

ORIGINAL RESEARCH—WOMEN'S SEXUAL HEALTH

Yoga in Female Sexual Functions

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ABSTRACT

Introduction. Yoga is a popular form of complementary and alternative therapy. It is practiced both in developing and developed countries. Female sexual dysfunctions are common and do not always get adequate clinical attention. Pharmacotherapies for treating female sexual dysfunctions are available but suffer from drawbacks such as poor compliance, low efficacy, and side effects. Many patients and yoga protagonists claim that it is useful in improving sexual functions and treating sexual disorders.

Aim. To establish the effect yoga can have on female sexual functions.

Methods. We recruited 40 females (age range 22–55 years, average age 34.7 ± 8.49 years) who were enrolled in a yoga camp and were given a standardized questionnaire named Female Sexual Function Index (FSFI) before and after the 12 weeks session of yoga.

Main Outcome Measures. FSFI scores.

Results. It was found that after the completion of yoga sessions; the sexual functions scores were significantly improved ($P < 0.0001$). The improvement occurred in all six domains of FSFI (i.e., desire, arousal, lubrication, orgasm, satisfaction, and pain). The improvement was more in older women (age > 45 years) compared with younger women (age < 45 years).

Conclusions. Yoga appears to be an effective method of improving all domains of sexual functions in women as studied by FSFI. **Dhikav V, Karmarkar G, Gupta R, Verma M, Gupta R, Gupta S, and Anand KS. Yoga in female sexual functions. J Sex Med 2010;7:964–970.**

Key Words. Yoga; Female Sexual Functions; Female Sexual Function Index; Female Sexual Dysfunctions; Female Sexuality

Introduction

The topic of female sexuality has long been reduced to a low-priority research field. More recently, female sexual functions have received greater research interest [1]. Epidemiological studies regarding female sexual dysfunctions, however, are sparse [1]. It has been seen that middle-aged and older women engage in satisfying sexual activity, but one-third report problems with sexual functions [1].

Sexual dysfunctions are characterized by disturbances in sexual desires and in the psychological

and physiological changes associated with sexual response cycle [2]. Emotional and stress-related problems among women generate elevated risk of experiencing sexual difficulties in all phases of the sexual response cycle. In females, sexual dysfunctions are associated with negative experiences in sexual relationships and overall well-being.

Low desire or hypoactive sexual desire disorder can lead to low physical and emotional satisfaction as well as poor general happiness [2,3]. This can affect quality of life as well [2,3]. Moreover, a recent study [2] has suggested that sexual dysfunctions are more common in younger population. Since it

Table 1 Brief description of *yogasanas* used in the present study

<i>Kapalbhati</i> (Figure 1A, <i>kapal</i> = skull, <i>bhati</i> = bright; "forehead brightener"): Sit straight in squatting posture with eyes closed. Put hands on the knees. Fix the chest and consciously contract abdominal muscles.
<i>Vajarasana</i> (Figure 1B, <i>vajra</i> = diamond): Fold legs at knee joints and sit on the legs, and touch the knee caps as shown.
<i>Yog mudra</i> (Figure 1C, <i>Yog</i> = after <i>yogis</i> , <i>mudra</i> = posture; "symbol of yoga"): Take hands to the lower back. Catch the right wrist with the left palm and bend forward.
<i>Marjarasan</i> (Figure 1D, Cat's posture): Sit in <i>vajarasana</i> and after that be in the cat's posture and move the spine and neck.
<i>Pavanmuktasan</i> (Figure 1E, Hanging in air): Lie down on your back, bend the legs, bring them inside; clasp them with hands. Now, bring the head up to touch the knee as shown.
<i>Viparita karani mudra</i> (Figure 1FF, <i>viparit</i> = opposite, <i>mudra</i> = posture): "legs-up-the-wall pose".
<i>Matsyasana</i> (Figure 1G, Fish's posture): Lie down flat on the back and bend the neck backwards.
<i>Halasan</i> (Figure 1H, <i>Hala</i> = plough): Lie down flat; then, turn legs overhead while maintaining hands on the ground firmly.
<i>Ardhmatsyendra mudra</i> (Figure 1I, Half-spinal twist): Sit straight, bend right knee, and put it below buttocks. Now cross the left leg and bring it in front of the right knee.
<i>Paschimottoasana</i> (Figure 1J, Back stretching pose): Sit with legs straight, touch toes, and try to bend the head forward and kiss the toes.
<i>Paravatasan</i> (Figure 1K, <i>Parvata</i> = mountain; mountain pose): Sitting with head and spine intact with hands stretched overhead like a mountain.
<i>Bhujangasan</i> (Figure 1L, <i>Bhujang</i> = Snake): Lie down in prone position and transfer weight on palms. Attempt should be made to stretch the back muscles.
<i>Shalabhasan</i> (Figure 1M, Locust pose): Lie down on your chest and rest the head on ground. Lift the legs to the extent that the entire body rest on the chest and abdomen. Keep hands firm on ground.
<i>Naukasana</i> (Figure 1N, <i>Nauka</i> = boat; Boat posture): Lying prone and lifting hands and legs in air.
<i>Dhanurasan</i> (Figure 1O, <i>Dhanu</i> = Bow): Body gets a "bow-like shape."
<i>Bhushirasana</i> (Figure 1P, Preliminary posture of <i>Shirshashan</i>): Sit in <i>Vajarasana</i> and touch head on floor with the help of wall.
<i>Hansasana</i> (Figure 1Q, Swan pose; preliminary posture of <i>Mayurasan</i>): Sit in <i>Vajarasana</i> and transfer your weight on both palms. Body will hang in air but feet are supported by ground. It gives all the benefits of <i>Mayurasan</i> without difficulty. Particularly suited for overweight or old people.
<i>Chakarasana</i> (Figure 1R, Wheel pose): This <i>asana</i> is so named because the body takes the shape of a circle or a semi-circle.
<i>Trikonasana</i> (Figure 1S, Triangle pose): Stand up, open the legs, and touch the right leg with right hand and move the left arm in air. Look towards fingertips of left hand.
<i>Uddiyana bandha/agnisara</i> (Figure 1T, Rapid abdominal lifts): Exhale out all air and then draw abdominal muscles under rib cage.
<i>Pranayama</i> (Figure 1U, Breath control): Sit comfortably with eyes closed in squatting posture. Deep breathing should be done via alternating nostrils as shown.
<i>Shava asana</i> (Figure 2V, Dead posture): It involves lying relaxed, eyes closed with arms placed on both sides of the body.

constitutes the reproductive age group, an amicable solution to problems is therefore required. It has been seen that women may not seek help despite the presence of sexual dysfunctions [4].

Yoga is a nonpharmacological measure that has been shown to have an effect on sexual functions [5]. We attempted to establish what effect yoga would have on the sexual functions of females using a known and well-validated inventory of female sexual functions i.e., Female Sexual Function Index (FSFI) [6].

Methods

We recruited 40 females who attended the yoga camp in the city of Mumbai (India) between the ages of 22 and 55 years. Out of this group, 36 were married (mean duration of marriage 11.04 years) and four were unmarried but sexually active (mean duration of sexual activity 3.25 years). Patients were briefed about the yoga protocol (Table 1, Figure 1) that they were supposed to follow over the period of the next 12 weeks. *Asanas* which are believed to have effects on abdomino-pelvic muscle tone, gonads, endocrines, digestion, joint movements, and mood

were chosen specifically for the present study. Patients were given a questionnaire named FSFI [6] before and after yoga sessions and their FSFI scores were noted before and after the study.

Females included in the study were: healthy and sexually active, with no clinical diagnosis, not taking any drugs, not practicing yoga or any other exercise program/meditation protocols regularly. A general physical examination of all systems was performed. Unmarried or married females who were not sexually active were excluded from the present study. Study protocol was kept double blind and neither patients nor investigators were briefed about possible beneficial effects of yoga on sexual health to avoid any kind of bias. A neutral yoga instructor, unconnected with the present study, was asked to brief participants about the protocol and he too has no idea about the hypothesis, aim, and objectives of the present study.

Although the average suggested duration for *yogasnas* was 1 hour (6–7 AM in the morning or 6–7 PM in the evening), it was not fixed rigidly, and the patients were told to practice *yogasanas* depending on their stamina. This was because in yoga, the advice generally given was that the patients should

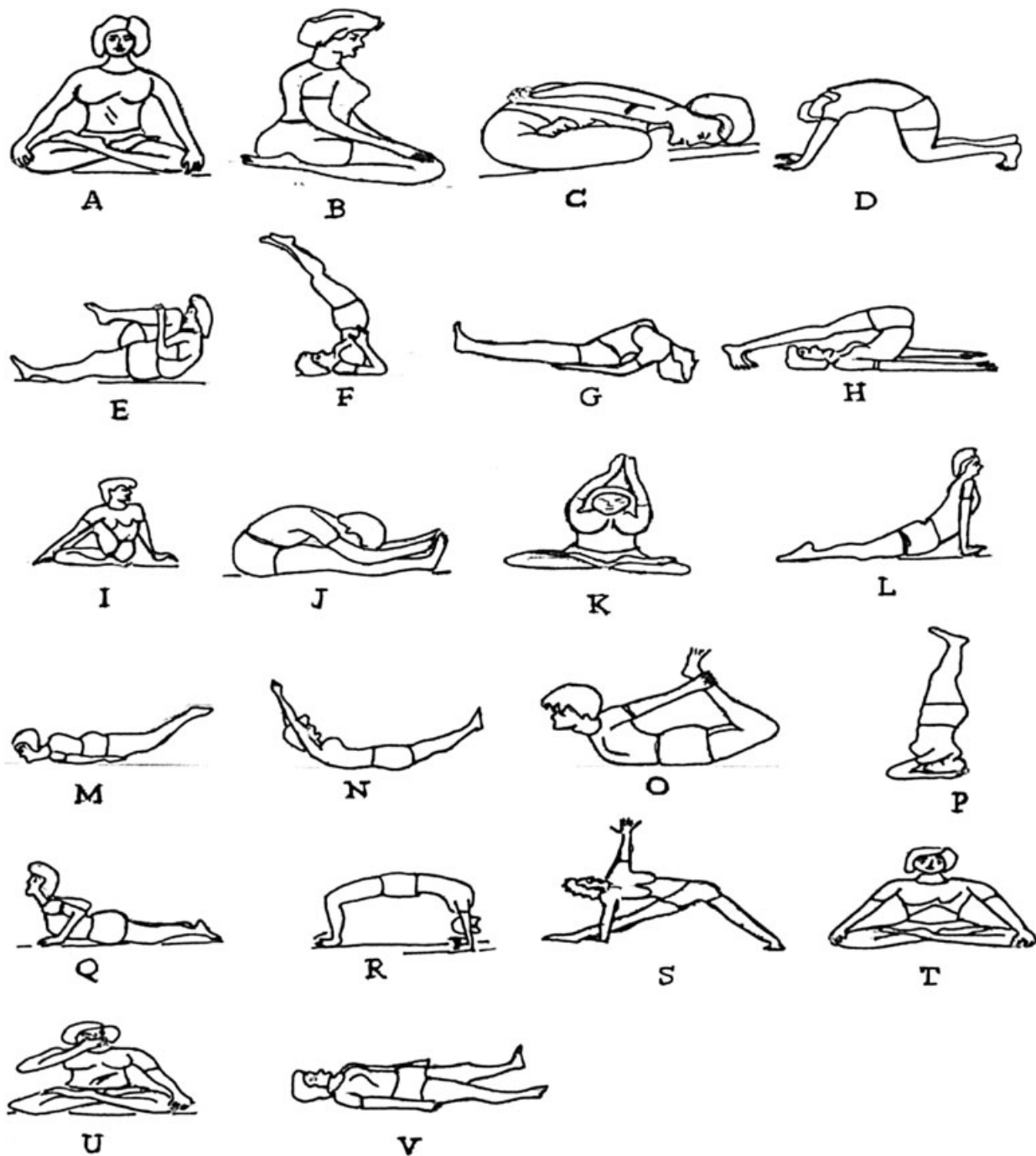


Figure 1 (A–V) Various yoga postures adopted by participants during study. See Table 1 for description.

not exert themselves. For some patients, two *yogasanas* (*bansasana*, *bhusirasana*) were modified depending upon their feasibility and acceptability by present study population. This was done for obese and old patient as they were not able to perform the full and difficult version of these *asanas*. Therefore, easier versions were offered to

them. Three repetitions of each *asana* were suggested. Differential relaxation was taught to the patients once they finished their daily yoga protocol with a breathing technique called *anulomvilom* (breathing via alternative nostrils) and *shavasan* (Sanskrit—*shava* = a dead body, lying dead). That means in the end, the patients performed breath-

Table 2 Scores of various domains of the Female Sexual Function Index before and after yoga sessions among study participant

Parameters	Mean \pm SD		df	t value	P value
	Before	After			
Desire	3.29 \pm 0.96	4.07 \pm 0.71	78	4.1249	<0.0001
Arousal	4 \pm 1.7	5.36 \pm 0.63	78	4.8148	<0.0001
Lubrication	4.38 \pm 1.7	5.53 \pm 0.57	78	3.9493	0.0002
Orgasm	3.38 \pm 1.61	4.75 \pm 0.92	78	4.6723	<0.0001
Satisfaction	4.06 \pm 1.24	5.21 \pm 0.87	78	4.7982	<0.0001
Pain	4.29 \pm 1.84	5.47 \pm 0.59	78	3.8609	0.0002
Total	23.65 \pm 8.51	30.38 \pm 3.11	78	4.6953	<0.0001

SD = standard deviation.

ing as mentioned and laid still for few minutes. Here, they were able to relax those muscles, which were stretched during yoga. That is why this is named as “differential relaxation.”

Statistical Analysis

Statistical analysis was performed using SPSS version 14 (SPSS Inc., Chicago, IL, USA). Paired *t*-test was used to calculate the *P* value. A *P* value of less than 0.05 was considered significant.

Results

We recruited 40 females (Age range 22–55 years, average age 34.7 \pm 8.49 years) who were enrolled in a yoga camp and were given a standardized questionnaire (FSFI) before and after the 12 weeks session of yoga.

There was a statistically significant improvement in all domains of sexual functions (Table 2) studied, i.e., desire, arousal, lubrication, orgasm, satisfaction, and pain. The overall weighted FSFI score was 946.2 before the start of study (baseline score) and 1,215.3 after the completion of the study. There was an overall improvement of 18.69% ($P < 0.0001$) in female sexual functions scores after yoga. Twenty-nine (72.5%) subjects expressed improvement in satisfaction about their sexual life following yoga, while 11 (27.5%) patients did not note any appreciable improvement.

Females who were aged over 45 years were considered “older” ($N = 6$; mean age 50 \pm 3.3 years) and females below that age were considered “younger” ($N = 34$; mean age 32 \pm 5.8 years). Improvement in older females (17.83 \pm 10.1 vs. 5.11 \pm 4.95) was greater compared with that in younger women ($P < 0.0001$). The order of improvement in older patients was: arousal (61.66%) > pain (57.77%) > lubrication (56.66%) > orgasm (52.22%) > satisfaction (40%) > desire (19.44%); and in young women, the order was:

orgasm (17.74%) > satisfaction (15.78%) > arousal (15.73%) > pain (13.13%) > lubrication (12.50%) > desire (12.35%). It can be seen that the older women experienced maximum improvement in their arousal scores and minimum improvement in their desire scores. Orgasmic quality improved maximally in younger women followed closely by satisfaction. It is apparent that arousal was the major form of improvement in women above 45 years of age and this was more than younger women of below 45 years (3.7 \pm 1.8 vs. 0.94 \pm 0.97; $P < 0.0001$). Also, lubrication and pain improve significantly in older subjects. This may be because, in the case of postmenopausal women, dryness of the vagina is a common feature. In terms of the pain during intercourse, there was greater improvement reported in older women compared with that in younger women (3.47 \pm 2.61 vs. 0.78 \pm 1.15; $P < 0.0001$). The results in Table 2 demonstrate there is an increase in pain score from 4.29 \pm 1.84 before baseline to 5.47 \pm 0.59 after yoga sessions. Increase in pain score in FSFI signifies less pain during sexual intercourse. Emotional closeness scores during sexual activity increased significantly (3.50 \pm 1.47 vs. 4.48 \pm 0.8; P value = 0.0003) after 12 weeks of yoga.

Discussion

Female sexual dysfunction is slowly attracting the attention of healthcare professionals and women in general [7]. A recent study has shown that female sexual arousal disorder is of a common occurrence and it has been reported by up to 26% of American women [8]. Despite its high prevalence, the present pharmacological treatment modalities for female sexual dysfunctions are limited [9–11]. Androgens primarily affect sexual desire, arousal, orgasm, and the overall sense of well-being. Therefore, testosterone [10] and sildenafil have also been tried

in the treatment of female sexual dysfunctions [12–14]. Other potential treatment options, e.g., L-arginine, yohimbine, phentolamine, apomorphine, and prostaglandin E1, etc., are under investigation.

The empirical literature supporting eastern techniques [15], such as mindfulness, acupuncture, and yoga, for women's sexual complaints and loss of satisfaction is sparse but promising [16]. Herbal therapies have also been investigated for female sexual dysfunctions and limited data support their usefulness [17,18]. Preliminary report suggests a brief, three-session group psycho-educational intervention [16] for women with sexual desire and arousal complaints. Importance of eastern approaches [19] in managing sexuality was emphasized earlier.

This study explored the effect of yoga on female sexual function using a well-validated inventory of female sexual functions and reports usefulness of yoga in improving female sexual functions. Although we do not know an exact mechanism by which yoga improves female sexual functions, several postulations could be made about its putative mechanisms of usefulness. Beneficial effects of yoga have been recognized in improving muscle tone of lumber region [20], depression [21], hypertension [22], peripheral neuropathy [23], anxiety [24], joint disease [25], stress [26], ischemic heart disease [27], quality of life [28], labor pain [29], epilepsy [30], self care [31], well-being [32], pain [33], addiction [34], psychosomatic disorders [35], infertility [36], obsessive-compulsive disorders [37], and stress management [38].

Although the results of present study are encouraging, apart from the small sample size, this study has few limitations. First limitation is that the time of onset of improvement cannot be known. Additionally, we cannot predict how long the improvement produced by yoga will last. There is somewhat of selection bias in our study as well, as only those people who voluntarily chose to participate in the study were selected. Motivation to engage in yogic exercises, therefore, could also perhaps contribute to some benefits seen in the present study to an unknown extent. Another important limitation of this study is that it is a noncomparative trial and yoga has not been compared with placebo or with any other known modality that is effective in improving female sexual functions. The study compares the FSFI scores before and after yoga sessions and there is a statistically significant improvement in sexual function scores among participants. As stated above, 29 (72.5%) subjects expressed

improvement in their sexual life following yoga while 11 patients did not note any appreciable improvement. Although scores improved statistically in all patients, it may not have been subjectively appreciable by some subjects.

Although the current study noted an improvement in desire among women, more studies involving larger number of subjects and different scales [39] are needed. It has been realized that female sexual dysfunction is highly prevalent but not well defined or understood [40]. However, recently, there have been consensus meetings about the diagnosis, classification, and recommendations/guidelines concerning state-of-the-art knowledge for the clinical management of women's sexual dysfunctions [41].

Conclusion

It has been recognized that sexual dysfunctions in females are common and that treatment, frequently, is not sought. Sexual dysfunction among women has the potential to affect quality of life and interpersonal relationships. Yoga appears to be a nonpharmacological method of improving sexual functions in women. This study shows that yoga can produce improvement in all six domains tested by FSFI (i.e., desire, arousal, lubrication, orgasm, satisfaction, and pain). Considering widespread acceptability of yoga, nonpharmacological nature, and apparent beneficial effects in the present study, this modality deserves further study.

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Statement of Authorship

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