

Development of a Novel Tool to Assess the Impact of Yoga and Nutrition Practices on the Health of Rural Women

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Abstract: Yoga and nutrition are two main holistic approaches that are considered as the path to good health. This study aims to develop a validated questionnaire and find the efficacy of sustainable yoga and nutrition practices (pre- and post-study) for women's well-being among rural populations in Manesar, Gurugram, Haryana. The questionnaire includes various attributes like health and wellness, community building, empowerment through skill development, nutrition and dietary patterns, yoga, and nutrition including dietary history. All the items were evaluated on a 5-point Likert scale ranging from a score of 5 corresponding to excellent, and a score of 1 corresponding to very poor. 50 subjects were carefully chosen from Manesar for the pilot study. The scores were analyzed for the questionnaire's reliability and validity. The questionnaire's reliability was measured using Cronbach's alpha using SPSS version 29.0. It was found to be 0.864, indicating a high level of correlation between different questionnaire items, and is consistently reliable. The final questionnaire had 45 questions whose Content validity Index (CVI) score was more than 0.8 and the rest 15 were discarded based on their CVI score of less than 0.8 resulting in a valid and reliable questionnaire. The questionnaire went through demanding development to ensure it had valid and reliable properties. This questionnaire is proposed to help in checking the efficacy of sustainable yoga and nutrition practices on the overall health of women.

Keywords: Sustainable Practices, Yoga, Nutrition, Health, Reliability, Validity, Questionnaire Development.

1. Introduction

According to the Bhagwat Gita, "Yoga is the journey of the self, through the self, & to the self." "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (WHO, 1994).

There is nothing more important than taking care of our bodies. Women are constantly pressured to balance their roles and duties at home and work. To fulfill their many responsibilities, women frequently put their needs last and neglect their health. They make an effort to keep work and home life in balance. The primary cause of many illnesses that affect women is their disregard for their health. Maintaining women's mental and physical strength is crucial since they are the foundation of the family and society (Baishya, 2024).

One of the main factors that determines life is nutrition. The main nutritional problems facing our nation are inadequate nutrient intake and quality, which can result in nutritional health diseases (ICMR, 1998). A state of equilibrium, when nutrient requirements and intake are balanced, maintains nutritional health. When net nutritional intakes fall short of requirements, malnutrition results. A series of metabolic disorders, physiologic alterations, decreased organ and tissue function, and loss of body mass are caused by malnutrition (ADA, 1994). A woman's health is her overall well-being, which is influenced by a variety of circumstances, including her workload, diet, stress, and migration, in addition to her biological characteristics and ability to reproduce (Pallavi R, et al., 2020). Because it represents the health of the family, women's health is extremely important (Jain H and Singh N.A, 2003). Women's status is influenced by their dietary status and overall health. A person's health is negatively impacted by nutritional deficiency problems because they impede defense mechanisms, physical stamina, attentiveness, and work performance. Understanding nutrition is crucial for working women to live healthy lives. By improving nutritional knowledge, nutrition education influences attitudes and behaviors related to healthy eating (Pallavi R, et al., 2020).

10% and 40% of women, respectively, are affected by Malnutrition stages like Underweight, overweight, and obesity, along with micronutrient deficiencies, such as anaemia, which affects 500 million women worldwide (Black, 2013). Women are more prone to nutritional deficiencies, especially because of the increased requirements of vital nutrients during vulnerable phases like pregnancy and lactation, and during the time of excess loss during the menstrual cycle. Despite their nutritional losses in various stages, the need for women's nutritional intake is not adequately met (Hawkes, 2020). Interventions also focus on the need for nutrients during their vulnerable phases, as well as improving childbirth and their nutritional status. To improve the condition of women and their families' nutritional state, this has to be improved globally. To lessen the double burden of malnutrition, major steps and actions should also focus on women's empowerment and nutrition-focused interventions (Madzorera & Fawzi, 2020).

The prevalence of lifestyle-related diseases, along with the associated mortality and morbidity, has increased over the last 20 years, raising severe concerns. This put the research community in serious concern for an individualized and holistic approach to the health sector. The prevalence of noncommunicable or metabolic disorders such as hypertension, heart disease, type 2 diabetes mellitus, obesity, cancer, and mental health disorders continues to rise worldwide in spite of constant research and development in the medical field (Kabir et al., 2022)

Lifestyle and behavioral modifications are considered as the path to good health. Yoga, along with a drug-free approach to medicine, encompasses complementary principles that effectively tackle various aspects of health. Through its comprehensive approach, yoga empowers individuals to take charge of their health (Salwa & Nair, 2021).

As the awareness of holistic practices is reviving worldwide, India holds an exceptional position due to its rich legacy of traditional medical insight, combined with a healthy framework and skilled workforce in recent medical practice. Therefore, there is a necessity for a novel, wide-ranging, and integrative healthcare framework in India, which should direct and support future health policies and initiatives for a better future (Bhargav et al., 2022).

Every healthcare system possesses its advantages and disadvantages. In India, there are two main avenues for healthcare, both in the public and private sectors: (1) the conventional biomedical healthcare system that adheres to Western medical principles, and (2) the conventional medical systems that seek to improve a person's quality of life, encourage lifestyle balance, and strengthen the body's inherent healing capacities (Bhargav et al., 2022). Various

traditional medical practices in India (Ayurveda, Allopathy, Yoga, Naturopathy, Unani, Siddha, Sowa Rigpa, and Homoeopathy) are grouped under the abbreviation "AAYUSH" (Shankar & Patwardhan, 2017).

Over the past few decades, yoga has become more popular worldwide in both developed and developing countries (Chandler, 2001) (Raub, 2002), and the area of yoga rehabilitation is currently expanding quickly around the world (Jeter, 2015). The primary objectives of yoga, which is derived from the Sanskrit term meaning "to yoke or unite," focus not solely on physical health, but also on the combination of the body, mind, and spirit, fostering balance, calmness, harmony, awareness, and in traditional yoga practices, achieving generosity and spiritual enlightenment (Garfinkel & Schumacher Jr, 2000) (Innes & Selfe, 2016).

Yoga has evolved over thousands of years and addresses the mental, emotional, physical, and spiritual well-being of individuals, particularly women. Yoga therapy enhances numerous aspects of health, and its various components function in different ways. The term "yoga" signifies the connection of an individual's consciousness with the Universal Divine Consciousness, which can be achieved through a wide array of practices such as specific Yoga postures, breathing techniques, cleansing practices, meditation, and relaxation methods (Sharma & Chandola, 2015). Because of its significant impact on both physical and mental health, an incredible boost to this several-decades-old "science of Yoga" was observed in 2014 (Nesari, 2024).

Rural women come across numerous challenges that hinder their well-being. Initiatives aimed at empowering them, such as enhancing livelihood opportunities, frequently fail to yield improvements in other areas, particularly their nutritional health. Many current measures of women's empowerment have an unclear relation with nutritional status indicators. This is likely because existing definitions of empowerment often prioritize factors that are somewhat different from those influencing nutrition (Narayanan, 2019).

The 17 objectives and 169 indicators that make up the United Nations Sustainable Development Goals (SDGs) are meant to be accomplished by 2030 (Kumar & Singh, 2024). A unique holistic approach that is in line with the SDG framework emphasizes the significance of environmental variables and community health and well-being through a variety of performance indicators to fulfill the growing need for value-driven healthcare (Rattan, 2022). Ayurveda's well-established research and practice in India are expected to significantly contribute to SDG 3 (Good Health and Well-Being) (Kumar & Singh, 2024).

These SDGs have a connection to nutrition; they include SDG 5 (Gender Equality) in addition to SDGs 2 (Zero Hunger) and 3 (Good Health and Well-Being). This relationship is significant because women are more vulnerable to food insecurity throughout their lives, including during pregnancy and when they are frail (Feskens, 2022).

This study will help to assess the health and well-being of rural women. Along with that, the nutritional and holistic knowledge of the women will also be evaluated.

1.1 Aim: To study the efficacy of sustainable yoga and nutrition practices for women's well-being among rural populations in Manesar, Gurugram, Haryana.

1.2 Objectives:

- To develop a validated questionnaire/tool and assess the efficacy of nutrition and wellness promotion practices pre- and post-study among the women of Panchgaon, Manesar.
- To conduct a study of yoga practices among subjects before and after the sessions using a validated questionnaire / tool.

2. Research Methods

A study was conducted on the impact of Sustainable Yoga and Nutrition practices on Women's well-being in the villages of Manesar (including Gwalior, Chandla, Dungerswas, Fazalwas, Pukharpur, Kukrola, Langra, and Pathredi), Gurugram, Haryana. Through the self-developed questionnaire, we analyzed the efficacy of yoga practices and nutrition on the health of women of Manesar.

2.1 Tool Development

The questionnaire is developed on various aspects of health, nutrition, and yoga in which one section of questions is based on health and wellness and the other is on empowerment through skill development then to gather knowledge on community building and nutrition and dietary patterns are also recorded and then the relation of yoga and food is also promoted.

Step 1- Preparation of Structure and Scope of the Items in the Questionnaire- This was done with an extensive literature review and data collection from various studies over time.

Step 2- Elaboration of Items in Questionnaire- Initially 100 questions were designed to collect data from the subjects. Based on the information and content available, an item pool of 60 questions was generated. Only clear, non-repetitive, specific, non-redundant, and important questions were included. All the 60 questions were identified on a five-point Likert scale, ranging from a score of 5 equivalent to excellent, and 1 equivalent to very poor. Words of simple and unambiguous nature were included in the development of the questionnaire.

The questionnaire contains five sections that are described below:

Section-A: Health and Wellness

This section included the contribution of Yoga to the overall health and wellness of people. Also includes the effect of yoga on postures, the musculoskeletal system, and stress reduction.

Section-B: Community building

This section will assess factors that contribute to community building among yoga practitioners as a tool of social change.

Section-C: Empowerment through Skill Development

This attribute of the questionnaire included the process of skill development, i.e., empowering the community through Yoga, which will lead them to their personal growth. This section will assess their perspective toward yoga and its contribution to their empowerment.

Section D: Nutrition and Dietary Patterns

This attribute will assess their dietary patterns, like food practices, food preferences, and their diet.

Section-E: Yoga and Nutrition, Including Dietary History

In this section, the effect of nutrition and yoga will be assessed on the overall well-being of people. This will focus on yoga practices and the role of nutrition as a holistic approach. This will also assess their 3-day dietary recall so that it can be calculated whether they are meeting their daily requirement or not, and whether they are following a healthy dietary pattern or not.

Content validity and Face Validity of the questionnaire were established. It can be defined as the content examination and systematic evaluation under test to ensure that it encompasses the representative sample of the domain behavior that is to be measured. It also refers to the fact of how well a test measures the data that it was supposed to measure. Face validity, on the other hand is defined as the transparency or relevance of a test or questions as they are shown to the participants. A test or questionnaire has face validity if it looks like it can measure what is required to measure. To ensure the content validity and face validity of the questionnaire, the items that were pooled were evaluated by six senior experts. The experts selected 60 questions,

and it became the first draft of the questionnaire. All 60 questions were then constructed on a Likert scale. Changes like editing the language, clubbing some questions, removing, and addition of new questions were made.

Step 3- Preliminary Questionnaire Development- This Self-designed Questionnaire contains 60 questions. The initial page comprises a declaration and instructions for filling it out. Demographic details, including the name of the respondents, age, gender, family composition, educational qualifications, and income, will be recorded.

Step 4- Pilot Study to Evaluate the Preliminary Questionnaire- This study was carried out to examine the compatibility and appropriateness of the questionnaire. Forty-five subjects from Manesar were selected for a pilot study. Internal consistency was measured using SPSS version 29.0.

Step 5- refining the Questionnaire by Item Analysis- The test of each item suitable to be included in the questionnaire is termed item analysis. It includes an item difficulty index assessment. Kline classified the items that are answered correctly by either less than 20 % or more than 80 % of respondents as unusable items (Freeman, 1993).

Step 6- Reliability- The questionnaire's reliability was evaluated. Reliability is explained as the ability of the questionnaire to measure the consistency of a particular attribute as well as the level of correlation between items. Internal consistency is the degree of homogeneity between all the items in a questionnaire. It was measured using Cronbach's alpha using SPSS version 29.0. The value of Cronbach's α was found as 0.8. A score of 0.7 or more is considered acceptable. Whole questionnaire reliability was calculated.

3. Results

A total of 100 questions were designed, out of which 60 questions were pooled to frame a questionnaire. All 60 questions were identified on the Likert scale and marking of all the questions was done by 6 experts.

3.1 Content Validity of Questionnaire

A CV index score of 4 or 5 indicates the validity and appropriateness of the content (Lynn 1986). Content validity is calculated by dividing the number of relevant responses (scores 4 and 5) by the total number of responses. The level for CVI is set at 0.8 or 80 %. Any score below 0.8 is rejected, and the content is removed based on low face validity (Hendrie et al., 2008). Four out of six experts rated an item as relevant (scored 4 or 5), then CVI was $4/6 = 0.66$. The rated item is thus removed.

3.2 Face Validity of Questionnaire

All the questions were assessed by the six panelists on a Likert scale of 1-5. All the panelists found the questionnaire easy to respond to, and 85% (5/6) directed that the appearance and layout of the questionnaire would be suitable with the target population, thus assuring good face validity.

The item scale's relevance evaluations from six experts									
Items	Exper t 1	Exper t 2	Exper t 3	Exper t 4	Exper t 5	Exper t 6	Numbe r Agree ment	I- CVI	U A

1	1	1	1	1	1	1	6	1	1
2	1	1	1	1	1	1	6	1	1
3	1	1	1	1	1	1	6	1	1
4	1	1	1	1	1	1	6	1	1
5	1	1	1	1	1	1	6	1	1
6	1	1	1	1	1	1	6	1	1
7	1	1	1	1	1	1	6	1	1
8	1	1	1	1	1	1	6	1	1
9	1	1	1	1	1	1	6	1	1
10	1	1	1	1	1	1	6	1	1
11	1	1	1	1	1	1	6	1	1
12	1	1	1	1	1	1	6	1	1
13	1	1	1	1	1	1	6	1	1
14	1	1	1	1	1	1	6	1	1
15	1	1	1	1	1	1	6	1	1
16	1	1	1	1	1	1	6	1	1
17	1	1	1	1	1	1	6	1	1
18	1	1	1	1	1	1	6	1	1
19	1	1	1	1	1	1	6	1	1
20	1	1	1	1	1	1	6	1	1
21	1	1	1	1	1	1	6	1	1
22	1	0	1	1	1	0	4	0.667	0
23	1	1	1	1	1	1	6	1	1
24	1	1	1	1	1	1	6	1	1
25	1	1	1	1	1	1	6	1	1
26	1	1	0	1	1	0	4	0.667	0
27	1	0	1	0	1	1	4	0.667	0
28	1	1	1	1	1	1	6	1	1
29	0	1	1	1	0	1	4	0.667	0
30	1	1	1	1	1	1	6	1	1
31	1	0	1	1	1	0	4	0.667	0
32	1	1	1	1	1	1	6	1	1
33	1	1	1	1	1	1	6	1	1
34	1	1	1	1	1	1	6	1	1
35	1	1	1	1	1	1	6	1	1
36	1	1	1	1	1	1	6	1	1
37	1	1	1	1	1	1	6	1	1
38	0	1	1	1	1	0	4	0.667	0
39	1	1	1	0	1	0	4	0.667	0
40	1	1	1	1	0	0	4	0.667	0
41	1	1	1	0	1	0	4	0.667	0
42	1	0	1	1	1	0	4	0.667	0
43	1	1	0	1	1	0	4	0.667	0
44	1	1	1	1	1	1	6	1	1

45	0	1	1	1	1	0	4	0.667	0
46	1	1	1	0	1	0	4	0.667	0
47	0	1	1	1	1	0	4	0.667	0
48	1	1	1	1	1	1	6	1	1
49	1	1	1	1	1	1	6	1	1
50	1	1	1	1	1	1	6	1	1
51	1	1	1	1	1	1	6	1	1
52	1	1	1	1	1	1	6	1	1
53	1	1	1	1	1	1	6	1	1
54	1	1	1	1	1	1	6	1	1
55	1	1	1	1	1	1	6	1	1
56	1	1	1	1	1	1	6	1	0
57	1	1	1	1	1	1	6	1	0
58	1	1	1	1	0	0	4	0.667	0
59	1	1	1	1	1	1	6	1	1
60	1	1	1	1	1	1	6	1	1
							S-CVI/Ave	5.5	
Proportion Relevance	0.933333	0.933333	0.966667	0.933333	0.95	0.783333			
	The average proportion of items deemed as relevant by the six experts						0.916667		
							S-CVI/UA	0.71666667	

3.3 Reliability

Using Cronbach's alpha and SPSS version 29.0, the reliability coefficient for the questionnaire was determined to be 0.864, indicating a high degree of correlation between its various items and consistent reliability. The final questionnaire had 45 questions and was distributed to the required population.

Reliability Statistics

Cronbach's Alpha				No. of items
.864				45

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	74.67	77.467	.000	.865
2	74.67	77.467	.000	.865
3	74.67	77.467	.000	.865
4	74.67	77.467	.000	.865

5	71.67	77.467	.000	.865
6	74.67	77.467	.000	.865
7	71.67	77.467	.000	.865
8	74.67	77.467	.000	.865
9	74.67	77.467	.000	.865
10	73.50	82.700	-.424	.882
11	75.00	78.000	-.088	.869
12	74.67	77.467	.000	.865
13	74.00	78.000	-.088	.869
14	74.00	72.800	.499	.858
15	74.00	70.400	.785	.853
16	74.00	79.600	-.260	.872
17	74.00	82.000	-.513	.877
18	74.00	78.000	-.088	.869
19	73.67	64.667	.658	.852
20	74.33	82.667	-.582	.878
21	74.00	70.400	.785	.853
22	74.00	74.800	.269	.863
23	74.17	71.767	.582	.856
24	74.00	71.200	.688	.855
25	74.00	71.200	.688	.855
26	74.17	82.167	-.504	.878
27	73.50	71.500	.424	.860
28	74.00	71.200	.688	.855
29	74.00	70.400	.785	.853
30	74.00	70.400	.785	.853
31	74.00	74.800	.269	.863
32	74.17	73.767	.361	.861
33	74.00	74.800	.269	.863
34	73.50	65.500	.691	.851
35	73.83	71.367	.860	.854
36	74.00	71.200	.688	.855
37	73.67	65.467	.609	.854
38	74.00	74.800	.269	.863
39	73.83	71.367	.860	.854
40	73.83	71.367	.860	.854
41	73.83	71.367	.860	.854

42	74.00	71.200	.688	.855
43	73.83	71.367	.860	.854
44	74.00	74.800	.269	.863
45	73.83	71.367	.860	.854

4. Discussion

In the study, a careful study was done on the development of a questionnaire that can check the efficacy of yoga and nutrition on the overall well-being of women. The two main purposes of this study were to develop a valid and reliable questionnaire on yoga and nutrition practices and to evaluate the efficacy of this practice on women's overall health. A team of 6 experts was selected to check the content validity and face validity of the questionnaire. They precisely assured the items of the questionnaire. During the validation process few questions were removed, and a few were modified according to the requirements of this study. Initially, there were 60 questions, but during the validation process, the panel of 6 experts removed around 15 questions that were not required in the study. So, the final draft consists of 45 questions. The reliability of the questionnaire was assessed by Cronbach's alpha using SPSS version 29.0. and was found to be 0.864, which shows a high level of correlation between different questions of the questionnaire and is consistently reliable. After the reliability and validity, the questionnaire was used to assess the nutritional and holistic knowledge of rural women. The questionnaire is distributed in various attributes like health and wellness, community building, empowerment through skill development, nutrition and dietary pattern, yoga, and nutrition, including dietary history. Several villages of Manesar District (including Gwalior, Chandla dungerwas, Fazalwas, Pukharpur, Kukrola, Langra, and Pathredi), Gurugram, Haryana were included in the study. Over 336 women participated in the study. 4 sessions were conducted in every village, and in every session, Yoga, Meditation, Post-workout meals (like Bean-salad, Ragi Ladoo, and Oats bar), and Skill-based recipes (Orange-squash, Bajra Jhalmudi, and Oil-free achaar) were taught. The pre- and post-assessment of the questionnaire was also done, which resulted in their nutritional knowledge, mental health awareness, and approaches they follow towards their well-being.

5. Conclusion and Implications

In conclusion, a valid and reliable questionnaire was developed to check the efficacy of Sustainable Yoga and Nutrition practices on Women's well-being in Manesar, Gurugram, Haryana. It is known that women are not only the housemakers but also the ones who neglect their health the most. Yoga and nutrition practices are the way to good health. The focus of this study is not only to check the efficacy of yoga and nutrition practices, but also to raise awareness of the same. And, it will be assessed by this valid and reliable questionnaire, which includes pre- and post-assessment. It was designed to assess the impact of nutrition and yoga practices on the overall health of women. It assesses various attributes like health and wellness, community building, empowerment through skill development, nutrition and dietary patterns, yoga, and nutrition, including dietary history. The questionnaire has good content and face validity, along with high reliability, so it can be used as an important tool in holistic approaches. When implemented in the study, the questionnaire assessed the nutritional knowledge and well-

being of the rural women. During the study, women were taught holistic approaches towards their well-being, along with the post-workout meals and skill-based recipes. The pre- and post-assessment evaluated their nutritional knowledge.

Funding Support- Haryana Yog Aayog

Funded project No- AUH/RP/700

Sincere gratitude to the Haryana Yog Aayog for the valuable support and contribution to the research. I would like to particularly acknowledge the resources, funds, and support provided by the Haryana Yog Aayog that have played a crucial role in advancing this study. The insights from AAYUSH and the collaborative approach truly enhanced the understanding of the subject matter.

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