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Yoga can Inhibit Uterine Fibroid Growth and Improve Health-Related Quality of Life

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Abstract

Objective: Uterine fibroids are a major cause of morbidity in women during the reproductive and menopausal phase, contribute by Several factors. Fibroids affect the menstrual cycle and pelvic pressure symptoms. These conditions can be managed medically, surgically, or through minimal access techniques, including non-invasive yoga practices. The present study aims to assess the effect of yoga on women with uterine fibroid.

Methods: The study followed single group pretest-posttest intervention design. Women (N=42) with uterine fibroid complaints, aged 25 to 45 years were selected through convenient sampling. Participants with physical disability, neurological and psychological problem were excluded. The intervention group practiced yoga one hour daily, for five days per week for 90 days. Data were collected before and after the intervention, including scan reports, blood pressure, respiratory rate, and breathe holding time, BMI, medication score, and Uterine Fibroid symptoms and Quality of life (UF-QOL) scores. Analysis was conducted based on data distribution.

Results: Post intervention, reductions were observed in uterus fibroids growth measurements ($p<0.001$), endometrial thickness ($p<0.001$), right ovary measures ($p<0.001$), and left ovary measures ($p<0.001$). In the UFS-QOL scale showed improvement in all the subscales, including Symptoms Severity ($p<0.001$), Concern ($p<0.001$), Activity ($p<0.001$), Energy/Mood ($p<0.001$), Control ($p<0.001$), Self- Consciousness ($p<0.001$), Sexual Function ($p<0.001$) and Total Quality of life ($p<0.001$).

Conclusion: Three months of yoga practice reduced the growth of uterine fibroids and a positive effect on quality of life in women with uterine fibroids.

Keywords: Uterine Fibroids; Yoga; Stress; Quality of Life; Fibroids Growth; Women; Women Health

Abbreviations

TCM: Traditional Chinese Medicine; GFLT: Gui Zhi Fu Ling Tang; CM: Chinese Medicine; CODE: Centre for Open and Distance Education.

Introduction

Uterine fibroids, common clonal neoplasms of the uterus, cause significant morbidity in women of reproductive age and occasionally after menopause [1-3]. Fibroids are highly heterogeneous in pathophysiology, size, location, and clinical symptomatology [4]. They are benign tumors originating from uterine smooth muscle tissue (myometrium), with growth dependent on estrogen and progesterone [5,6]. Fibroids are rare before puberty, have higher prevalence during reproductive years, and decrease in size after menopause [6]. Aromatase in fibroid tissue facilitates endogenous estradiol production, and fibroid stem cells express estrogen and progesterone receptors, enabling tumor growth in the presence of these hormones [5]. While most women with fibroids are asymptomatic, approximately 30% experience severe symptoms, including abnormal uterine bleeding, anaemia, pelvic pain, back pain, urinary frequency, constipation, or infertility. These symptoms often require medical or surgical intervention. Additionally, fibroids are associated with poor obstetrical outcomes [7]. Symptomatic evaluation primarily depends on abnormal menstrual bleeding, pelvic pain, and anaemia. Fibroids are sometimes asymptomatic and diagnosed incidentally during routine pelvic examinations or imaging [8]. Incidence and prevalence rates of uterine fibroids vary widely, depending on the population and diagnostic methods. Uterine fibroids affect 70% of women, with age-dependent prevalence detected in 80% of women by 50 years of age [9,10]. Among reproductive-age women, prevalence ranges from 35% to 77% [11,12]. In southern Indian states, fibroid prevalence in women aged 41-50 years is 52.5% [13]. A study in Telangana district, Andhra Pradesh, found that the predominant age group affected was 40-59 years, with 59.8% married and 40.2% unmarried, divorced, or widowed [14]. Studies in rural south India reported that 66% of women with uterine fibroids had menorrhagia with severe anaemia, while 33% presented with a large abdomino-pelvic mass. Abdominal hysterectomy was performed in 67% of cases, with a mean age of 46 years [15]. A cross-sectional study in Andhra Pradesh revealed a significant correlation between fibroid prevalence, age, and BMI, suggesting early detection and weight management could reduce occurrences [16]. In northern India, the incidence of fibroids was 34.9%, most common in women aged 31-40 years. Symptoms included abdominal lumps (41%) and abnormal uterine bleeding (24.1%). Fibroid types included submucosal fibroids (38.6%), intramural fibroids (19.3%), submucosal polyps (14.5%), seedling fibroids (13.9%), and subserosal fibroids (10.2%) [17]. Fibroids significantly impact women's quality of life, fertility, and obstetrical outcomes [18]. Hysterectomy is the most common treatment for symptomatic fibroids, accounting for one-third of all hysterectomies worldwide [19,20]. Less invasive approaches are preferred when possible [21]. Medical management includes hormonal contraceptives, tranexamic acid, NSAIDs, and gonadotropin-releasing hormone agonists. Surgical options include hysterectomy, myomectomy, uterine artery embolization, and MRI-guided focused ultrasound surgery [22]. Complementary and alternative medicine (CAM) approaches include exercise, dietary changes, herbal treatments, and acupuncture. Traditional Chinese Medicine (TCM) formulas like Gui Zhi Fu Ling Tang (GFLT) have shown efficacy in reducing fibroid size [23-28]. Ayurveda offers treatments like Gomutra Haritaki and Hemakanda Ghruta for managing symptoms and reducing fibroid growth without complications [29-39]. Integrated management strategies, including lifestyle modifications, detoxification, and yoga, may alleviate symptoms and improve quality of life for women with fibroids [40].

Yoga Combined with Other Treatment Modalities

Integrated yoga and Ayurveda interventions lasting three months have been found to be effective in the prevention and management of uterine fibroids [41]. A reduction in the size of uterine fibroids was observed after 11 days of yoga and naturopathy interventions in patients who underwent both therapies [42]. In one case, a 43-year-old female with uterine fibroids and an ovarian cyst was managed through an alternative, non-surgical yoga-based intervention. Practicing yoga twice daily for three months resulted in significant recovery from the ovarian cyst and a reduction in uterine fibroid size. Yoga has shown promise as an effective treatment modality for the prevention and management of uterine fibroids [43].

Previous single-case studies have indicated that the combined effects of yoga with Ayurveda and yoga with naturopathy can reduce the growth and size of uterine fibroids. However, no comprehensive investigation has been conducted to evaluate the effects of a specific yoga module for uterine fibroids. The aim of the present study is to assess the impact of specific yoga practices on the quality of life and fibroid growth among participants with uterine fibroids.

Materials and Methods

A single-group, pretest-posttest intervention study design was employed. Forty-two women aged 25 to 45 years with a diagnosis of uterine fibroids were selected through convenience sampling from the Thrissur district, Kerala. The yoga intervention consisted of one-hour sessions

conducted five days per week for three months. Participants with physical disabilities, neurological, or psychological conditions were excluded from the study.

The yoga protocol included breathing practices, loosening exercises, asanas, pranayama, Surya Namaskara, and relaxation techniques [44,45]. Additional practices were incorporated based on expert recommendations.

Pre- and post-intervention data were collected for parameters including ultrasound scan reports, uterine fibroid quality of life (UF-QOL) scores, and general health indicators such as blood pressure, respiratory rate, breath-holding time, BMI, and medication usage. A non-parametric statistical test was performed to analyze pre- and post-intervention data, with the significance level set at 5%.

All participants provided informed consent prior to their inclusion in the study. The study adhered to the principles outlined in the Declaration of Helsinki and was approved by the Centre for Open and Distance Education (CODE), Swami Vivekananda Yoga Anusandhan Samsthana (SVYASA, deemed to be University).

Assessments

Uterus Fibroid Growth Assessment as per Ultra sound scanning reports: All fibroid measurements were taken during a single examination. Ultrasounds were conducted transvaginal. Transabdominal ultrasound examination was added if the transvaginal examination did not provide a complete assessment. Each individual fibroid was measured with their 3 perpendicular diameters (sagittal, longitudinal, and transverse). Each fibroid was relocated and re-measured two additional times during the examination. Caliper placement for each diameter was from outer border to outer border.

Therefore, a total of 9 diameters were recorded for each fibroid. Sonographers used a standardized data collection form that included a diagram of the uterus where each fibroid was mapped and numbered. Therefore, in women with multiple fibroids each fibroid was carefully mapped, numbered, and measured separately three times. Fibroids were recorded as fibroids only if they were at least 0.5 cm in maximum diameter, and could be visualized in all three planes. The largest fibroid measured was 5.7 cm. If a fibroid-like echo pattern could not be visualized in all three planes, it was recorded as a "questionable fibroid" and the visualized diameters were recorded. Fibroid type (intramural, submucosal, subserosal, and pedunculated) and location (fundus, uterine corpus, cervix/lower uterine segment) were assessed by each ultra-sonographer during the exam. Fibroid type was defined as intramural if it was mainly within the myometrium and did not impinge into the endometrial cavity. If a fibroid impinged upon the endometrial cavity, it was considered submucosal. A fibroid was considered subserosal if it projected from the serosal (uterine) surface, distorting the uterine contour with 1/3 or more of its volume. Fibroid location was determined with respect to the uterine axis, and divided into three categories (fundus, corpus, cervix/lower uterine segment). Women were asked to void prior to examination [46].

(UFS-QOL) Uterine Fibroid Symptom and Health Related Quality of Life Questionnaire: The UFS-QOL is a disease-specific questionnaire that assesses symptom severity and HRQL in patients with uterine fibroids [47]. It consists of an 8-item symptom severity scale and 29 HRQL items comprising 6 domains: Concern, Activities, Energy/Mood, Control, Self-consciousness, and Sexual Function. All items are scored on a 5-point Likert scale, ranging from "not at all" to "a very great deal" for symptom severity items and "none of the time" to "all of the time" for the HRQL items. Symptom severity and HRQL subscale scores are summed and transformed into a 0–100-point scale. The Symptom Severity scale and HRQL subscale scores are inversely related with higher Symptom Severity scores indicating greater symptoms while higher HRQL subscale scores indicate better HRQL. The internal consistency reliability, validity, and responsiveness of the UFS-QoL has been assessed [48].

Data Analysis

The obtained data was extracted as per the manual and standard measurements of the instruments and questionnaire. Thereafter, entered into MS Excel for analysis using SPSS (Version 20). Since the data is not normally distributed, Wilcoxon sign rank test has been conducted to analyze the data within groups.

Results

Total number of participant: 42 women diagnosed with the problem of Uterine fibroids (Tables 1 & 2).

Post intervention, there was a reductions were observed in uterus fibroids growth measurements (38.02 %, P<0.001), endometrial thickness (34.39%, P<0.001), right ovary measures (46.92, P<0.001), and left ovary measures (32.13 %, P<0.001).

In UF QOL scale, there was an improvement in all the sub scale of UFS-QOL scale. There were improvements in Symptoms Severity (25.76 %, p<0.001), Concern (53.52 %, p<0.001), Activity (23.10%, p<0.001), Energy/Mood (23.55 %, p<0.001), Control (30.30 %, p<0.001), Self- Consciousness (41.22 %, p<0.001), Sexual Function (56.33%, p<0.001) &

Total Quality of life (20.34 %, p<0.001).

Variables	Particulars	Pre
Age Mean / S.D	25 to 35	18
	36 to 45	22
	46 to above	2
Age (Mean/SD)	36.38+7.15	
Height (in cm)		163.2
Qualification	SSLC	5
	PUC	21
	Graduation	14
	Master	2
Occupation	House Wife	36
	Working	3
	Self employed	3
	< 1 year	9
Problem Since	1 -5 Years	25
	6-10 Years	6
	11-15 Years	2
Marital status	Married	40
	Unmarried	2
Physiological parameters (Mentioned as average values with SD)	BP (SYSTOLIC)	110.64±18.72
	BP (DIASTOLIC)	77.86±12.20
	HR	72.55±6.13
	BHT	26.14±9.78
	RR	20.79±6.34
	Weight (in KG)	61.17±8.28

Table 1: Demographic details of the participants.

Variable	Yoga N =42 (Pre)			Yoga N = 42 (post)			ES (d)	% Change	Sig- P Value Within Gps (Wilcoxon - Sign rank Test)
	Mean ± SD	UB	LB	Mean ± SD	UB	LB			
Uterus Fibroids–Measure in growth size (MM)	185.79± 170.83	239.02	132.55	115.14± 51.69	131.25	99.03	0.56	38.02	0.001
Endometrial thickness-(MM)	9.07± 3.77	10.87	7.27	5.95± 3.56	7.06	4.84	0.65	34.39	0.001
Right ovary Measures (MM)	14.45± 7.96	16.93	11.97	7.67± 4.82	9,17	6.17	1.03	46.92	0.001
Left Ovary Measure (MM)	11.36± 2.43	10.12	10.59	7.71± 2.78	8.58	6.85	1.39	32.13	0.001

Table 2: Uterus growth measurements details.

Variable	Yoga N =42 (Pre)			Yoga N = 42 (Post)			ES (d)	% Change	Sig- P Value Within Gps (wilcoxon - Sign rank Test)
	Mean ± SD	UB	LB	Mean ± SD	UB	LB			
UFS-QOL -SS	15.33±3.10	16.3	14.47	11.38±1.84	11.96	10.81	1.55	25.76	0.001
UFS-QOL-CON	9.21±2.75	10,07	8.36	14.14±2.82	15.02	13.26	1.77	53.52	0.001
UFS-QOL-ACT	13.98±3.64	15.11	12.84	17.21±2.09	17.87	16.56	1.08	23.1	0.001
UFS-QOL-EN	12.1±3.21	13.1	11.09	14.95±2.02	15.58	14.32	1.06	23.55	0.001
UFS-QOL-CO	8.48±2.45	9,24	7.71	11.05±2.02	11.68	10.42	1.14	30.3	0.001
UFS-QOL-SC	5.24±1.69	5,77	4.71	7.4±2.66	8.24	6.57	0.96	41.22	0.001
UFS-QOL-SF	3.55±1.78	4.1	2.99	5.55±1.65	6.06	5.03	1.16	56.33	0.001
UFS-QOL-TOTAL	67.88±13.83	72.19	63.57	81.6±95.73	83.48	79.9	1.3	20.34	0.001

Legends: UGS QOL: Uterine Fibroid Symptom Quality of life, SS: Symptoms Severity, Con: Concern, ACT: Activity, EN: Energy/ Mood, CO: Control, SC: Self- Consciousness, SF: Sexual Function, UB: Upper bound, LB: Lower Bound, ES: Effect size

Table 3: UFS-QOL: Uterine fibroid systems & Health related Quality Of Life questionnaire.

Discussion

The purpose of this study was to assess the effect of Yoga on Uterus fibroids. Present findings demonstrated that, three months of yoga practices has reduced the growth of uterine fibroids and a positive effect on quality of life among women having uterine fibroids.

Comparison with Earlier Studies

Individualized integrated yoga Ayurveda module consisted of Cyclic meditation (CM), a 40 minutes moving mediation technique, once a day along with the Ayurveda medications like Kanchanara Guggulu 250 mg two tablets, and Haridra Khanda 3 g were prescribed to take orally after meal at the interval of 12 hours with the milk for the duration of 20 weeks found to be very effective in relieving uterine fibroid in this case study [41]. Another case studies of 40 years old women showed a reduction in the UF size from 27 mm × 22 mm to 22 mm × 18 mm in the 11 days of yoga and naturopathy intervention [42]. A 43 years old female case study shown reduction of clinical symptoms, size of fibroid & suggests that yoga could be safe conservative intervention for management of ovarian cyst and uterine fibroid. Yoga was practiced under supervision daily twice a day for three months showed significant recovery from ovarian Cyst and reduction in uterine fibroid size. This study has specific yoga module. yoga has been found to be effective treatment modality in prevention and management [43].

Possible Mechanism

Stress is a threat to homeostasis. Chronic life stress is characterized by reward eating (consumption of high-energy dense and palatable foods), elevation of cortisol, and long-term weight gain correlates with the incidence of uterine fibroids [49-52]. Increases in cortisol and insulin may be a natural somatic protective response to stress, wherein the stress response both causes and is caused by a threat to homeostasis; i.e., the mechanistic trail may be convoluted. For example, stress increases activities associated with pleasure such as reward eating in order to inhibit the hypothalamic-pituitary-adrenal axis (HPA) as protective mechanism [53]. The consequent chronic suppression of cortisol levels may eventually cause insulin resistance, which in turn may result in the development of obesity, hypertension and atherosclerosis; all of which are implicated in fibroid growth [54,55].

Proposed biological mechanisms through which yoga may reduce stress include the autonomic nervous system. Autonomic nervous system. Both sympathetic and parasympathetic nervous systems are often posited as the mechanism through which yoga reduces stress [56-60].

A meta-analysis revealed the yoga-based interventions result in structural and functional changes in several brain regions [61]. Yoga is effective in the reduction of stress & anxiety [62]. Yoga practice leads to better regulation of the sympathetic nervous system and hypothalamic-pituitary-adrenal system, as well as a decrease in depressive and anxious symptoms in a range of populations [63]. Yoga may cause activation of prefrontal cortex and enhanced glutamate transmission in the arcuate nucleus of the medial hypothalamus resulting in the release of beta-endorphin [64], the latter causes anxiolysis [64], which, in turn, may cause a reduction of cortisol. These results support our present findings.

Subjects are part of the experimental/treatment setting. Their personal attributes, including belief in the treatment, willingness to apply the treatment, and even their spiritual

beliefs, may actually determine whether the treatment will work. Treatments may not have independent ratings of efficacy apart from the beliefs and other psych spiritual characteristics of the people being treated.

Strength of the Study

Participants were regular for three months of yoga practice, no dropouts in spite of their busy schedule.

Limitations of the Study

This study has small sample size. No control group. Convenient sampling. Participants were from different part of the city.

Suggestion for future research was participants should be other part of Kerala, longer duration of intervention, need to have large sample size, can be RCT with waitlist control or active control group. more objective measurements can be taken to study in details. Study can have expanded to other health problems of women.

Conclusion

Three months of yoga practice has reduced the growth of uterine fibroids and a positive effect on quality of life among women having uterine fibroids.

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Conflict of Interest

No

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