied with their appearance and believed that appearance had a high or very high effect on their sexual satisfaction (Table 2).

Table 2  
Distribution of study participants as per sexual behaviors

Variable	Number (%)
Having a history of sexual intercourse(yes)	118(92.9)
Number of sexual partners in the last 2 years	67(59.3)
1 person	31(27.4)
2 to 3 people	15(13.3)
More than 3 people	
Sexual partner's relationship with another person	42(37.2)
No	16(14.1)
Yes	55(48.7)
I do not know	
Sexual orientation	123(96.9)
Heterosexual	4(3.1)
Bisexual	
Dyspareunia (yes)	48(42.5)
Experience of orgasm	9(8)
Never	28(24.8)
In 25% of cases	45(39.8)
In 50% of cases	21(18.6)
In 75 of cases	10(8.8)
Always	
Sexual satisfaction	3(2.7)
Very much	6(5.3)
Much	57(50.4)
As medium	33(29.2)
Low	14(12.4)
Very little	

<b>Variable</b>	<b>Number (%)</b>
Satisfaction with the appearance	9(7.5)
Completely satisfied	40(33.3)
Somewhat satisfied	48(40)
Moderate satisfaction	14(11.7)
Somewhat dissatisfied	9(7.5)
Completely dissatisfied	
The effect of physical satisfaction on sexual satisfaction	23(20)
Very much	46(40)
Much	40(34.8)
As medium	3(2.6)
Low	3(2.6)
Very little	

In order to better understand the sexual behaviors performed and preferred by transgender women during sex, these behaviors were prioritized and evaluated; behaviors with the highest frequency were ranked first and behaviors with the lowest frequency were ranked eighth. In case of low frequency, some priorities were merged.

The most frequent sexual behavior in transgender women was romantic touching and caressing (53.1%) and then kissing (48.7%). Oral and anal sex had the lowest frequency among sexual behaviors and had never been tried in 54% and 47% of transgender women ; however, they were inevitably the third frequent sexual behavior (22.1% and 19.5% respectively) due to the lack of vaginoplasty in the majority of transgender women (74%). As a result, vaginal sex either did not exist or had the lowest frequency in 74.3% of transgender women. 85.8% had no self-stimulation and there was no sexual fantasies or touching genitals in 70.8% of participants (Table 3).

Table 3  
Prevalence of sexual behaviors of study participants during sexual intercourse

<b>Sexual behaviors in order of priority</b>	<b>Total Number = 113</b>
Romantic touching and caressing	60(53.1)
First priority	
Second priority	32(28.3)
Other priorities	21(18.6)
Kissing	36(31.9)
First priority	55(48.7)
Second priority	22(19.4)
Other priorities	
Oral sex	61(54)
Has no priority	25(22.1)
Third priority	18(15.9)
The fourth priority	9(8)
Other priorities	
Anal sex	53(47)
Has no priority	22(19.5)
Third priority	12(10.5)
The fourth priority	26(23)
Other priorities	
Vaginal sex	84(74.3)
Has no priority	5(4.4)
Third priority	9(8)
The fourth priority	15(13.3)
Other priorities	
Self-stimulation	97(85.8)
Has no priority	16(14.2)
Other priorities	

<b>Sexual behaviors in order of priority</b>	<b>Total Number = 113</b>
Sexual fantasies	80(70.8)
Has no priority	33(29.2)
Other priorities	
Touching the genitals	80(70.8)
Has no priority	33(29.2)
Other priorities	

About 50% of the participants were familiar with only 1 to 4 ways of HIV transmission. The majority of participants did not know any of the symptoms (33.9%) and complications (44.1%) of STIs. About 18% of participants had a history of STIs and 82.6% had been treated for the disease. In the sample under study, 2 participants were HIV positive (1.6%) and 2 participants had genital warts (1.6%).

88.2% of participants did not consider themselves at risk of HIV infection, and their most important reasons for not being at risk was that they were not having sex (36.5%) or had only one sex partner (34.8%). 87.4% of participants have never undergone STIs screening, about 90% have never had a rectal exam for genital warts, and 72.4% have never had an HIV test. The majority of participants cited they failed to undergo tests because they think they are not at risk (76.1%).

The majority of participants confirmed the need to use condoms during all types of sex (about 45%) and about one third of participants mentioned it necessary only for vaginal sex (33%). About half of the participants used condoms occasionally during sex (48.7%) and the most important reason for not using condoms in most cases was not having a condom (37.9%) or their sexual partner not accepting to use one (33.7%) (Table 4).

Table 4  
Distribution of study participants as per sexual transmitted infections(STIs) & HIV

Variable	Number (%)
Awareness of transmission ways of HIV	28(22)
1 or 2 ways	38(30)
3 or 4 ways	24(18.9)
5 or 6 ways	37(29.1)
All the ways	
Awareness of symptoms of STIs	43(33.9)
Not at all	51(40.2)
1 or 2 symptoms	24(18.9)
3 to 4 symptoms	9(7)
All the symptoms	
Awareness of complications of STIs	56(44.1)
Not at all	61(48)
1 or 2 complications	10(7.9)
3 to 4 complications	
Do you have a history of a STI? (yes)	23(18.1)
Have you been looking for a cure for STI? (yes)	19(82.6)
Do you consider yourself at risk for AIDS?	13(10.2)
Yes	112(88.2)
No	2(1.6)
I do not know	
Reason for not being at risk of AIDS	42(36.5)
No sexual contact	8(6.9)
Regular use of condoms	40(34.8)
Having only one sexual partner	25(21.8)
Do not use a common needle	
Test for STIs (No)	111(87.4)
Rectal exam for HPV (No)	114(89.8)

<b>Variable</b>	<b>Number (%)</b>
Test for HIV (No)	92(72.4)
Reason for avoiding HIV test	83(76.1)
I do not consider myself in danger	11(10.1)
I'm afraid and I do not want to know	9(8.3)
Fear of losing personality	6(5.5)
All 3 items	
Need to use a condom	7(5.5)
Anal sex	42(33)
Vaginal sex	2(1.6)
Oral sex	17(13.4)
Anal and vaginal sex	57(44.9)
All sex	2(1.6)
I do not know	
Frequency of condom usage	20(17.7)
Always	55(48.7)
Sometimes	38(33.6)
Never	
Reason for not using condom	36(37.9)
Not having a condom	22(23.1)
Decreased sexual pleasure	32(33.7)
Sexual partner rejection	2(2.1)
Alcohol and drug abuse	3(3.2)
It was not necessary	

## Discussion

This study was conducted to evaluate the sexual behaviors of transgender women and their vulnerability to STIs including HIV.

Results of the study on sexual behaviors of 127 transgender women showed that although 92% of them were single at the time of the study, about 93% had sex experience in their life. Although the majority of

participants had sex with a single partner for the past 2 years, it is important to pay attention to the rest 40.7% who had more than 2 partners in the last 2 years. Considering the fact that in Iran, sex is legal only in marriage, these people are exposed to high-risk behaviors, and STIs including AIDS. This conclusion seems plausible by looking at demographic characteristics such as 62.2% unemployed and inappropriate financial situation in 56.7% of participants. In a study by Clements-Nolle, 80% of transgender women had sex in the last 6 months and 37% had sex with more than 10 people [23]. In the study by Herbst, 31.7% of transgender women had multiple sex partners [24].

In the present study, sexual interests of transgender women were similar to those of Cisgender women in many ways. Romantic touching and caressing (53.1%) and then kissing (48.7%) were the first and second sexual behaviors and preferences in transgender women. Naturally, due to the absence of vagina in 74% of the participants in this study, vaginal sex, despite their strong desire, was less prevalent in their sexual relations and oral and anal sex were inevitably the third sexual behavior with a frequency of 22.1% and 19.5%. The frequency of oral and anal sex in Iranian transgender women seems lower relative to other transgender women, which is consistent with the unpleasantness of these behaviors among most Iranian cisgender women [25]. By contrast, in the study by Sinha in India, all transgender participants had receptive anal sex and 73.3% had receptive oral sex [26]. In his study, 70% of participants had sex for money and therefore, they were willing to perform any type of sex even against their will. Other patterns of sexual behavior, such as very low preference for fantasy or masturbation, were consistent with patterns of sexual behavior among Iranian women [27].

Although transgender women had similar interests to Cisgender women, there were significant differences in their sexual function. In this study, about 67.2% of transgender women reached orgasm in at least 50% of sexual intercourse and only 8% of them did not experience orgasm, which is quite significant compared to the prevalence of orgasmic disorders (37%) [28] and anorgasmia (26%) in Iranian women [29]. Experiencing a more pleasurable orgasm in transgender women compared to cisgender women may be due to the previous experience of orgasm owing to having a penis. In addition, the high ability to reach orgasm without vaginal penetration reaffirms that orgasm in women is less dependent on vaginal intercourse.

It should be noted that despite reaching proper orgasm, transgender women did not report high sexual satisfaction and 41.6% of them reported low and very low satisfaction with their sex life. This finding is important from several perspectives. First, consistent with other studies, this finding shows that reaching orgasm does not necessarily imply high sexual satisfaction, and sexual satisfaction in women is largely influenced by other factors such as satisfaction with husband [30, 31] and body satisfaction [32, 33]. In this study, about 60% of people were moderately satisfied or dissatisfied with their appearance and believed that appearance has a great impact on their sexual satisfaction. Therefore, efforts should be made to nurture a positive body image in them.

Another reason for low sexual satisfaction in transgender women is the significant prevalence of dyspareunia in them. The frequency of dyspareunia in transgender women was 42.5% which is

significant compared to the prevalence of severe (10.5%) and moderate dyspareunia (25.8%) in Iranian women [34]. At the same time, due to the absence of vaginoplasty in 74% of participants, they had to have anal sex which was described as painful and unpleasant. This shows that in order to improve the sexual health of transgender women, more useful and less complicated surgical methods are required, and special attention should be paid to sexual counseling, especially with their sex partner.

In addition, low sexual satisfaction in transgender women despite proper orgasm can be attributed to common sexual scripts in the society that generally consider sex to be penetration-based, and if absent, sexual satisfaction is overshadowed by dyspareunia or absence of vagina. With proper culture development and sexual counseling, however, their high potential for orgasm can be used to improve their sexual satisfaction.

This study showed that a significant portion of transgender women were not familiar with any STIs signs and symptoms and unfortunately 88.2% did not even consider themselves at risk for HIV infection. This finding is mostly related to cultural factors and lack of awareness on STIs in traditional societies. In India for instance, 88% of transgender people were not familiar with STIs(8) but in Canada 95% of transgender people were familiar with at least three main ways of HIV transmission [35].

STIs and HIV screening was never performed in 87.4% and 72.4% of participants respectively. However, among the few transgender women who underwent these tests, 1.6% were HIV positive and 18% had STIs. However, a study on general population of Iranian women indicated that the prevalence of gonorrhea is 0-2.4%, chlamydia 6.4- 10.3%, syphilis less than 1%, HPV 7% and the prevalence of HIV infection is 0.14% [36]. The high prevalence of STIs and HIV in transgender women compared to the general population indicates their high vulnerability to high-risk sexual behaviors such as unprotected sex and sometimes having multiple sex partners. Similarly, in the studies conducted on transgender women, the prevalence of STIs was between 13 and 21% [24, 26, 37]. In contrast to the present study, in most studies, the average prevalence of HIV infection in transgender women based on a positive laboratory test was between 14 and 41% [23, 24, 37, 38], which is significant, because more than 72% of participants in this study had never undergone HIV test. Also, these people have been deprived of other health services due to social stigma and discrimination [21].

In this study, about one-third of participants never used condoms during sex, and half of them used it occasionally. In addition, they mentioned that the most common reason for not using a condom was not having one, and given that the majority of participants in the study were in poor financial conditions, it seems necessary to provide them with free condoms and give them necessary training for safe sex. Results of other studies showed that the average condom nonuse in transgender people was low and between 34% and 48% [24, 37, 39].

To interpret the results of this study, it is necessary to consider its limitations such as data being self-reported and the lack of a cisgender group for comparison. However, this is the first study in Iran that examines sexual behaviors and vulnerability to sexually transmitted diseases in transgender women in a significant sample size.

## Conclusion

Results of this study indicated that sexual interests of transgender women were similar to cisgender women in any society in line with cultural patterns of their country. For example, in line with the preferences of Iranian cisgender women, transgender women were not interested in anal and oral sex, although they were forced to do so due to the lack of vagina or dyspareunia.

In addition, it seems that due to having penis at some point in life and experiencing previous orgasm, transgender women reach orgasm more easily and commonly compared to cisgender women, which emphasizes that women can reach orgasm without vaginal penetration. Despite having pleasurable orgasm, transgender women reported less sexual satisfaction than cisgender women for reasons such as dyspareunia and body dissatisfaction, which emphasizes the need for research on more effective surgeries. However, sexual dissatisfaction can be due to the great importance of vaginal sex in cultures, which indicates that specific sexual counseling is necessary in this group.

Paying attention to job opportunities and financial condition of transgender people, as well as raising their awareness on sexually transmitted diseases can be very effective in reducing high-risk behaviors and promoting their health.

## Abbreviations

sexually transmitted infections (STIs)

content validity index (CVI)

content validity ratio (CVR)

## Declarations

### Ethics approval and consent to participate

Ethics approval obtained from Tehran University of Medical Sciences with Ethics number of IR.TUMS.FNM.REC.1398.052 on 24<sup>th</sup> June 2019. To maintain confidentiality and privacy, participants were assured that their information was confidential and their names or addresses will not be disclosed in the research. Written consent was obtained from all participants. This study was reviewed and approved by the Ethics Committee of Tehran University of Medical Sciences. All methods were performed in accordance with the relevant guidelines and regulations of the Research Ethics Committee.

### Consent for publication

Not applicable

### Availability of data and materials

The data are available from the corresponding author on reasonable request.

### **Competing interests**

The authors declare that they have no competing interests.

### **Funding**

This work was supported by the Tehran University of Medical Sciences Grant number 98-3-100-43201.

### **Authors' contributions**

F.F; A.N; S.Gha; M.D and S.Gho. designed the study.

A.N Collected data from participants.

A.N; F.F and S.Gha analyzed and interpreted the data.

A.N wrote the initial and subsequent drafts of the manuscript.

A.N; F.F and S.Gha contributed to revising the manuscript.

All authors read and approved the final manuscript.

### **Acknowledgment**

We thank of Tehran Transgender Support Center and Shiraz Forensic Medicine for introducing and collecting study participants.

### **Authors' information**

A.N, F.F, Department of Reproductive Health, School of Nursing and Midwifery ,Tehran University of Medical Sciences, Tehran, Iran.

S.Gha, Department of Epidemiology and Biostatistics, Pasteur Institute of Iran, Tehran, Iran.

M.D, Nursing and Midwifery Care Research Center, School of Nursing and Midwifery. Tehran University of Medical Sciences, Tehran, Iran.

S.Gho, 1-Legal medicine research Center, legal medicine organization, Tehran, Iran.

2- Vice Chancellor in Administration and Resources Development affairs, Shahid Beheshti University of Medical Sciences, Tehran Iran

### **Acknowledgment**

This work was supported by the Tehran University of Medical Sciences with Grant number 98-3-100-43201. We thank of Tehran Transgender Support Center Shiraz Forensic Medicine for introducing and collecting study participants .

### **Conflicts of Interest:**

The authors report no conflicts of interest

## **References**

1. Gamarel KE, Chakravarty D, Neilands TB, Hoff CC, Lykens J, Darbes LA. Composite risk for HIV: a new approach towards integrating biomedical and behavioral strategies in couples-based HIV prevention Research AIDS Behav. 2019;23(1):283–8. doi:10.1007/s10461-018-2229-8
2. Bungener SL, Steensma TD, Cohen-Kettenis PT, De Vries AL. Sexual and romantic experiences of transgender youth before gender-affirmative treatment. Pediatrics. 2017;139(3).doi: 10.1542/peds.2016-2283.
3. Bartolucci C, Gómez-Gil E, Salamero M, Esteva I, Guillamón A, Zubiaurre L, et al. Sexual quality of life in gender-dysphoric adults before genital sex reassignment surgery. The journal of sexual medicine. 2015;12(1):180–8. doi: 10.1111/jsm.12758. Epub 2014 Nov 17.
4. Cerwenka S, Nieder TO, Cohen-Kettenis P, De Cuypere G, Haraldsen IRH, Kreukels BP, et al. Sexual behavior of gender-dysphoric individuals before gender-confirming interventions: a European multicenter study. J Sex Marital Ther. 2014;40(5):457–71. doi: 10.1080/0092623X.2013.772550.
5. Nikkelen SW, Kreukels BP. Sexual Experiences in Transgender People: The Role of Desire for Gender-Confirming Interventions, Psychological Well-Being, and Body Satisfaction. J Sex Marital Ther. 2018;44(4):370–81. doi: 10.1080/0092623X.2017.1405303.
6. Doorduyn T, Van Berlo W. Trans people's experience of sexuality in the Netherlands: a pilot study. Journal of Homosexuality. 2014;61(5):654 – 72.doi.org/10.1080/00918369.2014.865482
7. Costantino A, Cerpolini S, Alvisi S, Morselli PG, Venturoli S, Merigliola MC. A prospective study on sexual function and mood in female-to-male transsexuals during testosterone administration and after sex reassignment surgery. J Sex Marital Ther. 2013;39(4):321 – 35.doi: 10.1080/0092623X.2012.736920.
8. Kundu M, Panda N, Chowdhury S, Basu R, Das D, Sonkar R, et al. P4. 114 Sexual Behavior and Practice Among Transgenders in West Bengal, India. Sex Transm Infect. 2013;89(1):A323. doi:10.1136/sextrans-2013-051184.1011
9. Wilson EC, Garofalo R, Harris DR, Belzer M. Sexual risk taking among transgender male-to-female youths with different partner types. American journal of public health. 2010;100(8):1500–5. doi:10.2105/AJPH.2009.160051)
10. Nemoto T, Operario D, Keatley J, Villegas D. Social context of HIV risk behaviours among male-to-female transgenders of colour. AIDS care. 2004;16(6):724–35.doi:

10.1080/09540120413331269567..

11. Hines DD, Draucker CB, Habermann B. HIV testing and entry to care among trans women in Indiana. *J Assoc Nurses AIDS Care*. 2017; 28(5):723 – 36. doi: 10.1016/j.jana.2017.05.003.
12. Shankle M. *The handbook of lesbian, gay, bisexual, and transgender public health: A practitioner's guide to service*: Routledge; 2013.
13. Winter S, Diamond M, Green J, Karasic D, Reed T, Whittle S, et al. Transgender people: health at the margins of society. *The Lancet*. 2016;388(10042):390–400.doi.org/10.1016/S0140-6736(16)00683-8
14. Grant JM, Mottet LA, Tanis J, Herman JL, Harrison J, Keisling M. *National transgender discrimination survey report on health and health care*. Washington, DC: National Center for Transgender Equality and the National Gay and Lesbian Task Force. 2010.
15. Coleman EJ, Kirk S, Bockting WO. *Transgender and HIV: Risks, prevention, and care*: Routledge; 2014.
16. Lombardi EL, van Servellen G. Building culturally sensitive substance use prevention and treatment programs for transgendered populations. *Journal of Substance Abuse Treatment*. 2000;19(3):291–6. doi.org/10.1016/S0740-5472(00)00114-8
17. Equality NCfT. *transgender sexual and reproductive health: unmet needs and barriers to care* [internet]. Washington DC2012. Available from:www.TransEquality.org
18. Aghabikloo A, Bahrami M, Saberi SM, Emamhadi MA. Gender identity disorders in Iran; request for sex reassignment surgery. *International Journal of Medical Toxicology and Forensic Medicine*. 2012;2(4):128–34.
19. Javaheri F. A study of transsexuality in Iran. *Iranian Studies*. 2010;43(3):365–77. doi.org/10.1080/00210861003693893
20. Moayedi-Nia S, Taheri L, Rouzbahani NH, Rasoolinejad M, Nikzad R, Ardebili ME, et al. HIV prevalence and sexual behaviors among transgender women in Tehran, Iran. *AIDS and Behavior*. 2019;23(6):1590–3.doi.org/10.1007/s10461-018-02380-w
21. Nematollahi A, Farnam F, Gharibzadeh S, Khoda-khah P. Investigating discrimination, violence, and suicide in transgender women in Iran. *Health Care for Women International*. 2020; [Submitted].
22. Nematollahi A, Farnam F, Gharibzadeh S. Quality of life and mental health in Iranian transgender women: Socio-demographic differences. *Reproductive Health*. 2020;[Submitted].
23. Clements-Nolle K, Marx R, Guzman R, Katz M. HIV prevalence, risk behaviors, health care use, and mental health status of transgender persons: implications for public health intervention. *American journal of public health*. 2001;91(6):915.doi: 10.2105/ajph.91.6.915
24. Herbst JH, Jacobs ED, Finlayson TJ, McKleroy VS, Neumann MS, Crepaz N, et al. Estimating HIV prevalence and risk behaviors of transgender persons in the United States: a systematic review. *AIDS and Behavior*. 2008;12(1):1–17.doi.org/10.1007/s10461-007-9299-3
25. Hashemi S, Seddigh S, Tehrani FR, Khansari SMH, Khodakarami N. Sexual behavior of married Iranian women, attending Taleghani public health center. *Journal of reproduction & infertility*.

- 2013;14(1):34.PMCID: PMC3719361. PMID: 23926559.
26. Sinha A, Goswami DN, Halder D, Mallik S, Bisoi S, Karmakar PR. Sexual behavior of transgenders and their vulnerability to HIV/AIDS in an Urban Area of Eastern India. *Indian journal of public health*. 2017;61(2):141–3.doi: 10.4103/ijph.IJPH\_248\_14.
  27. Farnam F, Raisi F, Janghorbani M, Merghati-Khoei E. How do Iranian women with sexual problems conceptualize sexuality? A qualitative research. *Nursing Practice Today*. 2016;3(3):107–15.
  28. Safarinejad M. Female sexual dysfunction in a population-based study in Iran: prevalence and associated risk factors. *International journal of impotence research*.2006;18(4):382–95. doi.org/10.1038/sj.ijir.3901440
  29. Najafabady MT, Salmani Z, Abedi P. Prevalence and related factors for anorgasmia among reproductive aged women in Hesarak, Iran. *Clinics [online]*. 2011, vol. 66, n. 1. ISSN. 2011;5932:83 – 6. doi.org/10.1590/S1807-59322011000100015
  30. Merghati Khoei E, Maasoumi R, Talebi S, Hajimirzaie S, Bayat A, Rimaz S, et al. Factors affecting sexual satisfaction in Iranian women. *Women's Health Bulletin*. 2015;2(4):1–4.doi: 10.17795/WHB26604
  31. Dehghani Champiri F, Dehghani A. Predicting sexual satisfaction in Iranian women by marital satisfaction components. *Sexual and Relationship Therapy*.2020:1–15 doi.org/10.1080/14681994.2020.1736279.
  32. Fathi Aghdam G, Haghghat S, Dorri S, Nazeri N, Ajorbadian A. The Comparison of Sexual Satisfaction and Body Image between Women with Breast Cancer after Treatment and Healthy Women. *Iranian Quarterly Journal of Breast Disease*. 2018;11(2):46–55.doi: 10.30699/acadpub.ijbd..11.2.46
  33. Marvi N, Golmakani N, Esmaily H, Shareh H. The Relationship between Sexual Satisfaction and Genital Self-image in Infertile Women. *Journal of Midwifery and Reproductive Health*. 2018;6(4):1468–75.doi:10.22038/JMRH.2018.21564.1233
  34. Alizadeh A, Farnam F, Raisi F, Parsaeian M. Prevalence of and risk factors for genito-pelvic pain/penetration disorder: a Population-Based Study of Iranian Women. *The journal of sexual medicine*. 2019;16(7):1068–77.doi.org/10.1016/j.jsxm.2019.04.019.
  35. Hessou S, Glele Ahanhanzo Y, Kpozehouen A, Biaou A, Yadouleton T, Sodoloufo O, et al. Knowledge and sexual behaviors of transgender individuals faced with the risk of STI/HIV in Benin: Yolaine Glele Ahanhanzo. *European Journal of Public Health*. 2019;29(4):ckz186. 665.
  36. Johnson RB, Onwuegbuzie AJ. Mixed methods research: A research paradigm whose time has come. *Educational researcher*. 2004;33(7):14–26.doi.org/10.3102/0013189X033007014
  37. Operario D, Nemoto T, Iwamoto M, Moore T. Unprotected sexual behavior and HIV risk in the context of primary partnerships for transgender women. *AIDS and Behavior*. 2011;15(3):674–82. doi.org/10.1007/s10461-010-9795-8.
  38. Becasen JS, Denard CL, Mullins MM, Higa DH, Sipe TA. Estimating the prevalence of HIV and sexual behaviors among the US transgender population: a systematic review and meta-analysis, 2006–

2017. American journal of public health. 2019;109(1):e1-e8.
39. Bhatta DN. HIV-related sexual risk behaviors among male-to-female transgender people in Nepal. International Journal of Infectious Diseases. 2014;22:11 – 5.[doi.org/10.1016/j.ijid.2014.01.002](https://doi.org/10.1016/j.ijid.2014.01.002)