Indian Journal of
Nutrition

Open Science Publications

Volume 10, Issue 2 - 2023

www.opensciencepublications.com

Development and Validation of Nutrition Education Tool Kit on Millets for Pregnant Women: A Cross-Sectional Study

Research Article

Ansari Z*, Madan J and Patharia Z

Department of Food Nutrition and Dietetics, Sir Vithaldas Thackersey College of Home Science (Autonomous) SNDT Women's University, Juhu Tara Road, Mumbai India

***Corresponding author:** Zaynab Ansari , Department of Food Nutrition and Dietetics, Sir Vithaldas Thackersey College of Home Science (Autonomous) SNDT Women's University, Juhu TaraRoad, Mumbai India, E-mail Id: zaynabansari00@gmail.com

Article Information: **Submission:** 13/09/2023; **Accepted:** 30/09/2023; **Published:** 03/10/2023

Abstract

Background: Millet consumption has vanished due to excessive processed food consumption, and it is prudent to enhance millet consumption since millets are abundant in various nutrients. Nutritional inadequacies can cause pregnancy issues such as anemia, pregnancy-induced hypertension, and gestational diabetes. It might be stated that pregnant women's understanding of nutrition education is essential for creating nutrition interventions. This study developed and validated a nutrition education tool kit on millet for pregnant women.

Methods: The research was divided into two phases. The expert panel (n = 10) included clinical dietitians, academics, and obstetricians with expertise in the field of women's health and nutritional education. The participants (n = 50) were pregnant women. The validation framework of the tool kit was designed with each component of content and face validity in mind. A five-point Likert scale questionnaire, feedback, and recommendations were employed to examine content validity. An index greater than 0.83 was considered acceptable for content validity.

Results: The millet tool kit for pregnant women included: (1) A handout; (2) A film; (3) A two-fold brochure; (4) A tri-fold brochure; (5) A flipbook containing information on millet, its health advantages, millet-based recipes, and how to include them into the daily diet. With a CVI of 0.98 for the Millet Tool Kit, the experts felt that the Millet Tool Kit was adequate in terms of visual appeal, organization, pace, language, and understanding. Participants also thought the Millet tool kit was distinctive with a 96% approval percentage.

Conclusion: The tool kit was valid and can be considered educational material for pregnant women in the community to modify their nutrition and encourage them to eat a healthy diet that includes millet, as well as possibly improving its effectiveness when used by healthcare providers in public healthcare settings..

Keywords: Millets; Nutrition Education; Pregnant Women; Tool Kit

Abbreviations

CVI - Content Validity Index; I-CVI - Item-level Content Validity Index; S-CVI/AVE - Scale-level Content Validity Index based on the Average Method; S-CVI/UA - Scale-level Content Validity Index based on the Universal Agreement Method

Introduction

The Lancet Commissions' recent paper [1] recognizes the need for identifying healthy and environmentally sustainable diets, as well as increased utilization of underutilized plant species, such as quinoa, millets, and sorghum, due to their climate resilience and dense nutritional content. It was demonstrated that, out of 14,000 edible plants, only major crops, rice, maize, and wheat, account for 60% of calorie consumption. On the other hand, the Sustainable Development Goals (SDGs) 2030 have an ambitious goal of eliminating all forms of malnutrition by 2030. To do this, initiatives are needed to replace the majority of rice, wheat, and maize in the diet with highly nutritious grains such as millet.

ISSN: 2395-2326

Millets are "yesterday's coarse grains and today's Nutri-cereals." Because they are resilient to most pests and illnesses and can thrive in the difficult conditions of the arid and semi-arid regions of Asia and Africa, millets are regarded as "future crops." Millets are small-seeded grains, with sorghum, pearl millet, finger millet, proso millet, Kodo millet, foxtail millet, and little millet being the most common and important for food [2].

Nutri-cereals are making a strong comeback in the Indian cereal production segment after decades of neglect. Although India ranks first in the world in nutrient-rich millet production and second in rice and pulses, it also ranks second in child malnutrition incidences. India is home to more than one-third of the world's malnourished children [3].Millets are three to five times more nutritious than some other cereals (rice, wheat, maize) in regards to vitamins, fiber, proteins, and minerals (iron and calcium), and they are gluten-free; thus, they are referred to as "super foods" [4].

Millets are an exceptionally beneficial crop that contains a significant amount of minerals and vitamins. Millets are packed with calories, dietary fiber, slowly digesting starch, and resistant starch, and hence provide prolonged glucose release and satiety [5, 6]. Millets are packed with protein and sulfur-containing amino acids (methionine and cysteine) than cereals and have a higher fatty acid profile [7]. On the other hand, they have a limited quantity of lysine and tryptophan, which varies according to the cultivar. They also include vitamins E and B and minerals including calcium, phosphorus, magnesium, manganese, potassium, and iron [8]. As a result, millets play a significant role in the modern diet as a possible supply of key nutrients, particularly in emerging and underdeveloped countries.

Diet and behavior are highly changeable elements that can aid in preventing or treating new instances of lifestyle-related chronic diseases. These parameters can be changed by population-specific nutrition education. Malnutrition among schoolchildren, pregnant women, breast feeding moms and other vulnerable members of the community are mostly caused by a lack of awareness about food's dietary requirements and nourishing prices [9]. Pregnancy is a fragile and crucial time in a woman's life because it causes physical, physiological, hormonal, and

Anatomical changes. Pregnant women must make lifestyle changes to accommodate these changes [10, 11]. A healthy diet, according to the World Health Organization [WHO], includes enough calories, protein, vitamins, and minerals from various foods [12].Nutritional deficiencies can lead to pregnancy issues such as anemia, miscarriage, pregnancy-induced hypertension, gestational diabetes, and early or cesarean birth [13, 14].

Pregnant women's dietary knowledge is critical to achieving a favorable pregnancy outcome, whether for the mom or the fetus [15]. Evidence suggests that pregnant women in many countries have poor nutrition knowledge and behaviors. This was the situation for 616 Ethiopian pregnant women, 38.6% of whom showed low nutritional ability and 60.7% indicated poor dietary behaviors [16]. In agreement, Syrian refugee women in Lebanon were found to have limited nutritional knowledge and poor dietary behaviors during pregnancy (56% and 47%, respectively) [17]. According to the WHO (2016), healthcare providers should deliver nutrition instructions at each ante partum visit. Previous research has demonstrated that health education has a favorable influence on pregnant women's dietary knowledge and habits. For example, when 406 pregnant women in Ethiopia were studied for the influence of nutrition education on dietary knowledge and behavior, it was shown that knowledge of good nutrition rose from 53.9% to 97%, and dietary practice improved from 46.8% to 83.7% [14].

In conclusion, it can be addressed that pregnant women's understanding of health information requirements, resources of healthcare information, and obstacles to obtaining health information are crucial for creating health interventions and the provision of high-quality prenatal care.

Furthermore, while healthcare providers play an important role in educating patients in the clinic, community, or healthcare center, nutrition education should be practical and easily adaptable to the socioeconomic status, food habits, and the available local food resources generally needed for demonstration and feeding the locally available audience. Nutrition education programs should become a part of the community.

Currently, there is no nutrition education tool kit on millets for pregnant women, to provide knowledge about millets and incorporate them into their daily diets. By creating awareness about millets and educating pregnant women on the importance of millets in their daily diet, their health benefits will be much better realized. Hence, this study aims to develop and validate a nutrition education tool kit on millets for pregnant women that are easy to understand and handle and tested and validated by professionals, to ensure that all information is properly assimilated.

Material and Methods

The aim of the study was to develop and validate a nutrition education tool kit on millets for pregnant women. This chapter discusses the study's materials and methods. The research was conducted in two phases over six months. The study used a mixed-method, concurrent, Cross-sectional study design in which data were collected using a 5-point Likert Scale.

The study was conducted using a stepwise approach to achieve two objectives:

(1) The development of a nutrition education tool kit on millets for pregnant women and

(2) The validation of the tool kit on millets using two parameters namely content validity and face validity using a framework.

The target population was Pregnant women between the age group 19 - 45 years. The sample size included the expert Panel consisting of 10 experts, including 4 clinical Dietitians, 4 academicians, and 2 Obstetricians. The sample size of the target population was 50 participants aged 19-45 years residing in Mumbai, India. The Experts and participants were recruited through a purposive sampling method. The experts were recruited based on the following inclusion criteria: Clinical Experience in the field of Nutrition, Dietetics, and

Citation: Ansari Z, Madan J, Patharia Z. Development and Validation of Nutrition Education Tool Kit on Millets for Pregnant Women: A Cross-Sectional Study. Indian J Nutri. 2023;10(2): 280.

or/Obstetrician; Graduate Qualification - Specialization, Master or Doctorate; and Average Professional experience of 10-15 years. The experts were eliminated based on the following exclusion criteria: Experts who are unable to complete the validation process within the specified period. The following inclusion criteria were used to choose participants: Pregnant Women 19 - 45 years old; and Pregnant Women in their First, Second, and Third Trimester. Participants were eliminated based on the following exclusion criteria: Pregnant Women residing out of Mumbai. The study was conducted for 4 months.

The ethics committee approval was obtained from the Inter System Biomedica Ethics Committee (ISBEC) before the start of the study. All necessary precautions were considered to prevent a breach of confidentiality and disregard of consent. The experts explained in detail about the study by providing an expert information sheet. Written informed consent and professional profiles of experts were obtained. The participants were also explained in detail about the study by a participant information sheet and written informed consent was obtained.

The research study was conducted in two phases: development of an educational tool kit for pregnant women to educate about millets and incorporate them into their daily diet; validation of the educational material by experts; and legitimization of the educational material by pregnant women. After reviewing the literature on the databases of Medline (PubMed) National Institute of Health (NIH), and web pages such as the Indian Institute of Millets Research (IIMR), and World Health Organization (WHO), journals such as Nutrients, International Journal of Public Health and Clinical Sciences an educational tool kit consisting of educational materials were developed, with emphasis on official information on millets and their health benefits for pregnant women appropriate to the Indian context.

The educational tool kit was created by the guidelines for the conception and efficacy of educational items, which included content, language, organization, layout, illustration, learning, and motivation considerations. Production of educational materials sought to encourage pregnant women to consume millet and gain knowledge on their health benefits.

The researcher worked on graphic design and illustration using Canva and Inshot for the items in the tool kit. Images were gathered from the website. The tool kit was made in 3 different languages: English, Hindi, and Marathi for better understanding. The tool kit included the following items in [Table 1] in detail.

For the validation process, 10 experts participated. It is noteworthy that in the selection of experts, the researcher considered clinical dietitians, academicians, and obstetricians with experience in the following areas of care, teaching, and research: women's health (pregnancy – prenatal), public health, and health education. Data were collected from February to March 2023.

The validation framework for the tool kit was developed considering all the aspects of content validity and face validity. Content validity was assessed using a five-point Likert scale: strongly agree, agree, neutral, disagree, and strongly disagree. In addition, the questionnaire included open questions for comments and feedback. The scale elements included questions on the relevancy of the material, the simplicity and comprehensiveness of the information, the appropriateness of illustrations, the length of the sessions for the quantity of text to be taught, and so on. All of the questions were asked in a positive tone.

Table 1: Tools Included In the Millet Tool Kit

Items	Content
1 Handout	• An introductory guide with information on how to use the tool kit.
1 Video	• Introduction to millets • Types of millets
2 Brochure	• Health benefits of millets for pregnant women • Nutritional Content of various millets
1 Flipbook	• Millet-based recipes for pregnant women
Interactive Sessions	• Games/ Roleplay/ Live recipe demonstration, language, layout, and captivation. (5-point Likert Scale)
	• Calculation of the Content Validity Index is considered an acceptable value of 0.83.

Regarding the evaluation of the millet tool kit its content and layout through face validity; pregnant women were invited to participate in the study with a participant information sheet. A total of 50 pregnant women agreed to participate in the study. The validation process was conducted after the changes made in the tool kit as per the expert's recommendations. The final version of the tool kit was defined based on the suggestions made by the experts, trying to adapt it to the target audience as much as possible. For evaluation by the pregnant women, a final version of the tool kit was delivered along with the guidelines for signing the Terms of Free and Informed Consent. Pregnant women were asked to grasp and evaluate the tool kit's figures and text with the help of an evaluation form which included open and closed-ended questions and was evaluated by a 5-point Likert Scale.

A study assistant was instructed to undertake the reading for pregnant women who could not grasp the printed content. An instrument was created to assess the social profile of pregnant women (age, level of education, occupation, and family income). A brief questionnaire was created to determine face validity. The women were asked about their thoughts on the cover, title, subtitle, content, writing, graphics, learning motivation, graphics, learning motivation, and cultural components. During the interviews, notes were taken regarding remarks, thoughts, and ideas about the millet tool kit. The entire phase of development and validation is summarized in [Table 2].

Data were collected, coded, and then given for statistical analysis. Analysis was done using Statistical Package for Social Sciences (SPSS) software. Statistical analysis of the agreement, according to each item of the tool kit, was performed using the adequacy of proportions adjustments of experts who agreed with the relevance of the educational tool kit.

Results

Development of The Millet Tool Kit

The review and data supplied the key priority areas to address

Citation: Ansari Z, Madan J, Patharia Z. Development and Validation of Nutrition Education Tool Kit on Millets for Pregnant Women: A Cross-Sectional Study. Indian J Nutri. 2023;10(2): 280.

Table 2: Summary of the Development and Validation Process of the Millet Tool Kit

PHASE 1 - DEVELOPMENT	
Literature Review	• Reviewing the literature on the databases from published research articles and review articles.
Development of Millets Tool Kit	• The content of the tool kit materials was elaborated based on the researched literature. • Illustrations and layouts were created especially for the tool kit materials by the researcher.
PHASE 2 - VALIDATION	
Validation by the Committee of Experts	• The invitation to participate in the study was given to the experts. Copies of the following documents were given to those who agreed to participate:an invitation letter; Informed Consent Term (ICT); questions related to the professional profile; and the tool kit. • 10 days were given to the experts for the completion of the process of validation for the tool kit. • Validation from subject experts for the conceptualization and effectiveness of the tool kit regarding its content,

the participants with educational sessions while keeping the research objectives in mind. The review and resource materials from national and international sources were reviewed. Following a series of discussions with subject experts and data from the literature, it was determined that the millet tool kit for pregnant women includes all information on millet, its health advantages, and how to include it in the daily diet.

Following was the final version of the tools incorporated in the Millet Tool Kit after validation by the experts.

Handout

Following the completion of the text, the researcher used Canva to create visuals and layouts. The size of the handout was 11.4 x 6.4 inches (length x breadth). The handout was a single double-sided leaflet with a cover [Figure 1] and a back cover. It explained how health educators, dietitians, obstetricians, other health care and nutrition experts, social workers, youth advisers, and program directors might utilize the millet tool kit to help pregnant women eat and live healthily. It was intended to act as a nutrition education resource while also providing a brief overview of the items included in the tool kit.

Video

The introduction millet video was created in two steps using non-empirical approaches. The literature was researched in the initial step to determine the parameters for planning and producing the video. In step 2, the video was created. When producing a video for the target population, the literature review emphasized the need for the proper cognitive load. The cognitive load was lowered by utilizing basic language and layout, common terms, clear short phrases, images from the internet and some filmed by the researcher, a low-pitch human voice, a medium to slow speed, and keeping the presentation brief. The film lasted 5 minutes, and these parameters were followed while assuring the relevancy and correctness of material to create a video using Canva and In shot, an app used for video editing. The video's content was focused on the introduction of millet, millet-producing states in India, millet species present in India, millet types, and its health benefits, as well as India's role in proclaiming the International Year of Millets 2023.

Two-fold Brochure

The size of this brochure was 8.25 x 5.25 (length x breadth) inches. Following the expert content validity, the final version had 6 double-sided pages with a cover, a back cover, [Figure 2] a brief introduction to millets and kinds of millets, and a summary of its general health advantages. It also included information on nutrition during pregnancy, nutrient requirements throughout pregnancy, and the health advantages of millets during pregnancy, as well as strategies to include millets into the diet and how millets are experiencing a gourmet revival. The two-fold brochure included seven subjects in total, including an introductory page for each session topic, important messages, graphics, photos, and one-liner takeaway messages. The brochure was pink and blue and titled "Millets a Rainbow of Nutrients for You and Your Little One" to symbolize the baby's gender. The pamphlet was meant to be utilized by pregnant women during sessions to validate the tool kit from them.

Tri-fold Brochure

The trifold brochure, titled "Nutritional Content of Millets," [Figure 3] was 7.5 x 3.5 inches in size (length x breadth). It listed the nutritional composition as well as the price per 100 g of each millet.

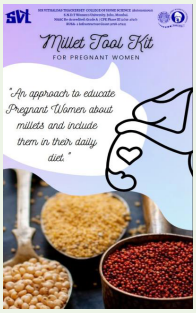

Figure 1: Front Cover of the Handout.

Figure 2: Back and Front Cover Page of the Two-Fold Brochure.

Figure 3: Front Page of the Tri-Fold Brochure.

Citation: Ansari Z, Madan J, Patharia Z. Development and Validation of Nutrition Education Tool Kit on Millets for Pregnant Women: A Cross-Sectional Study. Indian J Nutri. 2023;10(2): 280.

Flipbook

The flipbook was a recipe book featuring 30 millet-based meals. It measured 11.7 by 8.5 inches in dimension (length x breadth). The recipe book was named "Miraculous Millets - A Way of nourishing new mothers to Be" and included a front and back cover. It had 21 double-sided pages in total. The colored book was white with an appealing cover page. Five recipes from each category such as Millet-based salad, soup, dosa and paratha, one pot meal, munchies/ snacks, dessert, and beverages were all included in the recipe book. Following the cover page, a list of abbreviations was included as well. The flipbook included information on the recipe ingredients, how to make the meal, the number of servings, and the nutritional content of each recipe. The flipbook was designed to be utilized by participants and peers after the tool kit had been validated.

Professional Profile of the Experts

Among the sample of 10 experts, composed of academicians, clinical dietitians, and obstetricians all agreed to participate in the evaluation, and all evaluation tools were returned with analyses duly completed and open questions accordingly filled in. The expert's validation was done through face validity and content validity.

Regarding the professional profile, it was observed two experts with doctoral degrees among which one had a Doctorate of medicine in gynecology and another Diploma in Gynecology and Obstetrics, three with PhDs in Nutrition, Dietetics, and Public Health; four with master's degrees in the field of nutrition, dietetics, and food science, one was a registered dietician after completing her master's degree. In their current occupation, three were professors and researchers; two performed activities in prenatal consultations in hospitals, one performed teaching activities, and 4 were practicing clinical dietitians. The mean time of experience of all the experts was 22.0 years (Standard Deviation = 8.2). They were also asked if they had ever been a part of a research dissertation as an expert, and just four of the ten experts had been a part of an academic dissertation as an expert.

Participants Characteristics

Of the 50 eligible participants, all pregnant women agreed to participate (100%) in the study. The mean age of participants was 28.2 years. Women with both low and high socioeconomic backgrounds were included in the study. The participant's pregnancy trimester is seen in [Figure4].

Content Validity

The degree to which the characteristics of an evaluation tool are relevant to and indicative of the concept being assessed for a specific assessment purpose is known as content validity. It is essential to highlight that demonstrating content validity is critical to confirming the validity of a tool for evaluation such as questionnaires, particularly for research purposes. Validation of each of the following tools was done separately. The questionnaire was evaluated through a 5-point Likert Scale where 1= Strongly Disagree; 2= Disagree; 0= neither Agree nor Disagree; 3=Agree; 4=Strongly Agree. The mean (S.D) and mode were calculated along with Content Validity.

According to the Universal Agreement (UA), (Yusoff et al., 2019), method experts scored each item by responding either 'Strongly agree or Agree' which was the proportion of items on the scale that achieved a relevance scale of 3 or 4 by all experts was given as 1 when the item achieved 100% experts in agreement, otherwise the score is given as 0 if they responded 'Neither agree nor disagree, Disagree or Strongly disagree' to a series of closed-ended questions. For each item at the end of the questionnaire, there was a column of recommendations and feedback which was filled by the experts.

Video

There was a total of 11 questions which included questions such as whether the video provides all the necessary information for millet-based nutrition education; whether the visual information, language, and design are appropriate or not for the target audience; the size of images; the quality and resolution of graphics; the video has been created based on an accurate scientific source and whether it can be recommended to people who might benefit from it. Experts scored nearly (n = 109; 99%) of the questions as 'Strongly agree or Agree' responses and only (n = 1; 0.9%) as 'Neither agree nor disagree, Disagree or strongly disagree'. The overall mean (SD) of all the questions was 3.36 (0.57) and the mode was 3. A value of 0.99 was obtained in the S-CVI/Ave (scale-level content validity index based on the average method) and the S-CVI/UA (scale-level content validity index based on the universal agreement method) was 0.90 [Table 3].

Brochure

The questions were arranged into themes, namely

i. content (Q1 – 4),

ii. language (Q5-7),

iii. illustrations (Q8 – 10)

iv. layout (Q11 - 16)

v. motivation (Q17 – 19)

vi. culture (Q20).

Experts scored nearly (n = 196; 98%) of the questions as 'Strongly agree or Agree' responses and only (n = 4; 2%) as 'Neither agree nor disagree, Disagree or Strongly disagree'. The overall mean (SD) of all the questions was 3.34 (0.63) and the mode was 3.2. A value of 0.98 was obtained in the S-CVI/Ave (scale-level content validity index based on the average method) and the S-CVI/UA (scale-level content validity index based on the universal agreement method) was 0.85 [Table 4].

Flipbook

The set of questions (n = 9) for the flipbook included questions specifically in the recipe book. Some of the questions were whether the cover page of the r ecipe book is appealing; ingredient list is specified and whether exact measurements (amount) are mentioned precisely; the ingredients in the recipe book are easily accessible in the market to the target audience; the recipes included in the book are easy to prepare for an enthusiastic home cook and whether the recipes in the book is suitable for the target audience. Expects scored nearly (n

Citation: Ansari Z, Madan J, Patharia Z. Development and Validation of Nutrition Education Tool Kit on Millets for Pregnant Women: A Cross-Sectional Study. Indian J Nutri. 2023;10(2): 280.

Table 3: Content Validity Index of the Video after Evaluation by the Experts

Sr. No	Questions	Mode	Mean (SD)	Experts in Agreement	I - CVI	Universal Agreement
1.	The video provides all the necessary	3	3.4	10	1	1
	information for millet-based nutrition		(0.51)			
	education					
2.	The video content (visual information,	3	3.3	10	1	1
	language, design)appropriate for the target		(0.48)			
	audience					
3.	The scenes in the video are logical/accurate/appropriate/ uninterrupted.	3	3.4 (0.51)	10	1	1
4.	The arrangements and sizes of images are appropriate	3	3 (1.15)	9	0.9	0
5.	The quality/resolution of graphics used for the video is high	3	3.4 (0.51)	10	1	1
6.	The video contains information desired to educate people on millet	3	3.5 (0.52)	10	1	1
7.	The video content is correct, well-written, and relevant to the goal/topic of video	3	3.4 (0.51)	10	1	1,
8.	The information provided within the scope of the video is comprehensive but concise	3	3.4 (0.51)	10	1	1
9.	Visual explanations of concepts through images/videos are clear, logical, and correct	3	3.5 (0.52)	10	1	1
10.	The video has been created based on an accurate scientific source	3	3.3 (0.48)	10	1	1
11.	This video can be recommended to people who might benefit from it	3	3.4 (0.51)	10	1	1
OVERALL		**3**	**3.36 (0.57)**			
S-CVI/ AVE					**0.99**	
S-CVI/UA						**0.90**

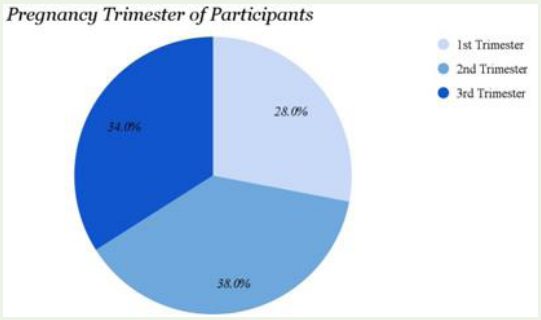

Figure 4: Participants' Pregnancy Trimester.
Pregnant women in their second trimester had the greatest frequency (n = 19; 38%). The first trimester had the fewest women (n = 14; 28%), whereas the third trimester had a greater number of women (n = 17; 34%). None of the participants ever received any kind of nutrition education on millet and its health benefits for pregnant women. The participants were informed that the millet tool kit is available in English, Hindi, and Marathi language. They were given three alternative languages to pick from, and the majority of the participants (n = 29) chose English, while the rest chose Hindi (n = 11) and Marathi (n = 10).

Figure 5: The Recipe Book's before and after Cover Page.
Pregnant women in their second trimester had the greatest frequency (n = 19; 38%). The first trimester had the fewest women (n = 14; 28%), whereas the third trimester had a greater number of women (n = 17; 34%). None of the participants ever received any kind of nutrition education on millet and its health benefits for pregnant women. The participants were informed that the millet tool kit is available in English, Hindi, and Marathi language. They were given three alternative languages to pick from, and the majority of the participants (n = 29) chose English, while the rest chose Hindi (n = 11) and Marathi (n = 10).

= 89; 98.8%) of the questions as 'Strongly agree or Agree' responses and only (n = 1; 1.1%) as 'Neither agree nor disagree, Disagree or Strongly disagree'. The overall mean (SD) of all the questions was 3.36 (0.19) and the mode was 3. A value of 0.98 was obtained in the S-CVI/ Ave (scale-level content validity index based on the average method) and the S-CVI/UA (scale-level content validity index based on the universal agreement method) was 0.88 (Table 5).

Expert Recommendations for the Millet Tool Kit

The comments from the experts were analyzed to identify common themes (content-based, illustration-based, and layout-based), and similar responses were grouped. The experts felt that the content was appropriate for the millet tool kit and needed for the populations, except for a few editions. They suggested highlighting the key points or messages within the sentences based on relevance.

Citation: Ansari Z, Madan J, Patharia Z. Development and Validation of Nutrition Education Tool Kit on Millets for Pregnant Women: A Cross-Sectional Study. Indian J Nutri. 2023;10(2): 280.

Table 4: Content Validity Index of the Brochue after Evaluationby the Experts

Sr. No	Questions	Mode	Mean (SD)	Experts in Agreement	I - CVI	Universal Agreement
1.	The content covered is relevant for the promotion of millet for pregnant women	3	3.3 (0.48)	10	1	1
2.	The content is suitable for the target audience	3	3.5 (0.52)	10	1	1
3.	The content is enough to supply the target audience needssssss	3	3.4 (0.51)	10	1	1
4.	The content can be easily applied to the target audience's daily routine	3	3.2 (0.42)	10	1	1
5.	The writing style is compatible with the target audience	4	3.5 (0.52)	10	1	1
6.	The writing style is attractive	3	3.4 (0.51)	10	1	1
7.	The language used is clear and objective	3	3.4 (0.51)	10	1	1
8.	Illustrations are adequate to match the themes of the support material	3	3.4 (0.51)	10	1	1
9.	Illustrations are clear and allow easy understanding	3	3.4 (0.51)	10	1	1
10.	The number of illustrations is content-suitable in support materials	3	3.1 (1.19)	9	0.9	0
11.	The font type eases reading	3	3.4 (0.51)	10	1	1
12.	The colors are adequate and easy to read	3	3.4 (0.51)	10	1	1
13.	Visual compositions are attractive and organized	3	3.4 (0.51)	10	1	1
14.	The size (dimensions) and the number of pages of the support material areappropriate	4	3.5 (0.52)	10	1	1
15.	Copy layout is adequate	4	3.5 (0.52)	10	1	1
16.	Font size in headings and the copy is adequate	3	3.4 (0.51)	10	1	1
17.	The content is motivating and encourages full reading	3	3.3 (0.48)	10	1	1
18.	The content awakens the interest of readers	3	3.4 (0.51)	10	1	1
19.	The content solves doubts, clears things up, and educates the target audience	3	3 (1.15)	9	0.9	0
20.	The copy is appropriate for the target audience and the various knowledge level profiles	4	2.9 (1.59)	8	0.8	0
OVERALL			3.2	3.34 (0.63)		
S-CVI/AVE				0.98		
S-CVI/UA						0.85

Table 5: Content Validation of the Flipbook after Evaluation by the Experts

Sr. No	Questions	Mode	Mean (SD)	Experts in Agreement	I - CVI	Universal Agreement
1.	The cover page of the recipe book is appealing	3	2.9 (1.10)	9	0.9	0
2.	Each specific ingredient's list and exact measurement (amount) are mentioned precisely	3	3.5 (0.52)	10	1	1
3.	The preparation process is provided in a straightforward step-by-step format that is clear and simple to follow	3	3.5 (0.52)	10	1	1
4.	The ingredients in the recipe book are easily accessible in the market to the target audience	3	3.4 (0.51)	10	1	1
5.	The number of servings and serving size is specified	3	3.3 (0.48)	10	1	1
6.	The recipes included in the book are easy to prepare for an enthusiastic home cook	3	3.5 (0.52)	10	1	1
7.	The variety of recipes in the book is adequate	3	3.4 (0.51)	10	1	1
8.	The recipes in the book are suitable for the target audience	3	3.4 (0.51)	10	1	1
9.	The recipe book is well-designed	3	3.4 (0.51)	10	1	1
OVERALL		3	3.36 (0.19)			
S-CVI/AVE					0.98	
S-CVI/UA						0.88

Often in the introductory video on millets, a few technical words were requested to be replaced with easier synonyms in the tool kit. Furthermore, there were suggestions to insert subtitles or important points to pop up on the screen in the video as there were certain segments in the video with only background and narration and no subtitles; such was suggested as it is an effective way to keep the target audience diligent and understand. Experts also suggested adding a short introduction about millets and their general health benefits, ways to include millets in the diet, and how they can be replaced by wheat and rice to the brochure titled "Millets a Rainbow of Nutrients for You and Your Little One". In the illustration sections, two or three of the experts recommended making the cover page of the flipbook which was the recipe book more attractive [Figure 5]. All necessary improvements were implemented according to the experts' recommendations. The experts also suggested that the content in the millet tool kit supplemented the existing knowledge of millets.

Face Validity

The questionnaire is evaluated for clarity, reasonability, and applicability using subjective face validity. The clarity of an evaluation questionnaire indicates that the tool is not difficult to grasp and read but has suitable instructions to follow. The validation procedure was carried out using online Google forms as well as printed copies of the forms filled out by the participants. Experts mainly discussed

Citation: Ansari Z, Madan J, Patharia Z. Development and Validation of Nutrition Education Tool Kit on Millets for Pregnant Women: A Cross-Sectional Study. Indian J Nutri. 2023;10(2): 280.

Table 6: Participants' (N = 50) Assessment of the Millet Tool Kit forPregnant Women

Question	Mode	Mean (SD)	Frequency								Agreement per Question (%)
			< 3		= 3		= 4		= 5		
			n	%	n	%	n	%	n	%	
1. The tool kit is clear to understand.	5	4.5 (0.50)	-	-	-	-	23	46	27	54	100%
2. The images & video are easy to see and understand.	5	4.5 (0.50)	-	-	-	-	25	50	25	50	100%
3. The text is easy to understand.	5	4.5 (0.50)	-	-	-	-	24	48	26	52	100%
4. All words were easy to understand.	5	4.0 (1.19)	9	18	3	6	12	24	26	52	76%
5. You can understand all of the language used.	5	4.3 (0.74)	2	4	2	4	22	44	24	48	92%
6. The layout catches your attention.	5	4.5 (0.54)	-	-	1	2	23	46	26	52	98%
7. You know the message of the Tool kit.	5	4.6 (0.49)	-	-	-	-	20	40	30	60	100%
8. You know the importance of millets better after viewing the tool kit.	5	4.6 (0.49)	-	-	-	-	19	38	31	62	100%
9. Viewing the tool kit help to make a difference in the dietary choices of pregnant women.	5	4.5 (0.54)	-	-	1	2	21	42	28	56	98%
Overall		4.4 (0.23)									96%
1 = lowest rating value			5 = highest rating value								

Table 7: Themes and Sub-Themes Identified With Participants' Supporting Feedback

Theme	Sub-Theme	Participant Feedback	%
Visuals	Visibility, clarity, and visual appeal	The tool kit was very catchy and interesting along with a fantastic concept, color scheme, and word art.	50%
		The images and text utilized were attractive, and the color scheme was also excellent. The colors that were combined were aesthetically pleasing, and it was easy to grasp that it was a collection of tools.	25% 14%
	Ability to improve the understanding of millets for pregnant women	The illustrations, images, and text were well done. Millets' benefits and dietary requirements for pregnant women were thoroughly described.	11% 27%
		The information provided was accurate and detailed, and it will assist other pregnant women in understanding the importance of millet.	35%
		Yes, it does boost knowledge since it helps battle anemia and diabetes and is high in nutrients.	24%
		It is a significant step forward in understanding millets for pregnancy.	14%
	Ability to remember information given in the toolkit	It's clear and precise.	14%
		Will improve pregnant women's knowledge.	10%
		The information provided is short and straightforward, making it easy to remember.	16%
		Easy to remember.	60%
	Cultural appropriateness and recipe appropriateness	The recipes supplied appear to be simple to prepare and cover a wide range of topics, from snacks and dinners to sweets. The recipes are suitable for both Indian and ordinary home cooking. Appropriate for all cultural groups, and the recipes' ingredients are readily available on the market. Exploring millets, the recipe book will come to be useful.	53% 13% 10% 24%
	Visuals are not understandable without verbal explanations	Visuals are appealing because they deliver clear and comprehensive information. Even without spoken explanations, they are understandable. Reading alone makes it simple to interpret.	37% 35% 28%
Layout	Information flowed between topics and is easy in following	It makes it easier for readers to find what they're looking for. The information is all pretty nicely connected. The flow of subjects was nice, beginning with an introduction movie and concluding with a quick phrase search game.	10% 10% 80%
	Excess information is given together	The information supplied is correct. Not too many specifics. Everything was really clear and simple to grasp and follow. The additional information provided is really beneficial.	45% 27% 28%
Length	The Perceived length of the introductory video and ability to maintain focus	The introduction film was the right length and could keep my attention for 2 to 3 minutes. Very appealing and easy to follow.	2% 30%
		The opening video is brief yet keeps the audience interested and engaged until the conclusion.	17%
		Perfect and capable of maintaining attention throughout.	51%
Content	Language simplicity	The language is simple and not overly complicated.	25%
		Simple, straightforward, and user-friendly.	75%
	Informative	The full tool kit is quite instructive for a pregnant woman who is continuously concerned about her baby's nutritional needs, this kit arrived at the perfect moment with such excellent recipes.	5%
		Very informative.	95%
	The usefulness of the Millet Tool kit/implementation at clinics	The tool kit will aid in the education of pregnant women who are ignorant of the advantages of Millet. Such tool kits are required in clinics since they enhance information about millet and assist women pick such healthy alternatives in their diet.	20% 34%
		If the tool kits are adopted in clinics, many pregnant women will profit immensely.	46%

Citation: Ansari Z, Madan J, Patharia Z. Development and Validation of Nutrition Education Tool Kit on Millets for Pregnant Women: A Cross-Sectional Study. Indian J Nutri. 2023;10(2): 280.

the shortcomings of the Millet Tool Kit and gave recommendations that were taken into consideration and the final version of the tool kit was given to the participants for validation. Feedback from the participants was evaluated both individually and collectively to study linked topics. Keywords were discovered and their context-specific meanings were defined. The frequency, extensiveness, intensity, and specificity of answers to the researched topic were employed to interpret the results from the participant's perspective. The evaluation of the participants (n = 50) is summarised in (Table 6).

Overall the participant's agreement percentage for the tool kit was 96%. .

Feedback from Participants on the Millet Tool Kit

For the participant's feedback, the questionnaire also included four main themes, namely visuals, layout, length, and content. The themes and sub-themes are presented in [Table 7]. The results were supported by participants' feedback and are summarized in [Table 7] along with the percentage of women who gave similar responses.

Visuals

Five sub-themes were identified in the visual theme. The first subtheme was related to visibility, clarity, and visual appeal. Participants found the visuals to be simple, clear, appealing, impressive, and eye-catching. The second sub-theme revealed whether participants gained a better understanding of the tool kit. Participants mentioned that the visuals helped them to understand millet and its health benefits. Participants were able to recall some of the content they learned from the tool kit. The third sub-theme is concerned with knowledge retention. Participants felt that the visuals helped them to recall information, especially when combined with audio material. The fourth sub-theme concerned cultural appropriateness and recipe appropriateness. Participants felt that the recipes were culturally acceptable and accessible. The fifth sub-theme was related to whether the visuals were not understandable without verbal explanations. Participants felt that it was easy to understand even without verbal explanation.

Layout

Two sub-themes were included in the layout theme. The first subtheme dealt with information flow from one topic to the next. Participants indicated that they felt the flow of information was smooth and easy to follow. The second sub-theme was whether too much information was given altogether to which the participants responded that it was not excessive and on point and that the information given was useful and adequate.

Length

The participants were satisfied with the length of the introductory video when viewed. Participants noted that they could maintain their focus for 2 - 3 minutes while some of them could maintain their focus throughout.

Content

The content theme was divided into three sub-themes. In terms of the language, the participants said it was straightforward to comprehend. Regarding the language simplicity, both participating groups said that the tool kit content was basic enough for viewers who saw the tool kit in English, but other groups who will not be able to grasp English will benefit from viewing in Hindi and Marathi. The second sub-theme was.

Whether the content of the tool kit was informative and whether the response was positive. Regarding the Millet Tool Kit's value for pregnant women in clinics, participants urged that every client explore the tool kit.

Discussion

The strategy chosen for this Millet Tool Kit for Pregnant Women arose from a worry about the present situation in which millets are being ignored and people are ignorant of their health advantages. The current scenario in the country is that rice and wheat are given more priority, but millets, while being an important grain in India for a long time, have currently lost their value.

However, with 2023 being the International Year of Millets and millets seeing a resurgence it is critical to provide nutrition education on millets to different individuals in the community.

Pregnant women are one such group since their health is crucial to the sustenance and growth of both their baby and themselves. Fetal issues such as neural tube defects, intrauterine development retardation, and low birth weight can be caused by nutritional deficits during pregnancy. Anemia, miscarriage, pregnancy-induced hypertension, gestational diabetes, and early or cesarean birth can all be caused by nutritional inadequacies [13,14].

The current study sought to develop and validate a Millet Tool Kit for Pregnant Women to assess its efficacy in transferring knowledge into action. A particular strength of the Millet Tool Kit was its simplicity. It was developed to convey complex concepts simply. The tool kit also depended on the use of colors and images, which may have aided in knowledge retention and impact.

Simple phrases and linguistic patterns were used to create the tools in the tool kit (i.e. brochure, video, and flipbook). Further emphasizing the cultural relevance of the graphics by integrating traditional cuisine was also attempted.

It is critical to incorporate culturally and socioeconomically relevant visuals for the audience to relate to the educational material. Allowing the audience to relate to the content can improve its efficacy and bring attention to key facts [18]. A significant effort was also made to improve the coherence of the tool kit's material. To promote knowledge retention, the material was structured rationally. Using a suitable layout increases the visibility of crucial text, images, and concepts while decreasing the amount of time spent looking for information [19, 20].

Because properly created educational content has the potential to influence a population's reality, we must assess which information is intended and what is anticipated. In this sense, the study evaluated the effectiveness of the nutrition education millet tool kit which was used to empower pregnant women to improve their diet through millet a nutri-cereal. Another research found that nutritional

Citation: Ansari Z, Madan J, Patharia Z. Development and Validation of Nutrition Education Tool Kit on Millets for Pregnant Women: A Cross-Sectional Study. Indian J Nutri. 2023;10(2): 280.

counseling was extremely important, with 94.6% of nurses agreeing that recommendations on maternal nutrition during pregnancy were a generally necessary duty in health care [21]. Validation approaches used in different research include construct, concurrent, convergent, and predictive validity [22]. However, the majority of studies stated that the validation of such materials should be done with individuals as well as intervention recipients [23].

The experts agreed on the appropriateness of the brochure's content, which received a content validity score of 0.98; the scores for the video and recipe book were 0.99 and 0.98, respectively, indicating that this is statistically significant information regarding the advantages of millets during pregnancy. Regarding the graphics, we acquired a statistically significant content validity index of >0.83 by taking into account the requirement to offer a suitable design for adults, which is required for understanding the material, and the desire of pregnant women to comprehend the suggested topic. A similar study [24] was conducted on the development and validation of an educational booklet for healthy eating during pregnancy, which obtained an I-CVI value of 0.90, indicating that the booklet contained statistically significant information about healthy eating during pregnancy.

A similar study was carried out to construct and assess a module for teaching an integrated approach to yoga therapy to treat obesity in teenagers. A focus group discussion with 16 topic experts who rated the content validity on a three-point scale was part of the validation process. The inclusion criteria for the module activities were a minimum content validity ratio of 0.5 [25]. another research [26] used a mixed-method approach to develop and validate an intervention module for teenage females. The intervention combines teenage mental health interventions with body-focused meditation practices. Six mental health specialists and yoga experts were interviewed in-depth to determine their preferences for the content and layout of the intervention module. Furthermore, the module's post-intervention evaluation was conducted utilizing a five-point scale to rate the effectiveness of the activities.

In the present study, although the graphics were well received, experts pointed up some possible concerns. Certain facts, according to them, need to be communicated better or more clearly. For example, the portion size of millets per day that can be eaten. Displaying the exact portion sizes is critical for avoiding confusion and misinterpretation about how much food to consume, which is an important factor. The experts also agreed that a tool kit containing such a large amount of stuff was essential. Importantly, experts provided suggestions for boosting or expanding the use of the Millet Tool Kit.

In this study for quantitative results, 5 point Likert scale was used for the validation of the tool kit by participants. The overall Mean (SD) was 4.2 (0.18) which indicated that the participants felt that the Millet Tool Kit for pregnant women was striking. In a similar study, conducted on face validity and content assessment of a diabetes nutrition education DVD for low literacy adults living with diabetes which was a mixed-method study, the mean score for the 12 questions was 4.1±0.3 out of 5 where the patients felt that the DNE - DVD was compelling [27]. In another study, which was done on Validation of Health Education Material for Youth: A Step to Ensure Implementation Fidelity in Community-Based Interventions a flipbook was developed and validated on enhancing the knowledge and bridging skill gaps among Young Married Women for their improved health, nutrition, and hygiene outcomes the mean (SD) score pre- and Post-intervention scores were 12.7 (5.5) and 18.7 (2.5), respectively [28].

Most participants and experts rated the Tool Kit as competent and relevant in all fields based on face validity and content validity. It is critical for multicultural communities, such as the one where this study was done, to consider several languages. Though the participants were aware of The Millet Tool Kit being available in English, Hindi, and Marathi language they chose English as their priority. The participants felt that it was a very good initiative to make the tool kit in 3 different languages as it can further be helpful in other communities as well where English is not the preferred language. Overall, participants were pleased with the tool kit, particularly its visual impact, simplicity, cultural appropriateness, and flow. Participants thought the voice-over in the video was helpful and they could maintain focus on the video. The combination of visual and auditory components may result in increased understanding, which can lead to favorable behavior changes [29]. The Millet Tool Kit addressed some of the overlooked or significantly addressed facts on millets, such as how they benefit pregnancy, and how women may include millets into their daily diets. The women thought this was a useful primer to use during prenatal appointments.

Conclusion

The content was simple and easy to follow. The experts found the content correct, accurate, and appropriate for nutrition education on millets with a mean value of 3.35 and CVI of 0.98 for the entire tool kit. These results indicate that the identified guidelines were successfully applied in the development of the Milet Tool Kit. By assessing the face validity and content, action points were identified that would improve the tool kit. These improvements included adding more millet-related information on its benefits, providing a conclusion, and translating the tool kit into local languages. The participants also agreed that the Millet tool kit was striking with an agreement percentage of 96%. This possibly improved the effectiveness of the tool kit to be used by healthcare providers and pregnant women in public healthcare settings.

Longer-term research, evaluating the efficacy of the Millet Tool Kit for Pregnant Women across various regions of India can be executed. Since no such tool kit has yet been produced, this Millet Tool Kit can be utilized as educational material for a broader population of women in nutrition education intervention research studies employing additional validity and reliability testing. The Millet Tool Kit may be employed by a variety of people both nationally and internationally if it can be made into an application for smart phones that provides details on each group, such as people with diabetes, lactating women, and infants, about why millets are beneficial to them and the way they can integrate them into their diet.

References

Citation: Ansari Z, Madan J, Patharia Z. Development and Validation of Nutrition Education Tool Kit on Millets for Pregnant Women: A Cross-Sectional Study. Indian J Nutri. 2023;10(2): 280.

1. Willett W, Rockström J, Loken B, Springmann M, Lang T, et al.(2019) Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. The Lancet 393: 447-492.
2. Rao BD, Malleshi NG, Annor GA, Patil JV (2016) Millets value chain for nutritional security: a replicable success model from India. CABI.
3. Nainwal K, Verma O (2018) Conservation of minor millets for sustaining agricultural biodiversity and nutritional security. Journal of Pharmacognosy andPhytochemistry 7: 1576-1580.
4. Ashoka P, Gangaiah B, Sunitha N (2020) Millets-foods of twenty-first century. Int.J. Curr. Microbiol. Appl. Sci 9: 2404-2410.
5. Annor GA, Tyl C, Marcone M, Ragaee S, Marti A (2017) Why do millets have slower starch and protein digestibility than other cereals? Trends in Food Science and Technology 66: 73-83.
6. Nithiyanantham S, Kalaiselvi P, Mahomoodally MF, Zengin G, Abirami A, et al. (2019) Nutritional and functional roles of millets—A review. Journal offood biochemistry 43: e12859.
7. Anitha S, Govindaraj M, Kane-Potaka J (2020) Balanced amino acids and higher micronutrients in millets complements legumes for improved human dietary nutrition.Cereal Chemistry 97: 74-84.
8. Birania S, Rohilla P, Kumar R, Kumar N (2020) Post-harvest processing of millets: A review on value-added products. International Journal of Chemical Studies 8: 1824-1829.
9. Moschonis G, Magriplis, E, Zampelas, A (2021) Novel Nutrition Education Approaches for Health Promotion: From Investigating Problems to Finding Solutions.Nutrients 13: 4423.
10. Eshra DK, Ali I (2016) Effect of nursing intervention on the Beliefs and Practicesof pregnant women regarding vitamins and Minerals Intake. Int J Novel Res Healthc Nurs 3: 66-80.
11. Soma-Pillay P, Catherine NP, Tolppanen H, Mebazaa A, Tolppanen H, et al.(2016) Physiological changes in pregnancy. Cardiovasc J Afr 27: 89-94.
12. Abu-Baker NN, Abusbaitan HA, Al-Ashram SA, Alshraifeen A (2021) The effect of health education on dietary knowledge and practices of pregnant women in Jordan: A quasi-experimental study. International Journal of Women's Health 13: 433-443.
13. Abujilban S, Hatamleh R, Al-Shuqerat S (2019) The impact of a planned health education program on the compliance and knowledge of Jordanian pregnant women withanemia. Women and Health 59: 748-759.
14. Ibrahim NA, Muhye A, Abdulie S (2017) Prevalence of birth asphyxia and associated factors among neonates delivered in Dilchora Referral Hospital. Dire Dawa,Eastern Ethiopia. Clin Mother Child Health 14: 4.
15. Lim ZX, Wong JL, Lim PY, Soon LK (2018) Knowledge of nutrition during pregnancy and associated factors among antenatal mothers. International Journal of Public Health and Clinical Sciences 5: 117-128
16. Nana A, Zema T (2018) Dietary practices and associated factors during pregnancyin northwestern Ethiopia. BMC Pregnancy and childbirth 18: 183.
17. Abou Haidar MY, Bou Yazbeck E (2018) Knowledge, attitude, and practices toward nutrition and diet during pregnancy among recently delivered women ofSyrian refugees. Journal of Refugee and Global Health 1: 6.
18. Ferguson LA (2012). Implementing a video education program to improve healthliteracy. The Journal for Nurse Practitioners 8:e17-e22.
19. Frentsos JM (2015) Use of videos as supplemental education tools across the cancertrajectory 19: E126-E130.
20. Mackert M, Champlin SE, Pasch KE, Weiss BD (2013) Understanding health literacy measurement through eye tracking. Journal of health communication 18: 185-196.
21. Ilmonen J, Isolauri E, Laitinen K (2012) Nutrition education and counseling practices in mother and child health clinics: study amongst nurses. Journal of clinicalnursing 21: 2985-2994.
22. Hayes CJ, Bhandari NR, Kathe N, Payakachat N (2017) Reliability and validity of the medical outcomes study short form-12 version 2 (SF-12v2) in adults withnon-cancer pain. In Healthcare 5: 22.
23. Reberte LM, Hoga LAK, Gomes ALZ (2012) Process of constructing an educational booklet for the health promotion of pregnant women. Revista Latino-Americana de Enfermagem 20: 101-108.
24. Oliveira SCD, Lopes MVDO, Fernandes AFC (2014) Development and validation of an educational booklet for healthy eating during pregnancy. Revista latino-americana de enfermagem 22: 611-620.
25. Rathi SS, Raghuaram N, Tekur P, Joshi RR, Ramarao NH (2018) Development and validation of integrated yoga module for obesity in adolescents.International Journal of Yoga 11: 231-238.
26. John JM, Navneetham J, Nagendra HR (2017) Development of atrans-disciplinary intervention module for adolescent girls on self-awareness. Journal ofclinical and diagnostic research: JCDR 11:VC07-VC10.
27. Dianré Kapp, Gerda J, Gericke , Jane W Muchiri (2022) Face validity and content assessment of a diabetes nutrition education DVD for low literacy adults living with diabetes: a mixed-method study, Journal of Endocrinology, Metabolism and Diabetes ofSouth Africa 27: 83-92.
28. Sharma S, Akhtar F, Singh RK, Mehra S (2019) Validation of health education material for youth: a step to ensure implementation fidelity in community-based interventions. In Healthcare 8: 8.
29. Chau JPC, Chung LCL, Wong R YM, Loo KM, Lo SHS, et al. (2012) An evaluation of a web-based diabetes education program designed to enhance self-management among patients living with diabetes. CIN: Computers, Informatics, Nursing 30: 672-679.
30. IIMR (2022) Nutritional and Health Benefits of Millets. Indian Institute of Millets Research;Hyderabad, India: ICAR; New Delhi, India.
31. NIN (2022) Indian Food Composition Tables. IIMR (Ministry of Health and Family Welfare,GoI) Hyderabad, India.

Citation: Ansari Z, Madan J, Patharia Z. Development and Validation of Nutrition Education Tool Kit on Millets for Pregnant Women: A Cross-Sectional Study. Indian J Nutri. 2023;10(2): 280.