



**PREVALENCE OF SEXUAL DYSFUNCTION AND
ASSOCIATED FACTORS, AMONG WOMEN SEEKING
INFERTILITY TREATMENT AT SAINT PAUL'S HOSPITAL
MILLENNIUM MEDICAL COLLEGE CENTER FOR
FERTILITY AND REPRODUCTIVE MEDICINE, ADDIS
ABABA, ETHIOPIA**

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November, 2024

Addis Ababa, Ethiopia

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PREVALENCE OF SEXUAL DYSFUNCTION AND ASSOCIATED FACTORS AMONG WOMEN SEEKING INFERTILITY TREATMENT, AT SAINT PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE CENTER FOR FERTILITY AND REPRODUCTIVE MEDICINE, ADDIS ABEBA, ETHIOPIA: CROSS SECTIONAL STUDY

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ABSTRACT

Background: Sexual health is defined as a dynamic state involving erotic and reproductive experiences and fulfillment within a broader physical, emotional, interpersonal, social, and spiritual sense of well-being. The prevalence of sexual dysfunction among infertile women in studies is in the range of 35.6% to 87.1%. Among the different domains of Female sexual dysfunction (FSD) the most commonly affected was arousal-sensation at 80.2%, desire 59.9% and orgasm 22.8%. Factors associated with sexual dysfunction include age, pregnancy, child birth and breastfeeding, interpersonal relationship, socioeconomic factors like poor educational level and low income, past history of sexual abuse, circumcision, menopause, certain medications like hormonal contraceptives and poor health.

Objectives: The objective of this study was to assess the magnitude of female sexual dysfunction and associated factors among infertile women at St Paul's hospital Millennium medical college center for fertility and reproductive medicine, Addis Ababa, Ethiopia.

Methods and Materials: A cross sectional survey of women seeking treatment at st Paul's millennium medical college infertility center in Addis Ababa Ethiopia from August to September 2024GC was conducted on 215 women. Women were selected with a systematic random sampling and modified form of Amharic version of female sexual function index was used for data collection. The data collected using kobo tool box was exported and analyzed with SPSS v28.

RESULTS: The study showed that prevalence of female sexual dysfunction among infertile women was 80.4% when assessed by the Female sexual function index (FSFI). The mean age of participants was 33 years. The most commonly affected domains were arousal, lubrication and pain affecting 100% of the participants. "History of gynecologic surgery" demonstrated a statistically significant association (AOR = 1.55, $p = 0.031$). Unfortunately the specific types of procedures were not assessed. Otherwise there was no statistically significant association between

female sexual dysfunction and several independent variables, including age, physical activity, income, educational level, religion and chronic medical illness.

CONCLUSION: In conclusion in this study 4 out of 5 infertile women had sexual dysfunction which is significantly higher than general population. There was a weak statistically insignificant negative correlation between duration of infertility and FSD. It is important to note that while "history of surgery" showed a statistically significant association with FSD, further research is needed to explore the nature and direction of this relationship.

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ABBREVIATION

FSD....Female sexual dysfunction

SPHMMC.... St Paul's Hospital Millennium Medical College

CFRM.....Center for fertility and reproductive medicine

SPSS....Statistical package for social sciences

WHO.....World Health Organization

FSFI.....Female Sexual Function Index

1. INTRODUCTION

1.1 Background

Taking into account the different domains like historical, physiological, psychological, interpersonal, sociocultural, and ethical views, including attention to human rights issues; the World Psychiatric Association has defined sexual health as “a dynamic and harmonious state involving erotic and reproductive experiences and fulfillment, within a broader physical, emotional, interpersonal, social, and spiritual sense of well-being, in a culturally informed, freely and responsibly chosen and ethical framework; not merely the absence of sexual disorders.”(1)

In 1998 when the approval for sildenafil by regulatory agency was given, urologist Irwin Goldstein received calls from women demanding solution for their sexual health problems, leading him to recognize the paucity of knowledge about the physiology of female sexual function and pathophysiology of the dysfunctions. This understanding and his actions to change it led to establishment of the Female sexual Function Forum three years later, which was later renamed to the International Society for the Study of Women’s Sexual Health.(2) Even though our knowledge in the area of female sexual dysfunction has progressed appreciably in the decades following this event, there is still significant social stigma surrounding it’s discussion especially in low and middle income countries where religious and traditional customs regulating marital relations are prominent. (3)

The prevalence of female sexual dysfunction is reported over wide range from international metaanalysis reporting 50.7%, to Nigerian institution based study resulting in 85.6% and a local population based cross-sectional study resulting in 57%.(4)(5)(6). All of these, however, show that female sexual dysfunction is a prominent problem for which a gynecologist is well positioned to be a solution to.

Infertility is inability to conceive with one year of unprotected adequate sexual intercourse in women aged younger than 35 and 6 months in those 35 and older. It is a problem affecting significant proportion of the world, with recent data indicating prevalence estimates in the range of 16.5 in low income countries to 17.8 percent adults in high income countries. In women the magnitude of infertility rises with increasing age with 3% of women aged 20 to 24 years and 5.5% of those aged 35 to 39 years.(7).

The relationship between infertility and female sexual dysfunction may be bidirectional with sexual dysfunction resulting in infertility and the diagnosis of infertility causing emotional, psychological and even altered physiological effect in the couple's sexual life(8). Some studies show Sexual dysfunctions as a cause of involuntary childlessness are relatively uncommon and reported as around 5%(9). But if we consider 10-15% of infertility with unexplained causes and consider sexual dysfunction 'hides' in that category the estimate might be higher(10). The prevalence of sexual dysfunction among infertile couple in general can be as high as 47%(11). Most studies reporting the prevalence of sexual dysfunction in the female partner of an infertile couple site a higher number; like a study in Iran reporting 64.3%(12). Among the different types of FSD the most commonly affected was arousal-sensation at 80.2%, desire 59.9% and orgasm 22.8%(13)(12).

In contrast there are some studies that found no correlation between sexual dysfunction and infertility(15)(16).

Factors general described to be associated with sexual function in females in general population include advancing age, pregnancy, child birth and breastfeeding, interpersonal relationship with the partner , socioeconomic factors like poor educational level and low income, past history of sexual abuse , circumcision, menopause, certain medications like hormonal contraceptives and poor health(11)(17).

1.2 Statement of the problem

Approximately 40-45% of adult women and 20-30% of adult men experience sexual dysfunction. The prevalence of sexual distress among women increases with age, peaking at 15% in women aged 45-64 before declining to 9% in those aged 65-85. The DSM-5 identifies four types of female sexual dysfunction: Female sexual interest/arousal disorder, Female orgasmic disorder, Genito-pelvic pain/penetration disorder, and Substance/medication-induced sexual dysfunction.(19)

Research indicates that women experiencing infertility are more likely to have sexual dysfunctions compared to the general population. While infertility and sexual dysfunction can exist independently, they are frequently interconnected. The inability to conceive can lead to

difficulties in sexual relationships for many couples, where sex may become associated with negative emotions like anger, guilt, and depression. This can create a cycle where sexual dysfunction further hampers the chances of successful conception. Additionally, individuals with sexual dysfunction may struggle to engage in sexual activity effectively, impacting the fertility of the couple. Couples undergoing fertility treatments often report lower sexual desire, lubrication, orgasm, satisfaction, and frequency of intercourse, potentially due to the stress of treatment or medications. However, studies examining the sexual function of infertile couples have produced conflicting and varied results. Challenges in drawing definitive conclusions about sexual dysfunctions in infertile women stem from methodological shortcomings in research, differences in tools used to assess female sexual function, and variations among study samples. (8)(20)

The prevalence FSD among infertile women is reported to be high internationally, for instance it is 64% in Iran. As high as this figures appear, it assumed to be understatement of the true prevalence of the issue. Reports from Africa are more or comparable with study in Cairo reporting 47% and one from Nigeria showing the prevalence to be 39.2%.(11)(21).

There is no local study on prevalence of FSD among infertile women. Population and institution based studies done on general population show prevalence of FSD to be 32.1 to 57.1%(6)(22) while the prevalence of sexual dysfunction among people with non-communicable disease is 68.05%.(23)

1.3. Significance of the Study

The issue of sexual dysfunction among infertile women is both intuitively and apparently known to be significant but to date there are no wide spread studies done in the area. Even the studies that available mainly are done on the male half of the couple focusing on erectile and ejaculatory dysfunctions only.

The paucity of research in this area is profound in Ethiopia. This may be due to the cultural stigma associated with discussions of sexuality and sexual problems. In this study we aim to see if there is increased prevalence of sexual dysfunction and infertility. This study aims to identify the prevalence of FSD in infertile women seeking treatment at SPHMMC infertility center.

The findings can:

- ✓ Encourage gynecologists evaluating infertile couples to incorporate screening for SD
- ✓ Be used by future researchers as background to further study the correlation of SD and infertility.

2. Literature Review

Infertility affects 10-15% of couples in industrialized countries, with varying prevalence rates in different countries, such as 13.6% in China, 11.5-15.7% in Canada, one in seven in the UK, 15.2-16.0% in New Zealand, 15.5% in the US, and 26.4% in Denmark. Accurate descriptive epidemiological data suggests that approximately 40–45% of adult women and 20–30% of adult men experience some form of sexual dysfunction. Women, who are unable to conceive, show higher levels of psychological stress compared to men. The definition of sexual dysfunction in the updated Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM5) was modified to align with recent research in sexual behavior. Key changes include different diagnostic classifications for men and women, combining desire and arousal into a single diagnosis known as female sexual arousal disorder, and grouping dyspareunia and vaginismus under a diagnosis of genito-pelvic pain/penetration disorder (GPPPD), along with several other taxonomic changes. It is important to consider sexual function within a couple as a unit. If one partner experiences sexual dysfunction, the other may feel guilty or have lower self-esteem. For instance, women whose partners have erectile dysfunction report decreased sexual satisfaction. Therefore, similar to infertility, sexual dysfunction in one partner affects the entire couple. Sexual function is crucial for overall wellbeing and quality of life, encompassing aspects like reproduction, pleasure, intimacy, identity, and gender roles. Impairments in sexual function can have negative impacts on quality of life.(24)(25)(26)(27)(4)(13)

Meta-analysis performed on 13 comparative and 10 non-comparative studies, published in 2017 indicated a significant association between sexual dysfunction and infertility. on these the prevalence of FSD in infertile women varied from 35.6% to 87.1 % with problems of lubrication, orgasm and satisfaction being the most common(8). In line with this report, another Systematic review and meta-analysis of 18 studies done on infertile Iranian women, revealed a pooled

prevalence of FSD 64.3%. The findings also showed the most prevalent disorder was sexual desire(59.9%) with vaginismus being the least prevalent(19.2%).(12)

In 2010 a case control study was done on patients at Stanford University Fertility and Reproductive Medicine Clinic and at the Stanford University Gynecologic Specialties Clinic, presenting for fertility treatment, with a question of "Is infertility a risk factor for female sexual dysfunction? " and the results showed 25% of the control had FSD while 40% of the patients with infertility met the same criterion for FSD. In contrast to the control group, individuals experiencing infertility showed notably reduced scores in desire and arousal areas, as well as less frequent engagement in sexual activities. Those with infertility indicated a level of satisfaction with their sex life that was comparable to the control group's prior to their diagnosis(24). Another case control study done three years later in India with significantly larger sample size showed an even greater prevalence FSD among the infertile group as compared to the controls; 63.67% and 46.35% respectively. Most common dysfunction observed was arousal (70%) in infertile patients(28).

In line with the above findings there were other institution based cross-sectional studies done in different parts of the world reporting more or less the same results; including a study done in tertiary university hospital in Iran on the prevalence sexual dysfunction in infertile couples reporting only 7% of the study population had had 'normal' sexual function scores(13) and similar cross-sectional survey done 8 years later in two primary care subfertility clinics done on Hong Kong Chinese women results showed FSD prevalence was 32.5%(25). A report from turkey also showed as the infertility duration extends, the scores of all parameters, except sexual satisfaction, decreases(16).

An institution based study done on infertile Nigerian women and published on 2002 found the prevalence of sexual problems among infertile women to be 39.2%. Similarly another comparative study done at Cairo university hospital examining prevalence of sexual dysfunction in infertile versus fertile couples reported that proportions of females with sexual dysfunction was higher in the infertile group (47%) than in the control group(30%)(21)(11).

Although almost all studies published have confirmed correlation between FSD and infertility; there are some studies that have come to the opposite conclusion. For instance a cross sectional

study published in Iran in 2016 compared 110 infertile and 110 fertile couples and concluded there was no significant difference between fertile and infertile women in terms of sexual problems(15). An analytical cross sectional study from Kenya likewise stated there was no association between the fertility status and the prevalence of female sexual dysfunction.(26)

Factors that influence female sexual function include aging, pregnancy, breastfeeding, childbirth, relationship dynamics with a partner, socioeconomic status (such as low education and income levels), history of sexual abuse, circumcision, medical conditions like diabetes, and certain medications like hormonal contraceptives. (14)(11)

As previously there are no studies in our country exploring this question. The researches done on female sexual dysfunction are those done on general population and not on infertile women. Of these the 2019 population based cross-sectional study done in Aksum found the prevalence of FSD to be 57.1 %(6). On the contrary an institutional based cross-sectional study done in gurage zone reported a slightly lower prevalence at 32.1 %(22)). Through my research I have not come across a study done in St Paul's Hospital Millennium Medical College on the issue, whether published or unpublished.

2.2. Conceptual framework

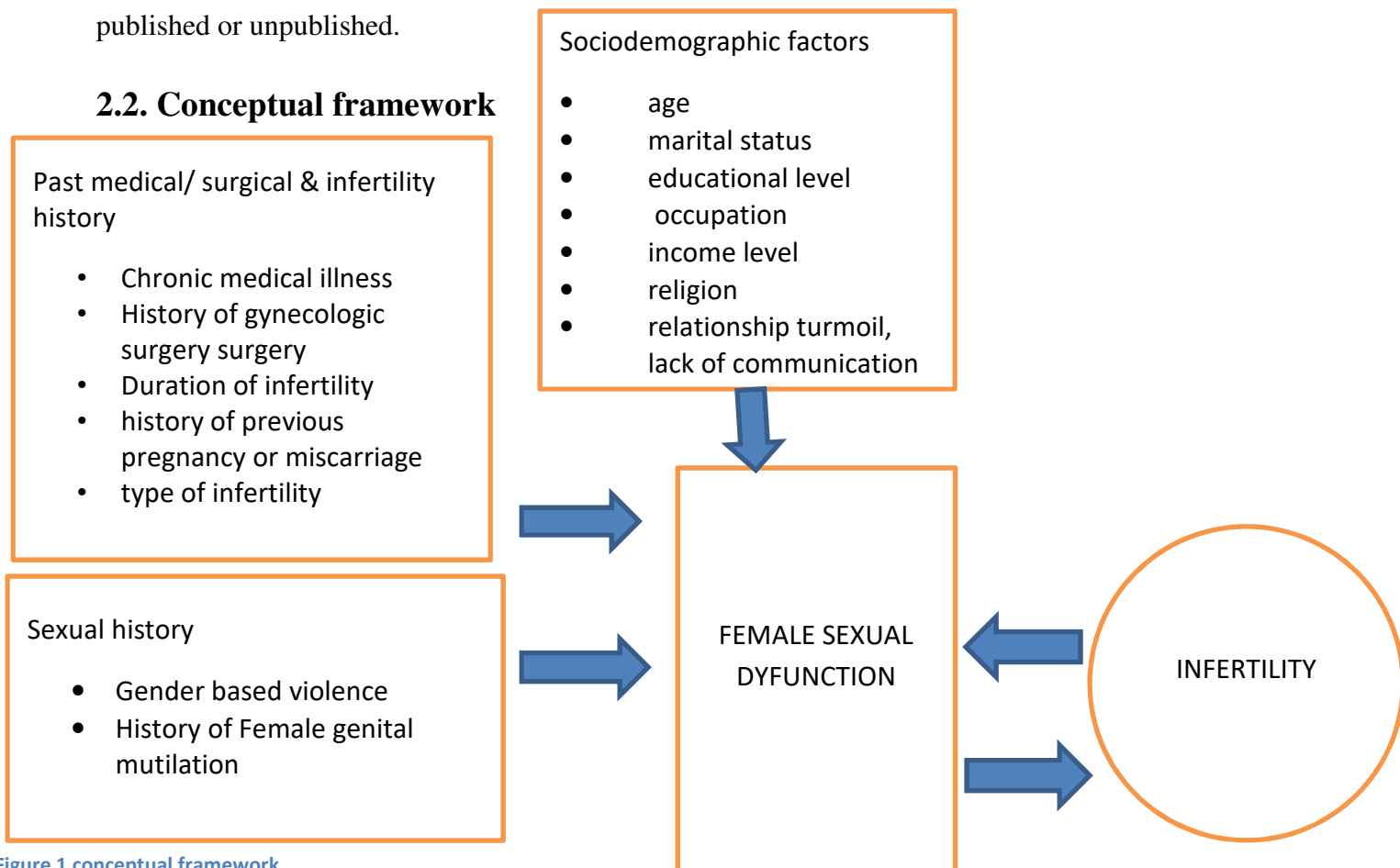


Figure 1 conceptual framework

3. Objectives

3.1. General objective

To assess the magnitude of female sexual dysfunction and associated factors among infertile women at St Paul's hospital Millennium medical college center for fertility and reproductive medicine, Addis Ababa, Ethiopia

3.2. Specific objectives

- ✓ To determine the magnitude of female sexual dysfunction and associated factors among women seeking infertility treatment at St Paul's hospital Millennium medical college center for fertility and reproductive medicine.
- ✓ To assess factors associated with sexual dysfunction among infertile women

4. Methods and Materials

4.1. Study setting and study period

The study was conducted at St Paul's Hospital Millennium Medical College infertility center.

St Paul's Hospital Millennium Medical College, is a tertiary referral hospital in Addis Ababa, Ethiopia which was established in 1968 by the late Emperor Haile Selassie. It is governed by a board directly under the federal ministry of health. It is also a teaching hospital for the Millennium Medical College. On April 12 2019 st paul's fertility and reproductive medicine center was established under SPHMMC around Haya Hulet. This center was the first public fertility center in the country and per day on average around 55 new patients is seen in this center. The institution provides evaluation and treatment for infertility for couples. In addition to this hysteroscopIC and laparoscopic surgeries for benign gynecologic illnesses as well as family planning and reproductive health services are being done in the center. This study was conducted on women visiting the IVF center for infertility treatment. The study will be done from August 2024 to September 2024.

4.2. Study Design

Cross sectional study design was employed.

4.3. Source Population

Women being evaluated at the IVF center for infertility during the study period.

4.4 Study population

Women with a diagnosis of infertility; who fulfill the inclusion criteria.

Inclusion criteria

Women seeking treatment for infertility at the center and consenting for the interview

Exclusion criteria

Women who do not consent

4.5. SAMPLE SIZE CALCULATION

Since there was no similar study done in our center or in our country, prevalence of 50% was used; which was also approximately an average of studies found on literature review for female sexual dysfunction in infertile couples. After using the following single population formula and including 10% lost or incomplete questionnaires the final sample size is 215.

$$n = \frac{Z^2 p q}{e^2}$$

Z^2 = is the Standardized normal distribution curve value for the 95% CI, 1.96

e = is the desired level of precision, 0.05.

p = the prevalence of sexual dysfunction for the purpose of this study is assumed to be 0.5

q = is $1-p=0.5$

4.6. Sampling Technique

Systematic random sampling technique was conducted and every 5th women was selected among those being seen at the outpatient departments.

Measurement

Study variables

Dependent variables

Prevalence of sexual dysfunction among infertile women

Independent variables

1. Infertility status (infertile vs. fertile couples)
2. Lifestyle factors (e.g., smoking, alcohol consumption, physical activity)
3. Age
4. Duration of infertility
5. Type of infertility (male factor, female factor, combined, unexplained)
6. History of previous pregnancies or miscarriages
7. Use of assisted reproductive technologies (ART)
8. Medical history (e.g., chronic conditions, medications)
9. Relationship quality and communication within the couple
10. Socioeconomic status (e.g., income, education level)

11. Cultural or religious beliefs related to infertility and sexuality

4.7.2 Instruments: The data was collected using a questionnaire; developed using Amharic female sexual function index used by similar study done previously. It was filled by data collectors who were trained on the topic.

Data Collection and Procedures:

A Structured and pretested questionnaire adapted from related literatures was used. The Amharic version of FSFI was used to assess FSD. Data was collected by two data collectors using kobo tool for which orientation was given. The data will be collected at SPHMMC Infertility center from September 1st to September 30th 2024. Data quality assurance was checked before, during and after the data is collected. During the data collection process, it was supervised for completeness and accuracy. After the data was collected it was checked for validity and double checked.

Operational definitions

Female Sexual Dysfunction: For the purposes of this study female sexual dysfunction will be defined as an FSFI score less than 26.5(31).

Physically Exercise: When subjects engaged in moderate activities at least 5 times per week, duration 30 minutes and/or vigorous activities at least 3 times per week, duration 20 minutes.

Infertility: Infertility is defined as inability to conceive with one year of unprotected adequate sexual intercourse in women aged younger than 35 and 6 months in those 35 and older.

DATA ENTRY, CLEANING AND ANALYSIS TECHNIQUES

Collected data by different data collectors was merged and exported to SPSS 28.0 for windows was used for data analysis. Data was presented with texts, tables, and figures. Bi-variable and

multivariable logistic regression was employed to identify an association between the independent predictors and the outcome variable.

ETHICAL CONSIDERATION

A formal approval letter for ethical clearance was obtained from institutional ethical board for SPHMMC. The information obtained was used only for the purpose of this study.

PLAN FOR DESSIMINATION

The finding of the study will be shared with department of REI and Obstetrics and Gynecology to refine the management of infertility and FSD. It will be available in the college's data base for any reference and as a base for further research.

5. RESULTS

Socio-demographic

A total of 215 women participated in the study, with a mean age of 33.01 years (SD = 5.36). The sample included 95.8 from urban residence and 4.2% from rural. All participants in the study were female. The educational status of participants reveals that 55.1% have attained a college or university education, 29.4% completed secondary school, 14.0% finished primary school, and a mere 1.4% are only able to read and write. The occupational status of participants shows that 29.0% are government employees, 22.9% identify as housewives, 26.6% work as merchants, and 20.6% are employed in private enterprises. A small fraction, 0.9%, falls into the unspecified category. In terms of economic status, the distribution reveals that a tiny; 0.9% of participants fall in to the extreme poor category. Meanwhile, 5.1% are considered moderately poor. A significant portion, 43.0%, is classified as vulnerable non-poor, while the upper class makes up the largest share at 50.9%. (Table 1)

Table 1 socio demographic characteristics

Variables	Variable Category	Frequency	Percent
Age	20 to 30 years old	78	36.4
	30 to 35 years old	67	31.3
	above 35 years	69	32.2
Location	urban area	205	95.8
	rural area	9	4.2
Educational level job	College or University and above	118	55.1
	Primary school	30	14.0
	Reading and writing only	3	1.4
	secondary school	63	29.4
job	Government Employee	62	29.0
	Housewife	49	22.9
	Merchant	57	26.6
	Private enterprise employee	44	20.6
	Unspecified	2	.9
income	Extreme poor	2	.9
	moderately poor	11	5.1
	vulnerable non poor	92	43.0
	upper class	109	50.9

religion	Muslim	38	17.8
	orthodox	134	62.6
	protestant	42	19.6

Prevalence of female sexual dysfunction and subtypes

The study included 215 couples seeking infertility treatment at St. Paul's Medical Center. Using the Female Sexual Dysfunction Index (FSFI) with a cutoff point of 26.55, the overall prevalence of female sexual dysfunction was found to be 80.4%, with 172 women scoring below this threshold. The overall prevalence of FSD in the sample was found to be significant, with 100% of participants meeting the criteria for at least one subtype of dysfunction with the mean scores for FSFI score being 23.81.

Further analysis of the FSFI subcategories revealed alarming rates of dysfunction across various domains. Specifically, 100% of the women scored below the cutoff points for arousal, lubrication, and pain.(TABLE 2)

In contrast, the prevalence rates for orgasm and sexual satisfaction disorders were significantly lower. Among the 172 women with low FSFI scores, 4.1% experienced satisfaction dysfunction, while 2.3% reported orgasm dysfunction. When considering the total study population, the prevalence of satisfaction dysfunction was found to be 3.3%, and orgasm dysfunction was reported at 1.9%.

Table 2 FSFI domains

Fsfi subcategory	Number of participant with dysfunction	total percentage	relative frequency
arousal dysfunction	215	100%	1
lubrication	215	100%	1

dysfunction			
pain dysfunction	215	100%	1
orgasm dysfunction	4	2%	0.0186
sexual satisfaction dysfunction	7	3.30%	0.0325
total fsfi	172	80.40%	0.8

Bivariate and multivariate logistic regression was conducted to examine the association between female sexual dysfunction and several independent variables, including age, physical activity, income, educational level, religion, history of surgery and chronic medical illness. The analysis revealed no statistically significant associations between female sexual dysfunction and any of the independent variables tested (all p-values > 0.05). Among the variables tested, only "history of gynecologic surgery" demonstrated a statistically significant association (AOR = 1.55, p = 0.031). Unfortunately the specific types of procedures were not assessed. (TABLE 3)

A correlation analysis was conducted to assess the relationship between the duration of infertility and the Female Sexual Function Index (FSFI) scores among participants. The results indicated a weak negative correlation ($r = -0.118$) between the duration of infertility and FSFI scores. This correlation was not statistically significant, with a p-value of 0.085 (Table 3). All of the participants state their relationship with their significant other peaceful and there is no turmoil.

Among the respondents 16.8 percent believe their male partners have some form of sexual dysfunction.

These findings suggest that while there is a tendency for longer durations of infertility to be associated with lower FSFI scores, the relationship does not reach conventional levels of statistical significance.

Table 3 associated factors

associated factor		FSD		COR	pvalue	AOR	pvalue
		yes	No				
age	20-30 yrs of age	61(35.5%)	17(40.5%)		1		
	30-35 yrs old	50(30%)	17(40.5%)	0.992	0.998	0.544	1.00
	older than 35	61(35.5%)	9(19%)		0.997	2.00	0.71
male sexual partner dysfunction	yes	36(20.9%)	0()	0.197	0.110	0.188	0.11
	No	136(79.1%)	43(100%)				
history of previous surgery	Yes	55 ()	10()	1.504	0.0304	1.551	0.70
	No	117()	33()				
history of female genital mutilation	Yes	77(44.8%)	13(28.6%)	2.026	0.059	0.560	0.74
	No	95(55.2%)	30(74.4%)				
history of gender based violence	Yes	8(4.7%)	4(7.1%)	0.634	0.515	0.590	0.99
	No	164(95.3%)	39(92.9%)				
chronic illness	Yes	25(14.5%)	0	0.000	0.998	0.000	0.99
	No	147(85.5%)	43(100%)				
physical activity	Yes	31(18.1%)	40(92.9%)	2.920	0.090	9.316	0.13
	No	141(81.9%)	3(7.1%)				
duration of marriage	less than 2	16 (9.3%)	13(31%)	0.000	0.441	0.000	
	2 to five	73(42.4%)	10(23.8%)	0.270	0.201	0.239	0.19
	above 5	73(48.3%)	19(45.2%)	0.701	0.995	0.654	0.99
educational level	College or University and above	87(50.6%)	29(72.5%)	1	1	0.119	0.53
	Primary school	30(17.4%)	0()	0.000	0.999	0.000	0.38
	Reading and writing only	3(1.7%)	0()		0.999		1
	secondary school	52(30.2%)	14(27.5%)	0.197	0.999	0.160	1

6. DISCUSSION

With a hypothesis of increased prevalence of sexual dysfunction among infertile couples as compared to the general population; in this study we investigated the prevalence of female sexual

dysfunction among infertile women visiting St Paul's millennium medical college reproductive center and 215 women participated in our study. We have found the prevalence of female sexual dysfunction as evaluated by FSFI score below 26.55 to be 80.4%.

This is an astoundingly high number and underscores how prevalent the problem is among this subgroup of the society. As high as our result seems it is comparable with some of the studies found in literature like a Meta-analysis published in 2017 on 23 studies that found the prevalence of FSD in infertile women varied from 35.6% to 87.1(8); while it's higher than results from another meta-analysis of 18 researches done on infertile Iranian women which showed a pooled prevalence of 64.3%.(12). Two other case control studies one done in Stanford another in India also showed lower prevalence than our study with 40% and 63.67% respectively. Even though there are no studies done on infertile couples in our country compared with studies done in general population which showed a prevalence of 57.1 (6) and an institution based study done at an OPD showing 32.1(20); the result in our study shows significantly higher prevalence. This is in line with our original hypothesis of disproportionally higher prevalence of FSD among infertile women.

On subdomain analysis the most commonly affected domains are arousal, lubrication and pain in 100% of women with sexual dysfunction. This is comparable with findings in aforementioned studies. (12,6)

When we examined the relationship between infertility duration and FSFI scores, we found a slight tendency for longer infertility periods to be linked with lower scores. However, this relationship wasn't strong enough to be considered statistically significant. This means that although there might be a connection between the two, it's not a reliable indicator of the severity of FSD.

There were no statistically significant association found between female sexual dysfunction and age, physical activity, income, educational level, religion, FGM, GBV and chronic medical illness. Among the independent factors "history of surgery" showed a statistically significant association with FSD in this study. From literature review factors associated with FSD were aging, pregnancy, breastfeeding, childbirth, relationship dynamics with a partner, socioeconomic status (such as low education and income levels), history of sexual abuse, circumcision, medical

conditions like diabetes, and certain medications like hormonal contraceptives. The lack association in our study may be due to the small sample size and may in part be due to most of our study population being in more or less similar age group and socioeconomic status.

From our interviews 16.8% of the participants state their male partner has some form of sexual dysfunction. Unfortunately our study doesn't reveal whether these are confirmed diagnosis or perception of the women. Further study is required in this area.

The high prevalence of sexual dysfunction among infertile women underscores the importance of assessing sexual health among this population. It's prudent to integrate screening or evaluation for FSD with infertility evaluation because of the potential impact of FSD on relationship quality, emotional well-being, and treatment adherence.

7. STRENGTH OF THE STUDY

To the best of our knowledge, this study is the first of its kind to be conducted in our country. The absence of prior studies conducted in our particular setup underscores the novelty and originality of our research. It highlights the magnitude of the problem and can be used as a base for future studies.

8. LIMITATIONS OF THE STUDY

It is important to acknowledge the limitations of this study. The sample was comprised of women seeking infertility treatment at a single medical center even though it is the only public IVF center, the uniformity and the small sample size limits the generalizability of the findings to other populations. Additionally, the cross-sectional design prevents us from establishing causal relationships between variables. In addition, the study includes a relatively sensitive issue. Thus, social desirability bias could not be ruled out.

9. CONCLUSION

In conclusion in this study the prevalence of sexual dysfunction among infertile women is 80.4% which is significantly higher than general population. There was a weak statistically insignificant negative correlation between duration of infertility and FSD. It is important to note that while "history of gynecologic surgery" showed a statistically significant association with FSD, further research is needed to explore the nature and direction of this relationship. Based on our findings it

would be prudent to consider a separate sexual dysfunction clinic in the center and other fertility centers. Future researches should investigate the bidirectional relationship between infertility and FSD and the effectiveness of treatment of one for management of the other.

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ANNEXES

QUESTIONNAIRE

Questionnaire: Prevalence of sexual dysfunction and associated factors in infertile couples at St Paul's Hospital Millennium Medical College infertility center

Introduction:

Prevalence of sexual dysfunction and associated factors in infertile couples at St Paul's Hospital Millennium Medical College infertility center.

Section 1: Demographics

1. Age: _____ years

2. Ethnicity: _____

3. Educational Level: _____

4. Occupation: _____

5. Medical History:

a) Do you have any pre-existing medical conditions? (Yes/No)

- Chronic hypertension
- Bronchial Asthma
- Anemia
- Seizure disorders
- Cardiac diseases
- Diabetes

b) If other, please specify: _____

6) Do you have any history of substance use? More than one answer acceptable

- Smoking
- Khat
- Alcohol
- If other, please specify: _____

If yes:

- A. Are you using at least one of the substances for non-medical purpose within the last three months
- B. Are you using at least one of any specific substance for non-medical purpose at least once in life time

7. What's the duration of infertility?

8). Type infertility

- A. Male factor
- B. Female factor
- C. Combined
- D. Unexplained

9). Have you started any treatment for the infertility

- A. Medication only: specify
- B. ART: specify type of ART

10). Any psychiatric problem

- A. I have been diagnosed with clinical depression
- B. I have been diagnosed with anxiety disorder
- C. I have been diagnosed with schizophrenia
- D. I feel stressed
- E. Other: specify

11). Are you experiencing any relationship problems

A. Yes

B. No

12). Do you believe it is religiously or culturally unacceptable to discuss sexuality with someone other than your spouse?

A. Yes

B. no

section 2: Female Sexual Function Index Scoring

1. Over the past 4 weeks, how often did you feel sexual desire or interest?

Response Options

5=Almost always or always

4 = Most times (more than half the time)

3 = Sometimes (about half the time)

2 = A few times (less than half the time)

1 = Almost never or never

2. Over the past 4 weeks, how would you rate your level (degree) of sexual desire or interest?

5 = Very high

4 = High

3 = Moderate

2 = Low

1 = Very low or none at all

3. Over the past 4 weeks, how often did you feel sexually aroused ("turned on") during sexual activity or intercourse?

0 = No sexual activity

5 = Almost always or always

4 = Most times (more than half the time)

3 = Sometimes (about half the time)

2 = A few times (less than half the time)

1 = Almost never or never

4. Over the past 4 weeks, how would you rate your level of sexual arousal ("turn on") during sexual activity or intercourse?

0 = No sexual activity

5 = Very high

4 = High

3 = Moderate

2 = Low

1 = Very low or none at all

5. Over the past 4 weeks, how confident were you about becoming sexually aroused during sexual activity or intercourse?

0 = No sexual activity

5 = Very high confidence

4 = High confidence

3 = Moderate confidence

2 = Low confidence

1 = Very low or no confidence

6. Over the past 4 weeks, how often have you been satisfied with your arousal (excitement) during sexual activity or intercourse?

0 = No sexual activity

5 = Almost always or always

4 = Most times (more than half the time)

3 = Sometimes (about half the time)

2 = A few times (less than half the time)

1 = Almost never or never

7. Was there any difference in the above parameters before and after diagnosis of infertility

አጠቃላይ መመሪያ፡- ከተዘረዘሩት አማራጮች መካከል መልሱን የያዘውን ቁጥር ያክብቡ። የተሳታፊዎች ምላሽ ከተዘረዘሩት አማራጮች ውስጥ ከሌለ ወይም መልሳቸው በጽሁፍ እንዲቀመጥ የሚያዝ ከሆነ በተሰጠው ባዶ ቦታ ያስቀምጡ። ስሞት አይመዘገብም፤ መልሶችም በሚስጥር ነው ሚያዘው።

ክፍል I: ማህበራዊ እና ግላዊ ሁኔታዎች የሚመለከቱ ጥያቄዎች

ተ.ቁ ጥያቄ ምላሽ

01 እድሜዎ ስንት ነው? _____ ዓመት

02 ሀይማኖትዎ ምንድን ነው?

1. ሙስሊም 2. ኦርቶዶክስ 3. ፕሮቴስታንት 4. ካቶሊክ

5. ሌላ (ይገለጹ)_____

03 ከየት ነው የሚኖሩት?

1. ገጠር 2. ከተማ

04 የትምህርት ደረጃዎ ምን ያህል ነው?

1. ማንበብ እና መጻፍ የማልችል 2. አንደኛ ደረጃ ድረስ

3. ሁለተኛ ደረጃ 4. ኮሌጅ/ዩኒቨርሲቲ ድረስ

05 ሥራዎ ምንድን ነው?

1. የቤት እመቤት 2. የመንግስት ሰራተኛ 3. የግል ተቋም ተቀጣሪ 4. ነጋዴ

5. ሌላ ካለ (ይገለጹ)_____

06 የቤትዎ ሁኔታ ምን ይመስላል?

1. ትልቅ ቤት (ከአንድ በላይ የመኝታ ክፍሎች ያሉት)

2. አነስተኛ ቤት (ለሁለት ጥንዶች አንድ መኝታ ቤት ብቻ)

3. ለእነሱ እና ለልጆቻቸው አንድ መኝታ ቤት

07 በትዳር ምን ያህል ጊዜ ቆያችሁ? _____ ዓመት

08 በባለቤትዎ እና በእርስዎ መካከል ምን ያህል የዕድሜ ልዩነት አለ? _____ ዓመት

09 የቤተሰብዎ ወርቃዊ ገቢ ምን ያህል ነው? _____ ብር

ክፍል II: ከማህፀን ጋር የተያያዘ ግለ ታሪክ

01 የሴት ልጅ ግርዛት ታሪክ አለዎት(ተሰርተዋል)?

0. የለም 1. አዎ

02 የመጀመሪያ የግብረ ሥጋ ግንኙነት ሲያደርጉ እድሜዎ ስንት ነበር? _____ ዓመት

03 የአባላዘር በሽታ ታመው ያውቃሉ?

0. የለም 1. አዎ

04 ከማህፀን ጋር የተያያዘ ኦፕራሲዮን ተሰርተው ያውቃሉ?

0. የለም 1. አዎ

05 የወር አበባዎ ሁኔታ ምን ይመስላል?

1. መደበኛ (በየወሩ ይመጣል) 2. መደበኛ ያልሆነ (በየወሩ የማይመጣ)

06 የወሊድ መቆጣጠሪያ ተጠቅመው ያውቃሉ?

0. የለም 1. አዎ

07 መልስዎ አዎ ከሆነ ምን ዓይነት የወሊድ መቆጣጠሪያ ነው የሚጠቀሙት?

1. በአፍ የሚወሰድ ክኒን 2. በየሶስት ወር የሚወሰድ መርፌ

3. በክንድ የሚቀበር 4. በማህፀን የሚቀመጥ (IUCD)

5. ሌላ ካለ (ይገለፅ)_____

08 መልስዎ አዎ ከሆነ ለምን ያህል ጊዜ ተጠቀሙ? _____ወር

09 ያታዩ ጥቃት ገጥሞዎት ያውቃል?

0. የለም 1. አዎ

ክፍል III: ከፅንሰ ጋር የተያያዘ ግለ ታሪክ

01 ከዚህ በፊት ወልደው ያውቃሉ?

0. የለም 1. አዎ

02 መልስዎ አዎ ከሆነ ምን ያህል ልጆች አልዎት? _____

03 የመጨረሻ ልጆዎትን በምን ነበር የወለዱት?

1. በማህፀን ያለምንም የብልት ጫፍ መሰንጠቅ (መቀደድ)

2. በማህፀን ሆኖ የብልት ጫፍ በባለሙያ (በራሱ) ከተፈጠረ መሰንጠቅ (መቀደድ) ጋር

3. በማህፀን ሆኖ በመሳሪያ በመታገዝ

4. በኦፕሬሲዮን

04 የመጨረሻ ልጆዎን ከወለዱ በኋላ በስንት ሳምንት ውስጥ የግብረ ሥጋ ግንኙነት ጀመሩ?

_____ሳምንት

05 ለምን ያህል ጊዜ ለማርገዝ ሞክረው እርግዝና እምቢ አሉት? _____

06 ምክንያቱን ያውቃሉ?

0. የለም 1. አዎ

07. አዎ ከሆነ መልሱ

1. ሴት ላይ በሚከሰት ምክንያት

2. ወንድ ላይ በሚከሰት ምክንያት

3. ሁለቱም ላይ በሚከሰት ምክንያት

part IV: አጠቃላይ የጤና ሁኔታን የሚመለከት ግለ ታሪክ

01 የሚታወቅ የጤና ችግር አለዎት?

0. የለም 1. አዎ

02 መልሱ አዎ ከሆነ ምን አይነት የጤና ችግር አለዎት?

1. ቲቢ 2. የስኳር በሽታ 3. የደም ግፊት

4. ሌላ ካለ ይገለፅ_____

03 የቀን የስራ ጫናዎ ምን ያህል ነው?

1. በቀን ከ 8 ሰዓት በታች 2. በቀን ከ 8 ሰዓት በላይ

04 መደበኛ የአካል ብቃት እንቅስቃሴ ያደርጋሉ?

0. የለም 1. አዎ

Part V: ትዳርንና ወሲባዊ ህይወትን የሚመለከት ግለ ታሪክ

01 በትዳርዎ ምን ያህል ደስተኛ ነዎት?

1. በጣም ደስተኛ ነኝ 2. ደስተኛ ነኝ

3. የተለመደ

4. አልተደሰትሁም

5. በጭራሽ አልተደሰትሁም

02 ባለቤትዎ የግብረ ሥጋ ግንኙነት ችግር አለባቸው?

0. የለም

1. አዎ

03 በባለቤትዎ የግብረ ሥጋ ግንኙነት ምን ያህል ረክተዋል (ደስተኛ ነዎት)?

1. በትክክል ረክቻለሁ

2. ረክቻለሁ

3. የተለመደ

4. አልረካሁም

5. በጭራሽ አልረካሁም

ክፍል VI: FSDI

01 ባለፉት 4 ሳምንታት ውስጥ የግብረ ሥጋ ግንኙነት (ወሲባዊ) ፍላጎት ምን ያህል ጊዜ ተሰማዎት?

5 = ሁልጊዜ ማለት ይቻላል ወይም ሁል ጊዜ 4 = ብዙ ጊዜ (ከግማሽ ጊዜ በላይ)

3 = አንዳንድ ጊዜ (ግማሽ ጊዜ ገደማ) 2 = ጥቂት ጊዜዎች (ከግማሽ ጊዜ በታች)

1 = በጭራሽ ወይም በጭራሽ ማለት ይቻላል

02 ባለፉት 4 ሳምንታት ውስጥ የወሲብ ምቹት ወይም ፍላጎት ደረጃዎን እንዴት ይገመግሙታል (ይገልጹታል)?

5 = በጣም ከፍተኛ 4 = ከፍተኛ 3 = መካከለኛ 2 = ዝቅተኛ 1 = በጣም ዝቅተኛ ወይም በጭራሽ

03 በአለፉት 4 ሳምንታት ውስጥ በወሲባዊ እንቅስቃሴ ወይም በግብረ ሥጋ ግንኙነት ወቅት ምን ያህል ጊዜ በወሲባዊ ስሜት ተነሳስተዋል?

5 = ሁልጊዜ ማለት ይቻላል ወይም ሁል ጊዜ 4 = ብዙ ጊዜ (ከግማሽ ጊዜ በላይ)

3 = አንዳንድ ጊዜ (ግማሽ ጊዜ ገደማ) 2 = ጥቂት ጊዜዎች (ከግማሽ ጊዜ በታች)

1 = በጭራሽ ወይም በጭራሽ ማለት ይቻላል 0 = የወሲብ እንቅስቃሴ የለም

04 ባለፉት 4 ሳምንታት ውስጥ በወሲባዊ እንቅስቃሴ ወይም በግብረ ሥጋ ግንኙነት ወቅት የነበረዎትን የወሲባዊ ስሜት መነሳሳት ደረጃ እንዴት ይገልጽታል?

0 = የወሲብ እንቅስቃሴ የለም 5 = በጣም ከፍተኛ 4 = ከፍተኛ 3 = መካከለኛ 2 = ዝቅተኛ
1 = በጣም ዝቅተኛ ወይም በጭራሽ በጭራሽ

05 ባለፉት 4 ሳምንታት ውስጥ በወሲባዊ እንቅስቃሴ ወይም በግብረ ሥጋ ግንኙነት ወቅት ወሲባዊ ስሜት እንደተሰማዎት ምን ያህል እርግጠኛ ነዎት?

5 = በጣም ከፍተኛ በራስ መተማመን 4 = በከፍተኛ በራስ መተማመን
3 = መካከለኛ በራስ መተማመን 2 = ዝቅተኛ በራስ መተማመን

1 = በጣም ዝቅተኛ በራስ መተማመን ወይም የራስ መተማመን የለውም 0 = ወሲባዊ እንቅስቃሴ የለም

06 ባለፉት 4 ሳምንታት ውስጥ በወሲባዊ ድርጊቶች ወይም በግብረ ሥጋ ግንኙነት ወቅት ምን ያህል ጊዜ በወሲባዊ ስሜትዎ ረክተዋል?

5 = ሁልጊዜ ማለት ይቻላል ወይም ሁል ጊዜ 4 = ብዙ ጊዜ (ከግማሽ ጊዜ በላይ)
3 = አንዳንድ ጊዜ (ግማሽ ጊዜ ገደማ) 2 = ጥቂት ጊዜዎች (ከግማሽ ጊዜ በታች)
1 = በጭራሽ ወይም በጭራሽ ማለት ይቻላል 0 = የወሲብ እንቅስቃሴ የለም

07 ባለፉት 4 ሳምንታት ውስጥ በወሲባዊ ድርጊቶች ወይም በግብረ ሥጋ ግንኙነት ወቅት ምን ያህል ጊዜ የብልት እርጥብ (ፈሳሽ ማመንጨት) ነበረዎት?

5 = ሁልጊዜ ማለት ይቻላል ወይም ሁል ጊዜ 4 = ብዙ ጊዜ (ከግማሽ ጊዜ በላይ)
3 = አንዳንድ ጊዜ (ግማሽ ጊዜ ገደማ) 2 = ጥቂት ጊዜዎች (ከግማሽ ጊዜ በታች)
1 = በጭራሽ ወይም በጭራሽ ማለት ይቻላል 0 = የወሲብ እንቅስቃሴ የለም

08 ባለፉት 4 ሳምንታት ውስጥ በወሲባዊ እንቅስቃሴ ወይም በግብረ ሥጋ ግንኙነት ወቅት የብልት መድረቅ (አለመለስለስ) ምን ያህል አስቸጋሪ ነበር?

0 = የወሲብ እንቅስቃሴ የለም 1 = በጣም ከባድ ወይም የማይቻል

2 = በጣም አስቸጋሪ 3 = አስቸጋሪ

4 = በትንሹ አስቸጋሪ 5 = አስቸጋሪ አልነበረም

09 ባለፉት 4 ሳምንታት ውስጥ ወሲባዊ እንቅስቃሴ ወይም የግብረ ሥጋ ግንኙነት እስከሚፈጸም ድረስ የብልት እርጥበት (መለስለስ) ምን ያህል ጊዜ ነበር?

5 = ሁልጊዜ ማለት ይቻላል ወይም ሁል ጊዜ 4 = ብዙ ጊዜ (ከግማሽ ጊዜ በላይ)

3 = አንዳንድ ጊዜ (ግማሽ ጊዜ ገደማ) 2 = ጥቂት ጊዜዎች (ከግማሽ ጊዜ በታች)

1 = በጭራሽ ወይም በጭራሽ ማለት ይቻላል 0 = የወሲብ እንቅስቃሴ የለም

10 ባለፉት 4 ሳምንታት ውስጥ የወሲብ እንቅስቃሴ ወይም የግብረ ሥጋ ግንኙነት እስኪጠናቀቅ ድረስ የብልት መድረቅ (አለመለስለስ) ምን ያህል አስቸጋሪ ነበር?

0 = የወሲብ እንቅስቃሴ የለም 1 = በጣም ከባድ ወይም የማይቻል 2 = በጣም አስቸጋሪ

3 = አስቸጋሪ 4 = በትንሹ አስቸጋሪ 5 = አስቸጋሪ አልነበረም

11 ባለፉት 4 ሳምንታት ውስጥ በወሲባዊ እንቅስቃሴ ወይም የግብረ ሥጋ ግንኙነት ምን ያህል ጊዜ ወሲባዊ እርካታዎን ደርሰዋል?

5 = ሁልጊዜ ማለት ይቻላል ወይም ሁል ጊዜ 4 = ብዙ ጊዜ (ከግማሽ ጊዜ በላይ)

3 = አንዳንድ ጊዜ (ግማሽ ጊዜ ገደማ) 2 = ጥቂት ጊዜዎች (ከግማሽ ጊዜ በታች)

1 = በጭራሽ ወይም በጭራሽ ማለት ይቻላል 0 = የወሲብ እንቅስቃሴ የለም

12 ባለፉት 4 ሳምንታት ውስጥ በወሲባዊ እንቅስቃሴ ወይም የግብረ-ሥጋ ግንኙነት ወሲባዊ እርካታዎን መድረስ ምን ያህል ከባድ (አስቸጋሪ) ነበር?

0 = የወሲብ እንቅስቃሴ የለም 1 = በጣም ከባድ ወይም የማይቻል 2 = በጣም አስቸጋሪ
3 = አስቸጋሪ 4 = በትንሹ አስቸጋሪ 5 = አስቸጋሪ
አልነበረም

13 ባለፉት 4 ሳምንታት ውስጥ በወሲባዊ እንቅስቃሴ ወይም በግብረ ሥጋ ግንኙነት ወቅት በነበረው ወሲባዊ እርካታን የመድረስ ችሎታዎ ምን ያህል ረክተዋል (ተደስተዋል)?

5 = በጣም ረክቻለሁ 4 = በመካከለኛው ረክቻለሁ 3 = በእኩልነት ረክቻለሁም
አልረካሁምም

2 = በመካከለኛው አልረካሁም 1 = ምንም አልረካሁም 0 = የወሲብ እንቅስቃሴ የለም

14 በአለፉት 4 ሳምንታት ውስጥ በግብረ ሥጋ ግንኙነት ወቅት በእርስዎ እና በአጋርዎ መካከል በነበረው ስሜታዊ ቅርበት ምን ያህል ረክተዋል?

5 = በጣም ረክቻለሁ 4 = በመካከለኛው ረክቻለሁ 3 = በእኩልነት ረክቻለሁም
አልረካሁምም

2 = በመካከለኛው አልረካሁም 1 = ምንም አልረካሁም 0 = የወሲብ እንቅስቃሴ የለም

15 ባለፉት 4 ሳምንታት ውስጥ ከባለቤትዎ ጋር በነበረው የግብረሥጋ ግንኙነት ምን ያህል ረክተዋል?

5 = በጣም ረክቻለሁ 4 = በመካከለኛው ረክቻለሁ 3 = በእኩልነት ረክቻለሁም
አልረካሁምም

2 = በመካከለኛው አልረካሁም 1 = ምንም አልረካሁም 0 = የወሲብ እንቅስቃሴ የለም

16 ባለፉት 4 ሳምንታት ውስጥ በነበረው አጠቃላይ ወሲባዊ (የግብረ ሥጋ ግንኙነት) ህይወትዎ ምን ያህል ረክተዋል?

5 = በጣም ረክቻለሁ 4 = በመካከለኛው ረክቻለሁ 3 = በእኩልነት ረክቻለሁም አልረካሁምም

2 = በመካከለኛው አልረካሁም 1 = ምንም አልረካሁም 0 = የወሲብ እንቅስቃሴ የለም

17 በአለፉት 4 ሳምንታት ውስጥ በነበረው የግብረ ሥጋ ግንኙነት ወቅት የብልት ህመም (አለመመቸት) ምን ያህል ጊዜ ተሰማዎት (ገጠምዎት)?

0 = የግብረ ሥጋ ግንኙነት አልሞከርኩም 1 = ሁል ጊዜ ወይም ሁል ጊዜ ማለት ይቻላል

2 = ብዙ ጊዜ (ከግማሽ ጊዜ በላይ) 3 = አንዳንድ ጊዜ (ግማሽ ጊዜ ገደማ)

4 = ጥቂት ጊዜዎች (ከግማሽ ጊዜ በታች) 5 = በጭራሽ ወይም በጭራሽ ማለት ይቻላል

18 በአለፉት 4 ሳምንታት ውስጥ ከግብረ ሥጋ ግንኙነት በኋላ የብልት ህመም (አለመመቸት) ምን ያህል ጊዜ ተሰማዎት (ገጠምዎት)?

0 = የግብረ ሥጋ ግንኙነት አልሞከርኩም 1 = ሁልጊዜ ወይም ሁል ጊዜ ማለት ይቻላል

2 = ብዙ ጊዜ (ከግማሽ ጊዜ በላይ) 3 = አንዳንድ ጊዜ (ግማሽ ጊዜ ገደማ)

4 = ጥቂት ጊዜዎች (ከግማሽ ጊዜ በታች) 5 = በጭራሽ ወይም በጭራሽ ማለት ይቻላል

19 በአለፉት 4 ሳምንታት ውስጥ ከግብረ ሥጋ ግንኙነት በኋላ የነበረውን የብልት ህመም (አለመመቸት) ደረጃ እንዴት ይገልጹታል?

0 = የግብረ ሥጋ ግንኙነት አልሞከርኩም

1 = በጣም ከፍተኛ

2 = ከፍተኛ

3 = መካከለኛ

4 = ዝቅተኛ

5 = በጣም ዝቅተኛ ወይም በጭረሽ በጭረሽ