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Correlation between general health and sexual function in older women in an Iranian setting

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Abstract:

INTRODUCTION: The world's population is aging and this trend continues. Older adults are living healthier and longer than in the last decades and their sexual function should also be considered along with their general health. This study aimed to examine the correlation between general health and sexual function in elderly women.

MATERIALS AND METHODS: In this cross-sectional correlation study, 1245 women over 60 years old were selected in Ardabil health-care centers by a convenient sampling method. Demographic data of all participants were noted and general health and sexual function were evaluated by the Goldberg General Health Questionnaire and Female Sexual Function Index (FSFI) Questionnaire.

RESULTS: The participants' mean ± standard deviation age was 75.1 ± 7.2 years, most of the women (40.08%) were illiterate, and the majority of them were living with their married (44.81%) or single children (27.14%). The general health score for 380 older women (30.52%) was under 22 (healthy). About 60% of the women had engaged in sexual activity during the past 4 weeks, and the total mean score of FSFI was 17.36 ± 1.44. In addition, 84.33% of the women had sexual dysfunction (FSFI < 26.55). The age ($P < 0.05$), educational level ($P < 0.001$), living with children ($P < 0.01$), and general health status ($P < 0.01$) were found to be significantly related to sexual function. The total scores for FSFI and the scores for all domains except for satisfaction were in positive correlation with the score for the total and all domains of general health ($P < 0.001$).

CONCLUSION: Sexual function in elderly women is affected by several factors, such as general health. Therefore, to promote successful aging in women, sexual function and general health require more attention when implementing women's health initiatives.

Keywords:

General health, older women, sexual function

Introduction

Sexual function is a part of human life and behavior; it is a multidimensional phenomenon that is influenced by many biological, psychological, and social factors.[1,2] Human sexual function is a process that involves a combination of different parts of the body and requires coordination between the nervous, vascular, and endocrine systems. Women's sexual function is a state of ability to achieve sexual arousal, lubrication, orgasm, and satisfaction, which leads to health and a level of well-being with a good quality of life.[3] Today, there is ample evidence to support the importance of sexual function and its impact on quality of life.[4] Sexual dysfunction is an important public health problem that is more prevalent in women than men and leads to individual and even interpersonal problems.[5]

The sexual functioning of women may vary, or it can change permanently, throughout life, particularly in terms of reproductive events and age maturity.[6] There are numerous growing studies focusing on

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the sexual functioning of middle-aged women folk, experiencing a transition of menopausal. While, most of these researchers have identified a decreasing tendency in sexual functioning linked to menopausal transition,[7] and the critical factor causing this decline in menopausal transition is dryness. However, some studies have explored independently the aging process based on menopausal status. Hence, growing age of women shows a decline in sexual functioning. This decline might be a result of the overall decline in women's general physical and mental health or changes with medical conditions.[6,8] In recent decades, attitude and experience for making sexual relationships of middle-aged women have changed, and it has affected both genders. However, there are a growing proportion of women and men to remain equally active in their later ages to maintain sexual relations.

The population of the elderly will grow from 901 million in 2015 to 2.1 billion in 2050, which will double.[9] In Iran, it is expected that about 33% of the population will be over 60 years old in the next few decades.[10] Older adults are living healthier and longer than in the last decades.[11] This rapid shift in age distribution demands understanding the evolution and multidimensional nature of well-being for older adults including physical, mental, and sexual health to promote successful aging.[12]

In 2010, the World Health Organization expressed that sexual health is important throughout life.[13] There is strong evidence that many older women are sexually active and have enjoyable sexual activities.[14-16] Meanwhile, images of sexually active women beyond the old age are lacking in popular culture.[17]

The past studies specified that there was an upsurge in maintaining sexual relationships actively over time in the proportion of individuals of 70 plus years of age. These 70 years old people see sexuality as a positive force, and they express their satisfaction with sex life.[18] Numerous trends are useful to describe this situation as males and females live longer and enter into their old ages with the right health conditions in the developed era as of today's medial science development with superior health-care facilities available worldwide.[19] This development has changed individuals' attitudes in maintaining sexual relationships throughout the life course. It helps in maintaining well-being, good health, and promoting self-esteem.[20,21] Female Sexual Function Index (FSFI) is a useful tool, and it consists of a brief scale intended for evaluation of both genders' sexual functioning. Later, it was translated and validated to use in Brazil and Portuguese-speaking patients.[22]

However, numerous studies have stipulated that there is evidence of changes in sexual expression with the increasing age limits, and the past studies indicated that sexual functioning declines with the growing age like over 60 years.[23,24] More equivocally, with increasing age, it reduces women's desire to maintain sexual relationships.[18,25] On the other hand, a substantial research body specified that majority of the older adults actively enjoy sexual activities.[26,27] The past researches stipulated that intimacy and sexual activities showed a significant contribution to the life quality of both genders across the world.[28-30]

According to community-based studies, the prevalence of sexual dysfunction in postmenopausal women is between 68% and 86.5% in different countries.[31,32] A study in Iran showed that two-thirds of postmenopausal women (45–65 years old) suffer from at least one sexual problem.[33]

A Thailand-based study specified that 82% of the postmenopausal women remained sexually active, and they had shown sexual dysfunction. The study assessed it to incorporate the overall FSFI scoring of ≤ 26.5 in women who indicated a significant attitude toward sex.[34] The prevalence of sexual dysfunction is estimated to be between 25% and 63% in all women. The prevalence in older women has been reported higher even at rates of between 68% and 86.5%.[32]

In Iran, with a dominant religious background and patriarchy, women are supposed to limit sexual activities to fertility years and say goodbye to the sex word after menopause.[35] Given that physicians often do not ask older women about their sexual relation for various reasons, including lack of confidence, discomfort, and feeling of deskilled.[36] On the other hand, due to lack of access to sexual health-care services, elderly women are expected to experience high sexual dysfunction.[37]

Understanding of general health status in older women and correlation with sexual function can help policymakers and health professionals to undergo the necessary steps to promoting health and well-being in this vulnerable group and provide appropriate, effective, and culturally based sexual health-care services for them. Therefore, given the limited studies conducted in this field in Iran, the aim of this study was to determine the correlation between general health and sexual function in elderly women who attended the Ardabil health-care centers in Iran. The results of this study can be useful in improving of health in older women.

Materials and Methods

Study design and study population

A cross-sectional correlation study was performed from March 2016 to April 2018. The study population was

all married women over 60 years of age who referred to Ardabil health centers. Four health-care centers in four different geographical locations in Ardabil city were involved randomly. The study objectives were explained, and written informed consent was obtained from all participants. One thousand two hundred and fifty-four women were selected by a convenient sampling method. In order to have a maximizing collaboration of women, questionnaires were completed by the assistance of four trained and experienced health-care providers working at the same center, who are usually familiar and trustworthy to women.

Inclusion and exclusion criteria

The inclusion criterion was being a married woman (over 60 years old). The exclusion criteria included having the history of hysterectomy, mastectomy, or other genital surgeries, any cancer, conditions (such as substance abuse or dementia) that would affect their ability to cooperate, and having the history of a severe stressful event in the past month (due to a confounding effect on the results of the study).

Instrument and data collection

Data collection tools include demographic questionnaire (including age, educational status, occupation, living with whom, sexual activity in the past 4 weeks, education of husband, and occupation of husband), the Goldberg and Hiller's General Health Questionnaire (GHQ), and Rosen *et al*. FSFI Questionnaire.

Questionnaire and measurements

General Health Questionnaire

The GHQ consists of 28 items on the scale with four subscales to measure insomnia, anxiety, severe depression, and social dysfunction, which reports on the four-point Likert scale showing 0, 1, 2, and 3 scores. Goldberg (1972) first time introduced the GHQ scale, and later, Goldberg and Hiller presented a 28-item revised version of the GHQ scale, and they extracted this scale from a 60-item version, which was related to factor analysis.[38] The investigators added each item score to every subscale and added together to measure the scores of each subscale. The authors obtained the total scores by the sum of all items based on the four subscales. The maximum score of a subject was 84 on the scale through this method. This study incorporated the Pearson's version of the scale as presented by Nazifi *et al*., who examined the validity and reliability of this questionnaire. The results indicated that the Cronbach's alpha coefficients of all four subscales, as well as the GHQ's overall scale based on 28 items, showed the values ranging from 0.74 to 0.92.[39] The threshold value of the GHQ scale is 23; however, 0–22 scores specify a healthy, and ≥23 shows an unhealthy state.[40]

Female Sexual Function Index Questionnaire

Rosen *et al*. proposed this scale to diagnose sexual functioning in women. This questionnaire contains 19 items with multiple-choice options to measure sexual functioning during the past 4 weeks, linked to further six domains and likely disorder types: (1) orgasm, (2) desire, (3) arousal, (4) lubrication, (5) pain during/after intercourse, and (6) satisfaction with sexual life.[22] The investigators provided questionnaires to the participants and educated them on how to fill the forms. The respondents provided their feedback on the instrument with the options which best described their current situation. Each question on the tool indicated a value conforming to the respondent's degree of gratification. Within the past 4 weeks without any sexual activity showed a zero score, while other scores specified values from 0 to 5 on the incremental scale. The values ranging from 0 to 5 show pain's domain inversely with the varying grades from 0 to 5. It refers to questions 3–14, 17–19, 1–5, and 12, 15, and 16. Each domain's sum multiplied by its related factor provides the overall score on the FSFI scale, which ranges from 2 to 36. If the total score is less than 26, it indicates one or more than one dysfunction in the particular domain. Mohammadi *et al*.[41] validated this scale in Tehran on 53 studies and reported 82%–83% sensitivity. This current study retested the model to determine the scale's reliability, and it indicated the Cronbach's alpha result 0.91 correspondingly.

Statistical analysis

Data were analyzed using the SPSS version 23 software (version 23.0, SPSS Inc., Chicago, IL, USA). Data were statistically described as mean, standard deviation, frequencies (number of participants), and percentages. Quantitative variables were analyzed by Student's *t*-test and one-way ANOVA. Pearson correlation coefficient was used to examine the correlation between general health and female sexual function.

Ethics statement

This study was conducted in accordance with the Declaration of Helsinki. The protocol was approved by the Ethics Committee of Ardabil University of Medical Sciences (REC.1395-63-IR.ARUMS). All participants were informed before the investigation, and consent forms were signed by participants themselves. For these who cannot sign their names, the Ethics Committee approved that consent forms can be signed by their relatives or data collectors at the request of the participants. Participants were made aware that all data would remain anonymous.

Results

Characteristics of the study population

The study sample consisted of 1245 married women aged

60–87 years (mean = 75.1 ± 7.2). The mean number of postmenopause years was 24.7 ± 6.6, and the mean age of women at the time of marriage was 16.6 ± 7.3. Most of the women (40.08%) were illiterate, more than 81.36% of the women were homemakers, and the majority of them were living with their married (44.81%) or single children (27.14%). The general health score for 380 older women (30.52%) was under 22 (they were considered healthy), and the rest of them (69.47%) were 22 or over (they were considered unhealthy). About 60% of the women had engaged in sexual activity during the past 4 weeks. The other demographic properties are reported in Table 1.

The mean total score of sexual function was 17.36 ± 1.44 (in the range of 1.2–36). In these domains, the lowest and highest scores belonged to the desire (2.01 ± 1.49) and pain (3.88 ± 1.75), respectively. Table 2 shows the scores for each domain of FSFI score of the study population.

Using an established cutoff score of 26.55, 1050 out of 1245 (84.33%) of older women were reported to have female sexual dysfunction (FSD). The sexual function in older women with respect to demographic variables is presented in Table 3. Among them, the age, educational level, living with children, and general health status were found to be significantly related to sexual function. The mean age of the women with FSD (76.9 ± 1.8) was higher than the women without FSD (68.2 ± 6.5). Women without FSD were significantly younger than those with FSD ($P < 0.05$). Academic degrees in non-FSD women were significantly higher than the FSD group ($P < 0.001$). Sexual dysfunction among women who were living with their married (47.61%) or single children (27.61%) at home was significantly higher than those who were living just with their husbands (24.76%) ($P < 0.01$). About 21% of the healthy women reported FSD compared with 79% of the unhealthy women ($P < 0.01$).

The correlation between sexual function and general health of elderly women was examined with Pearson correlation coefficient and revealed that the total score of sexual function and the score of all domains except for satisfaction had a positive significant correlation with the score of the total and all domains of general health. The score of satisfaction domain had a positive correlation with depression and anxiety domains, and there was no statistically significant relationship in the rest of the domains [Table 4].

Table 1: Demographic properties of the older women in an Iranian setting (*n*=1245)

Variable	*n* (%)
Age (years)	
60-69	329 (40.08)
70-79	580 (46.58)
<80	336 (26.98)
Mean±SD	75.1±7.2
Educational status	
Illiterate	499 (40.08)
Primary school	352 (28.27)
Secondary school	231 (18.55
College or University	163 (13.09)
Occupation	
Homemaker	1013 (81.36)
Employed	38 (3.05)
Retired	194 (15.58)
Living	
Just with husband	349 (28.03)
With single children	338 (27.14)
With married children	558 (44.81)
General health score	
22>	380 (30.52)
22<	865 (69.47)
Sexual activity in the past 4 weeks	
Yes	747 (60)
No	448 (35.98)
No response	50 (4.01)
Education of husband	
Illiterate	273 (21.92)
Primary school	459 (36.86)
Secondary school	268 (21.52)
College or University	245 (19.67)
Occupation of husband	
Employed	184 (14.77)
Retired	961 (77.18)

SD: Standard deviation

Table 2: Mean and standard deviation of sexual function dimensions in the study population

FSFI domain	Mean±SD
Desire	2.01±1.49
Arousal	2.88±1.22
Lubrication	2.74±1.27
Orgasm	2.30±1.40
Satisfaction with sexual life	3.55±1.55
Pain during or after intercourse	3.88±1.75
Total score	17.36±1.44

FSFI=Female Sexual Function Index, SD: Standard deviation

Discussion

Results of the study indicate that less than one-third of women over the age of 60 years were healthy, most of the women reported sexual activity within the past 4 weeks, and the majority of them had FSD. However, the results of a study showed that couples who have more sexual satisfaction have a higher quality of life than the others.

Estill *et al*. stated that the prevalence of sexual dysfunction was 45% among 2019 women aged 40–69 years,[31] and Starc *et al*. identified a 31% prevalence of FSD in Slovenia.[5] Therefore, sexual dysfunction can reduce the quality

Table 3: Sexual function according to demographic properties in older women in an Iranian setting

Characteristics	Mean±SD		
	Women with FSD (*n*=1050; 84.33%)	Women without FSD (*n*=195; 15.66%)	Total participant (*n*=1245)
Age	76.9±1.8*	68.2±6.5*	72.1±7.2
Years postmenopause	24.6±11.7	25.1±2.8	22.7±6.6
Age of marriage	16.8±5.8	16.1±4.7	16.6±7.3
Age of husband	78.6±1.7	77.9±8.9	78.8±5.4
Age			
60-69	292 (27.80*)	87 (44.61*)	379 (30.44)
70-79	501 (47.71)	79 (40.51)	580 (46.58)
≤80	257 (24.47)	29 (14.87)	286 (22.97)
Educational level			
Illiterate	425 (40.47)	74 (37.94)	499 (40.08)
Primary school	304 (28.95)	48 (24.61)	352 (28.27)
Secondary school	200 (19.04)	31 (15.89)	231 (18.55)
College or University	121 (11.52***)	42 (21.53***)	163 (13.09)
Employment			
Homemaker	86 (82.5)	146 (74.87)	1013 (81.36)
Employed	32 (3.04)	6 (3.07)	38 (3.05)
Retired	151 (14.38)	43 (22.05)	194 (15.58)
Living with			
Just with husband	260 (24.76**)	89 (45.64**)	349 (28.03)
With single children	290 (27.61)	48 (24.61)	338 (27.14)
With married children	500 (47.61)	58 (29.74)	558 (44.81)
General health score			
≥22	221 (21.04**)	159 (81.53**)	380 (30.52)
<22	829 (78.95)	36 (18.46)	865 (69.47)
Education of husband			
Illiterate	221 (21.048)	52 (26.66)	273 (21.92)
Primary school	398 (37.90)	61 (31.28)	459 (36.86)
Secondary school	214 (20.38)	54 (27.69)	268 (21.52)
College or University	217 (20.66)	28 (14.35)	245 (19.67)

*P<0.05, **P<0.01, ***P<0.001. SD: Standard deviation, FSD: Female sexual dysfunction

Table 4: Correlation between health status and sexual function in older women in an Iranian setting

Health status Subscales	Sexual function (*r*)						
	Desire	Arousal	Lubrication	Orgasm	Satisfaction	Pain	Total
Physical	0.218*	0.188**	0.184**	0.242**	0.216	0.188*	0.224**
Anxiety	0.214***	0.204***	0.129***	0.234***	0.209*	0.124**	0.178**
Social performance	0.284***	0.280	0.266**	0.344***	0.388	0.148***	0.344***
Depression	0.129***	0.087**	0.066**	0.119**	0.213*	0.058**	0.118**
Total	0.266**	0.247***	0.234***	0.294**	0.323	0.086***	0.264***

*P<0.05, **P<0.01, ***P<0.001

of life of women and their general satisfaction in marital life.[32] The results of this study showed that the sexual function decreased with age, a result consonant with several reports.[42-45] This effect may be due to hormonal and physical changes caused by aging and their consequences on sexual function. Studies have confirmed the effect of estrogen deprivation on decreasing of sexual function in older women.[46]

In confirmation of other published studies, some demographic characteristics were strongly predictive on sexual function. Lower education was associated with higher FSD. Other studies have also suggested that sexual function displayed a significant positive correlation with female educational level.[47,48]

Living with married or single children was the other important factor that influenced sexual function. Women, who lived with their children, had more FSD than the women who just lived with their husbands. Children play an inevitable role in the lives of their parents and their marital relationship, whether it is positive or negative. Some studies show that the presence of young children at home has a negative impact on marital relationships, perhaps because couples have less time to spend together.[49] The elderly

women who lived with their children, grandchildren, daughter-in-law, or son-in-law had difficulty in sexual relationships with their spouses in many ways, such as the importance they give to relationship factors, shame and embarrassment, or cultural factors. This could be due to the widely cultural beliefs that blame elderly women for having sexual activity as it is considered bad and embarrassing.[50] Cultural background has a greater impact on most aspects of sexual function.[51]

The other finding was that women with acceptable general health were less likely to suffer from FSD. These results parallel a previous study in which a negative perception of female health status was one of the main risk factors associated with FSD.[52] Women's bodies transform with the development and growth, and different changes take place in the perception of things, understanding, and the desires of sexual stimulation. The past studies evidenced that the youngest women with age groups of 18–23 and 24–29 years stated a higher level of changes in their physiological and psychological stimulus associated with sexual need, arousal, and satisfaction. Women also reported changes at the middle ages, such as 42–47 years of age, by focusing on orgasm, lubrication, and pain. Another strong influential element is education, excluding the age factor, which influences women's sexual activity. Arousal and sexual climax is the instrumental orientation of the sexual stimulus. Many other factors, such as value adoption, knowledge acquisition, education level, and spiritual growth, influence sexual stimuli besides development, growth, education, and chronic age.[53,54]

The present study showed that sexual function of elderly women has a positive correlation with their general health status, and there is a significant relationship in sexual dysfunction in people with low general health. Similar studies found that the health concerns prevalent in the aging population contribute to sexual problems.[55-57] Under particular circumstances, diabetes, endocrine, cardiovascular diseases, breast cancer, lower urinary tract problems, and osteoarthritis affect females' sexual functioning. Oophorectomy, hysterectomy, bariatric surgery, smoking, natural menopause, and clinical depression have shown an association with a woman's sexual dysfunction. Diseases also influence women's sexual functioning, and studies show that osteoarthritis disease affects tolerance, and mobility, for physical activities, and ultimately, it reduces sexual desire in women. The perceived attractiveness and image of the women's body change with increasing age and concomitant disease reduce sexual desires in women to make sexual relationships.[58] The past researches indicated that depression is a critical factor in decreasing sexual desire between 50% and 60% of the untreated patients.[58] The leading reason for morbidity is cardiovascular disease in old ages, and mostly, it indicates the relationships with sexual dysfunction. With the growing age, it is itself a risk factor to cause vascular dysfunction even though other risk factors are unknown or absent. Infect, intact vascular, and neurological systems are essential for normal arousal in females. Further research studies can determine the exact relationships between sexual dysfunction and cardiovascular disease in women.[59,60]

Previously, very good versus poor health has been shown to play a significant role for sexual satisfaction among older women.[59,61] Some studies indicated that sexual dysfunction relates to health status,[62] good physical and emotional health is associated with sexual activity,[25] and poor physical health is associated with decreased interest in sex.[63] Delamater argued that several physical and mental health challenges may interfere with sexual quality of life and decrease or stop sexual activity.[25] Karraker *et al*. confirmed that poor physical health has been implicated as a key component of decline in sexual activity in older adults across national samples.[46]

Based on our study, we conclude that sexual satisfaction had a positive correlation with depression and anxiety in older women. The impact of depression and anxiety has been proven on sexual function.[48,53,64] Basson *et al*. argued that depression interfered with female sexual response, with a negative association among desire, arousal, satisfaction, orgasm, and pain.[65] In multivariate models, depression was associated with a substantial and pervasive negative impact on sexual health in both men and women and across the age range of 50–99 years.[43]

However, this study may give additional insight into older women's health and well-being by highlighting risk factors associated with sexual function.

This study had some strengths. The sample was selected from a large, geographically diverse metropolitan area, and standardized instruments were used to assess sexual function and general health with face-to-face interviews. There are also a number of limitations that deserve to be noted. These data are from a single geographical region in Iran and may not generalize to the overall Iran population. This study focused on older women; therefore, it is recommended that future studies consider general health and sexual function among men and couples.

Conclusion

This study indicated that some factors including general health affect sexual functioning of older women. Therefore, the improvement of general health and sexual function in these women requires more and better knowledge and implementation of appropriate interventions.

However, physicians and health providers need to have a comprehensive approach in dealing with sexual problems in older women. Healthy aging must be a part of health care and medical education, and physicians must be advised to ask the aged patients about their sexual concerns.

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Conflicts of interest

There are no conflicts of interest.

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