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**ORIGINAL ARTICLE****Effect of Lifestyle and Demographic Factors on Female Sexual Function: Survey Study in Sharkia Governorate, Egypt.**

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**ABSTRACT**

**Background:** Female sexual dysfunction (FSD) is defined as persistent or recurring decrease in sexual desire, sexual arousal, dyspareunia and a difficulty in or inability to achieve an orgasm. Aim the work: is to evaluate the effect of life style and demographic factors on female sexual function in sharkia governorate, Egypt.

**Methods:** a cross sectional survey study was carried out on a sample size of 345 married female subjects attended to Dermatology department –Zagazig university hospitals.

**Results:** At baseline, 113 of studied subjects (33.3%) complained of sexual dysfunction, sexual dysfunction was lower in age group (21 to 29) but a higher in age group (30 to 39 years), and was lower in husband age group (21 to 29 years) but higher in husband age group (40 to 49 years), was lower in females with university degree but higher in read and write level, and was higher in employed subjects of physical work condition, and female sexual dysfunction was lower in subjects with high monthly income (>10,000 EGP) but higher in others who had low monthly income.

**Conclusions:** both lifestyle and demographic factors have great effect on normal female sexual function.

**Key words:** Female sexual function (FSD);Lifestyle ; Demographic factors; cross sectional.

**INTRODUCTION**

Female sexual dysfunction is a multifactorial problem, so the diagnostic instruments of FSD and definition of it evolved gradually over years [1]. The potential risk factors for FSD include a range of issues, but generally they could be classified into three categories: biological factors (e.g., age, hormone level, pelvic floor disease, and pelvic surgery), psychological factors (e.g., mood, affection for the partner, and marital relationship), social factors (e.g., education, economic level, social status, traditional culture, and religion) [2].

There is a believe that culture and religion carry several taboos and drawbacks, especially in the Arab-Muslim societies, and are therefore involved in the sexual behavior and its perception [3].

Around 43% of American women have been found to suffer from FSD .Numerous studies from diverse geo-graphic and sociocultural backgrounds have suggested similar problems globally [4].

A multicenter, multination study of Asian women revealed sexual problems in the range of 20–25%. It

further showed a high rate of hesitancy in seeking help because of economic and sociocultural considerations [5].

The female sexual response cycle was developed by **Masters and Johnson in (1966)**, Observations of sexual responses in women by Masters and Johnson brought about description of the excitation (E), plateau (P), orgasm (O) and resolution (R) (the EPOR model).And so called The Masters and Johnson (four-stage) model. According to this model, excitement is the first phase of sexual response[6].

**Aim the work:** is to evaluate the effect of life style and demographic factors on female sexual function.

**METHODS**

**Subjects:**A cross sectional study on 345 married women aged more than 18 years (the legal age of marriage in Egypt). The study was conducted between August 2018 and July 2019 in the Outpatient Clinic of Dermatology, Venereology and Andrology department, Zagazig University Hospitals after obtaining approval of Institutional Review Board (IRB), Written informed consent was obtained from all participants. The study was done according to The

Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

**Inclusion Criteria:** Include Married females, Literate (can read and write) to insure the complete privacy, More than 18 years (age of legal marriage in Egypt) and Consented to participate.

**Exclusion Criteria:** Include Unmarried females, divorced and widows, Medical diseases that affect sexuality e.g: cardiac problems, renal and hepatic diseases. Under medication that affect sexuality e.g: antidepressant and chemotherapy, Previous pelvic operation e.g: hysterectomy and oophorectomy, Subjects refusing to cooperate and Females less than 18 years.

**Methods: Study Instrument:** The questionnaire which was used in this study was an Arabic language interview questionnaire was designed for data collection. The questionnaire included two sections Items: **Section I:** Socio-demographic data of the subject, expressed by: Age, Family income level, Educational level, employment status. Life style and Marital data expressed by: Smoking, Residence, source of sexual information, Type of the family (extended or nuclear), husband' age.

**Section II:** Evaluate the FSD of the participants using the Arabic version of the Female Sexual Function Index (Ar-FSFI) [7].

Among the available assessment instruments for measuring female sexual function, Female Sexual Function Index (FSFI) (Appendix A). It is originally developed by (1), it was utilized universally, because of its appropriate wording, clear-scale structure, it was replicated in other languages. The Arabic version of FSFI questionnaire (Ar-FSFI) (Appendix B) was used in this study. Its administration time is 10-15 minutes [7].

The (FSFI) questionnaire is a validated self-administered questionnaire containing 19 questions divided into six domains (desire, excitement, lubrication, orgasm, satisfaction, and pain). According to its structure, responders are asked to base their responses on the past 4 weeks. Questions 1,2,15 and 16 were scored from 1 – 5, all the others were scored from 0 – 5.

**Procedures:** The investigator recruited the women after explaining the content and purpose of the study, the questionnaire was explained to the subjects, who were instructed on how to fill it out, with the examiner remaining accessible if they needed clarification. Each woman was asked to fill the questionnaire and to ensure that gathered information will be anonymous, each questionnaire was hold into an envelope and after filling it, and the subject sealed the envelope and put it in a basket containing other envelopes

**Calculation of FSFI score:**

The answers for each FSFI question have values that generate a score for each domain. The score is the sum of the responses to each question of specific domain multiplied by a factor that potentiates the influence of the domain on the total score.

The final result (2 – 36) points are the sum of all domains and, the higher the score, the better the sexual function of the respondent. Total scores of 26.5 or less characterize deficiency of female sexual function [1].

Domain score less than 3.9 characterizes domain disorder.

## RESULTS

The most common age group in the participant was 20-30 years (61.5%) while the most common age group of their husbands was 30-40 years (53.9%). Among the participants 56.2% living in urban area, 53.6 % live in extended family, 76,8 % had university degree while 99.7% were non-smokers, 63.8% were employed, the majority of them 77.73% had a job requires both physical and brain work. Regarding socioeconomic status 60.6% were intermediate, table (1)

There were statistically significant associations between female sexual dysfunction and sources of sexual knowledge ( $P=0.012$ ) in comparison with normal females. Other variants had no statistically significance.

Regarding sources of sexual knowledge, According to post hoc tests with bonferroni adjustment females with sexual dysfunction were higher proportion of sexual knowledge through friends but a lower proportion though the internet than normal females ( $P=0.005$ ). However, proportions of other sources of sexual knowledge were similar ( $P>0.05$ ).table (2).

There were statistical significance between female sexual dysfunction and age of the participants, husband age, educational level, work conditions and average monthly income ( $P=0.001$ ,  $P=0.001$ ,  $P=0.011$ ,  $P=0.001$  and  $P=0.014$ , respectively). Other baseline characteristics were not statistically significant different ( $P>0.05$ ).

According to post hoc tests with bonferroni adjustment:

Regarding age, female sexual dysfunction was lower in age group (21 to 29) but a higher in age group (30 to 39 years) ( $P=0.001$ ) proportions of other age groups were similar ( $P>0.05$ ).

Regarding husband age, female sexual dysfunction was lower in husband age group (21 to 29 years) but higher in husband age group (40 to 49 years) ( $P=0.001$ ). However, proportions of other husband age groups were similar ( $P>0.05$ ).

Regarding educational level, female sexual dysfunction was lower in females with university degree but higher in read and write level ( $P=0.011$ ).

However, proportions of other educational levels were similar ( $P>0.05$ ).

Regarding work conditions, According female sexual dysfunction was higher in employed subjects of physical work condition ( $P=0.001$ ). However, proportions of other work conditions were similar ( $P>0.05$ ).

Regarding average monthly income, female sexual dysfunction was lower in subjects with high monthly income ( $>10,000$  EGP) but higher in others who had low monthly income ( $<4750$  EGP) ( $P=0.014$ ). However, proportion of intermediate monthly income (4750 to 10,000 EGP) was similar ( $P>0.05$ ) table (3).

Prevalence of female sexual dysfunction among the studied participants was 33.3%, table (4) figure (1). Desire disorders among the participants (females with domain score less than 3.9) were about (24.3%). Arousal disorders among the participants (females with domain score less than 3.9) were about (7.8%). Lubrication disorders among the participants (females with domain score less than 3.9) were about (13.3%). Orgasmic disorders among the participants (females with domain score less than 3.9) were about (20%). Satisfaction disorders among the participants (females with domain score less than 3.9) were about (27.8%). Prevalence of dyspareunia among the participants (females with

domain score less than 3.9) was (4.6%) table (5) figure(2).

**STATISTICAL ANALYSIS**

Continuous variables were presented as mean±SD. Categorical variables were presented by the frequency (percentage).

**Chi-squared test of association:** is used to discover if there is a relationship between two categorical variables. **Fisher's Exact Test:** for (2X2) (RXC) table. It is used to discover if there is a relationship between two categorical variables. It is an alternative to chi-squared test when the expected cell count is less than five. **Principle component analysis (PCA):** is a variable-reduction technique aims to reduce a dataset with many inter-correlated variables to a smaller set of uncorrelated variables (that account for most of the variance in the original variables. Threshold for significance  $P\text{-value}<.05$  indicates a significant difference,  $P\leq.01$  indicates a highly significant difference,  $P\leq.001$  indicates a very highly significant difference while,  $P\geq.05$  indicates a non-significant difference. **Two-sided tests were used throughout.** All statistical analyses were performed using IBM SPSS Statistics, version 24 (IBM; Armonk, New York, USA). **Post-hoc tests with bonferroni adjustment**

**Table 1:** Socio-demographic characters of the studied females.

| Variable                  |                         | N=345   | %     |
|---------------------------|-------------------------|---------|-------|
| <b>Age (years)</b>        | <20 years               | 8       | 2.3   |
|                           | 20-29 years             | 212     | 61.5  |
|                           | 30-39 years             | 106     | 30.7  |
|                           | ≥40 years               | 19      | 5.51  |
| <b>Age of husband</b>     | 21-29 years             | 95      | 27.5  |
|                           | 30-39 years             | 186     | 53.9  |
|                           | 40-49 years             | 60      | 17.4  |
|                           | ≥50 years               | 4       | 1.2   |
| <b>Residence</b>          | Urban                   | 194     | 56.2  |
|                           | Rural                   | 151     | 43.8  |
| <b>Type of family</b>     | Extended family         | 185     | 53.6  |
|                           | Nuclear family          | 160     | 46.4  |
| <b>Level of education</b> | Read and write          | 21      | 6.1   |
|                           | intermediate            | 45      | 13    |
|                           | Secondary               | 14      | 4.1   |
|                           | University              | 265     | 76.8  |
| <b>Smoking</b>            | No                      | 344     | 99.7  |
|                           | Yes                     | 1       | 0.3   |
| <b>Employment</b>         | Unemployed              | 125     | 36.2  |
|                           | Employed                | 220     | 63.8  |
| <b>Work condition</b>     | Brain work              | 38\220  | 17.27 |
|                           | Physical work           | 11\220  | 5     |
|                           | Both brain and physical | 171\220 | 77.73 |

| Variable               |                                | N=345 | %    |
|------------------------|--------------------------------|-------|------|
| <b>Average income*</b> | <b>monthly</b> Low (<4750 EGP) | 65    | 18.8 |
|                        | Intermediate (4750-10000 EGP)  | 209   | 60.6 |
|                        | High (>10000)                  | 71    | 20.6 |

\*According to national bank of Egypt June 2018

**Table 2:** Association between FSD and sexual life conditions in comparison with normal females.

| Variables  | Females with sexual dysfunction (N=115) |      | Normal females (N=230) |      | Test of significance | P- value     |
|--|---|------|------------------------|------|----------------------|--------------|
| <b>Does work affect sexual life:</b>                   |   |      |                        |      |                      |              |
| No   | 35                                      | 51.5 | 93                     | 61.2 | $\chi^2=1.8$         | 0.19         |
| Yes  | 33                                      | 48.5 | 59                     | 38.8 |                      |              |
| <b>Extended family negatively affect sexual life?*</b> |   |      |                        |      |                      |              |
| No   | 15                                      | 23.4 | 37                     | 30.6 | $\chi^2=1.1$         | 0.30         |
| Yes  | 49                                      | 76.6 | 84                     | 69.4 |                      |              |
| <b>Source of sexual knowledge:</b>                     |   |      |                        |      |                      |              |
| Family members   | 13                                      | 11.3 | 16                     | 7    | $\chi^2=12.9$        | <b>0.012</b> |
| Friends  | 32                                      | 27.8 | 3                      | 16.5 |                      |              |
| The internet   | 20                                      | 17.4 | 67                     | 29.1 |                      |              |
| Husbands   | 39                                      | 33.9 | 73                     | 31.7 |                      |              |
| Specialists  | 36                                      | 15.7 | 11                     | 9.6  |                      |              |

$\chi^2$ , Chi-squared test, \*Total number=185

**Table 3:** Association socio-demographic characters of the participants and sexual function according to FSFI scoring:

| Variables                  | Females with sexual dysfunction (N=115) |      | Normal Females (N=230) |      | Test of significance     | p-value      |
|----------------------------|---|------|------------------------|------|--------------------------|--------------|
|                            | N                                       | %    | N                      | %    |                          |              |
| <b>Age(years):</b>         |   |      |                        |      |                          |              |
| <20                        | 2                                       | 1.7  | 6                      | 2.6  | $\chi^2 =17$             | <b>.001</b>  |
| 20-29                      | 56                                      | 48.7 | 156                    | 67.8 |                          |              |
| 30-39                      | 52                                      | 45.2 | 54                     | 23.5 |                          |              |
| ≥40 years                  | 5                                       | 4.3  | 14                     | 6.1  |                          |              |
| <b>Age of the husband:</b> |   |      |                        |      |                          |              |
| 21-29 years                | 20                                      | 17.4 | 75                     | 32.2 | Fisher's Exact Test=16.1 | <b>.001</b>  |
| 30-39 years                | 62                                      | 53.9 | 124                    | 53.9 |                          |              |
| 40-49 years                | 31                                      | 27   | 29                     | 12.6 |                          |              |
| ≥50 years                  | 2                                       | 1.7  | 2                      | 0.9  |                          |              |
| <b>Residence:</b>          |   |      |                        |      |                          |              |
| Urban                      | 66                                      | 57.4 | 128                    | 55.7 | $\chi^2 =0.4$            | 0.83         |
| Rural                      | 49                                      | 42.6 | 102                    | 44.3 |                          |              |
| <b>Type of family:</b>     |   |      |                        |      |                          |              |
| Extended                   | 64                                      | 55.7 | 121                    | 52.6 | $\chi^2 =0.3$            | 0.59         |
| Nuclear                    | 51                                      | 44.3 | 109                    | 47.4 |                          |              |
| <b>Educational level:</b>  |   |      |                        |      |                          |              |
| Read and write             | 13                                      | 11.3 | 8                      | 3.6  | $\chi^2 =11.2$           | <b>0.011</b> |
| Secondary                  | 5                                       | 4.3  | 9                      | 3.9  |                          |              |
| Intermediate               | 19                                      | 15.6 | 26                     | 11.3 |                          |              |
| University                 | 78                                      | 67.8 | 187                    | 81.3 |                          |              |

| Variables                      | Females with sexual dysfunction (N=115) |      | Normal Females (N=230) |      | Test of significance | p-value      |
|--------------------------------|---|------|------------------------|------|----------------------|--------------|
|                                | N                                       | %    | N                      | %    |                      |              |
| <b>Smoking:</b>                |   |      |                        |      |                      |              |
| No                             | 114                                     | 99.1 | 230                    | 100  | Fisher's Test=16.1   | Exact 0.33   |
| Yes                            | 1                                       | 0.9  | 0                      | 0    |                      |              |
| <b>Employment:</b>             |   |      |                        |      |                      |              |
| Unemployed                     | 47                                      | 40.9 | 78                     | 33.9 | $\chi^2=1.6$         | 0.21         |
| Employed                       | 68                                      | 59.1 | 152                    | 66.1 |                      |              |
| <b>Work conditions*:</b>       |   |      |                        |      |                      |              |
| Brain work                     | 11                                      | 16.2 | 27                     | 17.8 | $\chi^2=1.6$         | <b>0.001</b> |
| Physical work                  | 9                                       | 13.2 | 2                      | 1.3  |                      |              |
| Brain and physical             | 48                                      | 70.6 | 123                    | 80.9 |                      |              |
| <b>Average monthly income:</b> |   |      |                        |      |                      |              |
| Low                            | 30                                      | 26.1 | 35                     | 15.2 | $\chi^2=1.8$         | <b>0.014</b> |
| Intermediate                   | 69                                      | 60   | 140                    | 60.9 |                      |              |
| High                           | 16                                      | 13.9 | 55                     | 23.9 |                      |              |

\*total number=220

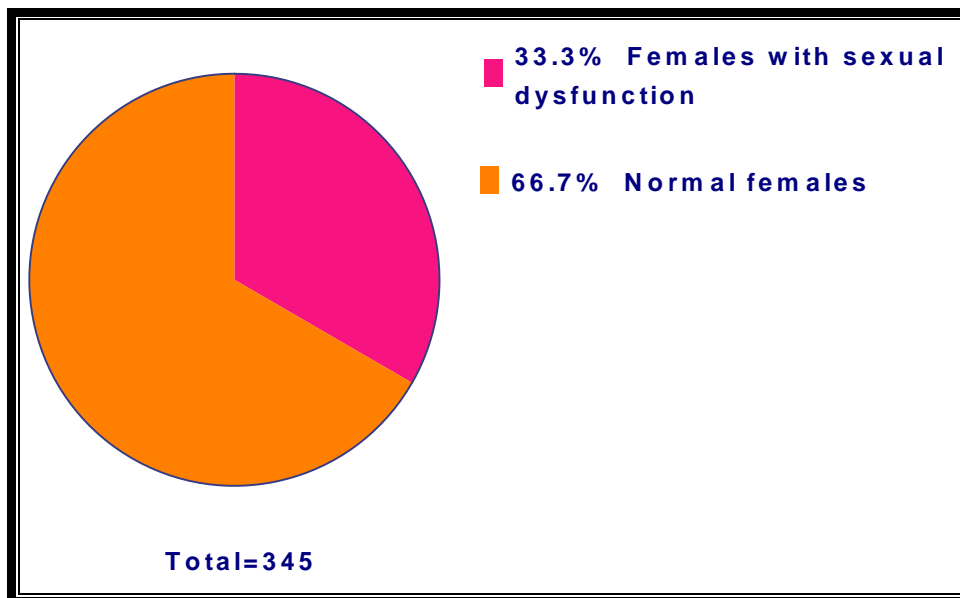
**Table 4:** Prevalence of female sexual dysfunction among the studied participants.

| Participants                           | N          | %           |
|--|------------|-------------|
| <b>Females with sexual dysfunction</b> | <b>115</b> | <b>33.3</b> |
| <b>Normal females</b>                  | 230        | 66.7        |

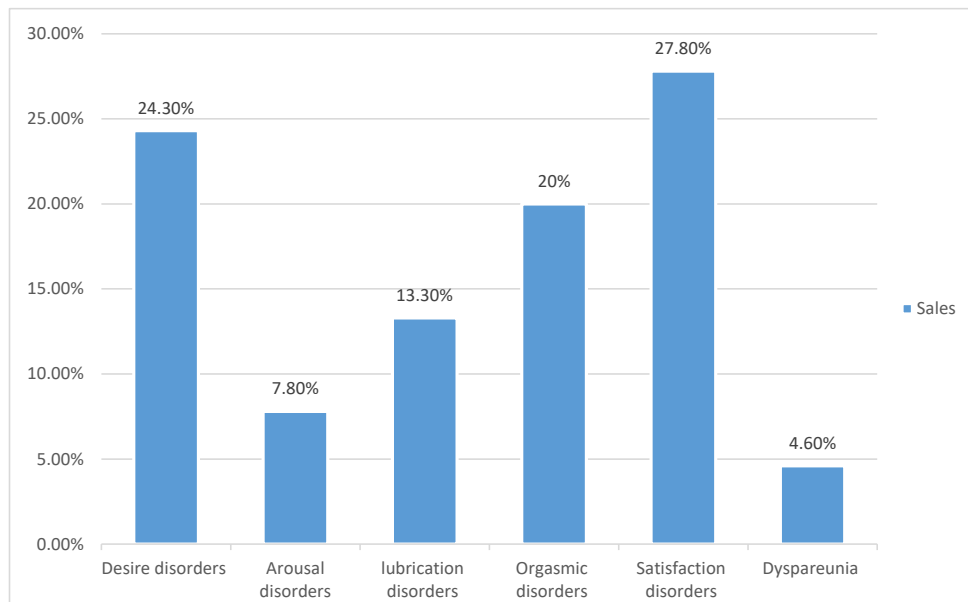
**Table 5:** Prevalence of different disorders according to each domain score of studied females:

| Disorder                       | N          | %           |
|--------------------------------|------------|-------------|
| <b>Desire disorders:</b>       |            |             |
| Yes                            | 84         | 24.3        |
| No                             | 261        | 75.7        |
| <b>Arousal disorders:</b>      |            |             |
| Yes                            | 27         | 7.8         |
| No                             | 318        | 92.2        |
| <b>Lubrication disorders:</b>  |            |             |
| Yes                            | 46         | 13.3        |
| No                             | 299        | 86.7        |
| <b>Orgasmic disorders:</b>     |            |             |
| Yes                            | 69         | 20          |
| No                             | 276        | 80          |
| <b>Satisfaction disorders:</b> |            |             |
| Yes                            | 96         | 27.8        |
| No                             | 249        | 72.2        |
| <b>Dyspareunia:</b>            |            |             |
| Yes                            | 16         | 4.6         |
| No                             | 329        | 95.4        |
| <b>Total</b>                   | <b>345</b> | <b>100%</b> |

\*\*Cutoff for each domain score is less than 3.9 [12]



**Figure 1:** Prevalence of sexual dysfunction among studied participants.



**Figure 2:** Percentage of each domain disorders

### DISCUSSION

Sexuality is a socially sensitive problem all over the world and has deep roots in many complicated health related factors such as cultural, religious, and ethical social factors [2].

Epidemiological data on sexual dysfunction are relatively scanty and vary widely. Sexual dysfunction is more prevalent in women than in men and is associated with various demographic characteristics, including age and educational level [8].

This study was performed to provide epidemiological data, predictors about prevalence of FSD and its risk factors in females living in Zagazig city (sharkia governorate, Egypt) and its districts.

The study was performed on 345 participants. Most of them were 20-29 years old (61.5%) which means that most of the participants were in the age of sexual activity. All of the participants were educated and 76.8% had university degree and to ensure the accuracy of the results and privacy, illiterates were excluded to let participants fill the questionnaire themselves.

The prevalence of sexual dysfunction among the participants was found to be 33.3%. The data are consistent with a population based sample study involved 5463 women aged 18–49 years in Finland in 2008 and found that 34.4% of women had sexual dysfunction [9], the prevalence of FSD in sexually active women aged 18–40 years in Medellín, Colombia, was reported as 30% [10], However on a

survey on 216 men and 191 women attending Department of Genitourinary Medicine, University of Bristol, UK and found that 69% of women had sexual dysfunction [11].

The educational level of the participants in this study was inversely correlated with the incidence of sexual problems, Females who had low educational level had higher incidence of sexual dysfunction than other educational level. Sexual problems was the lowest among females with university level. Also low educational level had statistical significance with reduced score of FSFI domains (desire, orgasm and satisfaction). This agree with a survey in Iran revealed that women with a low level of education had a 1.3 and 1.5 times greater risk of FSD than women with university educations, better-educated women pay more attention to sexual consciousness and property rights and are more able to express their desire and dissatisfaction [12]. In Egypt this may attributed to low educated women has more life stressors, bad financial conditions and less quality life style [13].

Demographic characteristics were found to be strongly predictive of sexual difficulties. In this study females with sexual dysfunction had high statistical significance of age group (30-39 years) .This results disagree with Egyptian study stated that FSD increases with older age group and found the highest proportion among women over 50 years old[13]. This study results may attributed to that this age (30-39) was associated with the increasing demands of growing children and running an expanding family. Also decreased number of the participant over 50 years (many subjects refused to share in the study and fill our questionnaire) and many of them were under our excluded criteria (medical condition, having medication that may influence sexual function).

In the present study 63% of the subjects were employed. About 58% of them stated that work doesn't affect their sexual life in negative way. This consistent with a study reported that women with jobs and being higher on the ladder of life were more likely to be sexually active as work increase their self-esteem[14].

Women with heavy physical work were more likely to have sexual problem. The results agree with a study stated that women who are frequently tired, depressed, or irritable are less likely to desire sexual activity as sexual function rely on both physical and mental health, and normal sexual activity are more common in healthier women[15].While disagree with a study found women whose work is much heavier physically less likely to have difficulties with sexual activity and physical exertion may be protective from sexual dysfunction problems or that both physical work and sexual activity are more common in women who are healthier overall[14].

Family income was strongly associated with sexual problems. Women in a family with low monthly income was found to impact their sexual function greatly compared with others with both intermediate and high income. These results agree with **Yangin** who found positive correlation between increased family income and improved sexual function as increased income lead to decrease stress , improve quality of life and allow women to focus on sex , also increased income has been linked to decreased depression score [16].

More than thirty two percent (32.5%) of the participants obtained there sexual information from their husbands, While about (20.3%) of them obtained it from their friends, (25.2%) from the internet, (13.6%) from specialists and (8.4%) from the family. However in this study there was statistical significance between sexually dysfunctioning women and obtaining sexual information from friends. This result disagree with **oniz** who found that sexual dysfunction more in females receiving their sexual information from husband[17].The results of the current study may be due to cultural differences with defects in sex education in our society, improper concepts about sex and misleading information about sex from friends.

In the present research desire disorder (DD) prevalence was 24.3, while arousal disorder (AD) was 7.8%, orgasmic disorder (OD) was 20%, and pain disorders or dyspareunia (PD) was 4.6%. These results agree with a population based study on 728 women living in morocco, DD were reported by 18%, OD by 12%, AD by 8% and PD by 8% [18].However the results disagree with a study in Santiago de Chili which reported higher proportions, DD were reported by 38%, AD by 32%, OD by 25% and PD by 33%[19].This fact supports the role of social and cultural factors and the interrelation with the partner in the development of dysfunction. Epidemiological studies on sexual dysfunctions indicate that desire complaints are the most frequent sexual difficulties reported by women, our results agreed with those studies as desire disorders was the highest proportion (24.3%). **Hayes** found that among women with any sexual difficulty, 64% experienced desire difficulty, this high proportion may attributed to more expanded sample size[20].

## CONCLUSION

In conclusion, like other literatures interested in female sexuality, in particular risk factors that may affect normal sexual function and increase the incidence of female sexual dysfunction, the results of this study suggest that there is strong relationship between female sexual dysfunction and both life style and demographic characters of the females including socio-economic characters decreased level of education, life stressors such as heavy physical work

as well as bad financial conditions, sexual ignorance with misleading sexual information were found to be major risk factors of FSD.

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