

## Original Research Article

# A KAP study on acceptance of millets in diet among housewives residing in a Military Garrison

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## ABSTRACT

**Background:** Millets are a group of small-seeded grasses that are cultivated as food crops around the world especially in Africa and Asia. Millets have high fibre content which helps in better digestion and relief from constipation, high antioxidant activities and also helps to lower cholesterol. United Nations declared the year 2023 as International Year of Millets (IYoM-2023). Limited studies have been conducted on the Knowledge, Attitude and Practices (KAP) on acceptance to use millets in diet in our country. Consumption of millets was higher in the states of Gujarat, Karnataka, Maharashtra but negligible in the states of Kerala, Orissa, West Bengal and Tamil Nadu where rice is the most consumed cereal as opined by National Nutrition Monitoring Bureau. The objective of the study was to assess the acceptance of millets in diet among housewives residing in a Military garrison in West Bengal.

**Methods:** A cross-sectional study was carried out from 01 Aug 2023 and 15 Aug 2023 among housewives residing in a Military garrison in West Bengal.

**Results:** A total of 209 respondents participated in the study of which, 33% of the respondents belonged to 25-29 yrs age group. 52% of them were either graduates or post graduates. There is a significant ( $p < 0.05$ ) association between level of education and knowledge of health benefits of millets.

**Conclusions:** The Armed Forces have been the front runners in incorporating millets in their ration scale as clearly observed from our present study. Sustained efforts are required to create awareness and improve acceptance of use of millets amongst general population.

**Keywords:** Armed Forces, Diet, Health benefits, IYoM, Millets

## INTRODUCTION

Millets are a group of small-seeded grasses that are cultivated as food crops around the world. They are a staple food in many parts of Africa and Asia and are

consumed in a variety of forms, including bread, porridge, and fermented beverages.<sup>1</sup> Millets come in two varieties: Major and Minor, which are distinguished by the size of their grains and the regions in which they are grown. Major millets include pearl millet (bajra), finger

millet (ragi), sorghum (jowar); Minor millets include foxtail millet (kakum), little millet (kutki), barnyard millet (sanwa), proso millet (chenna) and kodo millet (kodon).<sup>2</sup>

Millets are popularly known as Nutri cereals as they provide most of the nutrients required for normal functioning of human body. India is the largest producer of many variants of millets, which are often called coarse grains. Millet is considered a food security crop due to its stability under adverse agricultural and climatic conditions. Compared to paddy rice, especially polished paddy rice, millets release a lower percentage of glucose and over a longer period of time.<sup>3</sup> Millets are highly nutritious, gluten free and non-acid forming foods. Millets have high fibre content which helps in better digestion and relief from constipation, high antioxidant activities and also helps to lower cholesterol.<sup>4,5</sup>

Although millets are nutritionally superior to cereals, their consumption as food is still largely limited to traditional consumers and the population of lower economic groups. Post green revolution period witnessed a dramatic decline in area under cultivation of millets.<sup>6</sup> To create domestic and global demand and to provide nutritional food to the people, Government of India had proposed to the United Nations for declaring 2023 as International Year of Millets (IYoM-2023). The proposal of India was supported by 72 countries and United Nation's General Assembly (UNGA) declared 2023 as International Year of Millets on 5th March, 2021.<sup>7,8</sup> A number of studies were conducted on the production, consumption, nutritional facts of millets, but very limited studies have been conducted on the knowledge, attitude and practices (KAP) on acceptance to use millets in diet of individuals belonging to Eastern India. Hence, the present study was planned to study the KAP on use of millets amongst married female residents of a military garrison located in West Bengal. Any military garrison is unique in nature, as it represents individuals from all states of our country and comprises of a mixed population.

**METHODS**

**Study design, study period and data collection**

The study was conducted among housewives residing in a Military garrison in West Bengal, on door-to-door interview basis between 01 Aug 2023 and 15 Aug 2023. It is a cross sectional questionnaire-based study. A questionnaire was designed as per guidelines for assessing nutrition related Knowledge, Attitudes and Practices from Manual of Food and Agricultural Organization of the United Nations.<sup>9</sup> This questionnaire was pretested amongst 20 subjects following which it was modified and finalised and subsequently administered to all the respondents, without prior sensitizing on use and benefits of millets in diet.

**Sampling method/sample size**

Systemic random sampling was done; every 3<sup>rd</sup> house was visited and questionnaire was administered for all the individuals who were willing to participate. A total of 209 respondents participated in the study.

**Inclusion criteria**

All married women who were willing to participate in the study and available at the time of door-to-door visit were included.

**Exclusion criteria**

All unmarried women and those unwilling to participate and not available at the time of visit were excluded.

**Statistical analysis**

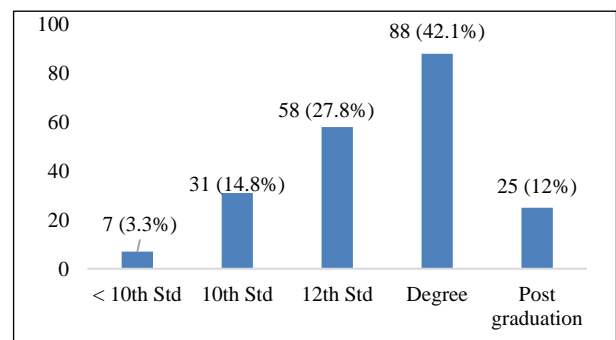
Statistical analysis was done using SPSS version 21 and Microsoft Excel Sheet.

**RESULTS**

A total of 209 respondents (n=209) answered the questionnaire. The age range of the study sample is between 20 yrs to 48 yrs. Average age of respondents is 30.8 yrs, with a maximum of 33% of women belonging to 25-29 yrs age group as per Table 1. Majority of the respondents were educated with 42 % of them being graduates and an additional 12% were having a post graduate degree as per Figure 1.

**Table 1: Age distribution of respondents.**

Age	No. of individuals	Percentage %
20-24	35	16.7
25-29	69	33
30-34	38	18.2
35-39	45	21.5
40-44	19	9.1
45-49	3	1.5
<b>Total</b>	<b>209</b>	<b>100</b>



**Figure 1: Education of the respondents.**

Out of the 28 states and 08 Union Territories of our country, this study sample is a representation of 23 states and 02 Union Territories, of which maximum respondents are from West Bengal (n=25) followed by Bihar (n=24), Uttar Pradesh (n=23), Maharashtra (n=21) and Punjab (n=15) as per Figure 2.

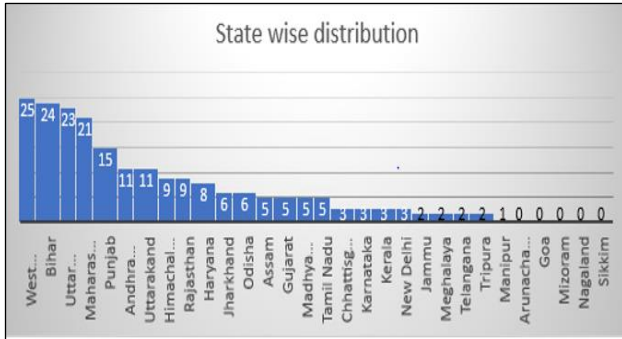


Figure 2: State wise distribution of respondents.

Of all the respondents, 89 % (n=186) were Hindus, 46.9% (n=98) were vegan and preferred veg diet as per Table 2. The average duration of marital life among the participants in this study was 9.8 years.

Table 2: Distribution by religion.

Religion	No of individuals	Percentage %
Hindu	186	89
Muslim	5	2.4
Christian	5	2.4
Sikh	12	5.7
Buddhist	1	0.5
Total	209	100

Out of the 209 respondents, 86% (n=181) of individuals had heard about millets and 69% (n=142) had used millets previously. Out of the 142 women who used millets, most of the respondents had used them occasionally 55.6% (n=79) and only 19.7%(n=28) respondents used millets in daily diet subject to availability as per Figure 3.

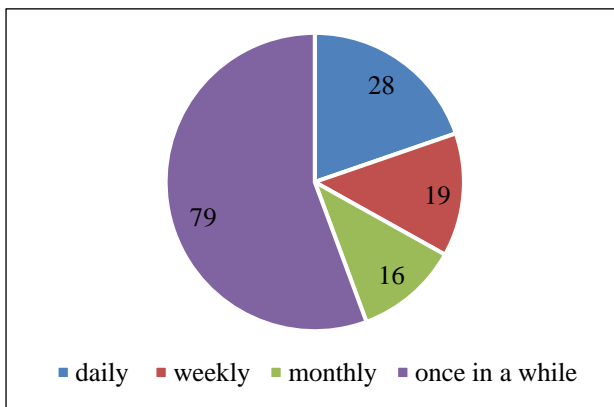


Figure 3: Frequency of use of millets.

Around 42% (n=88) individuals were aware of health benefits of millets, maximum were of the opinion that it lowers cholesterol and helps in digestion as shown in Figure 4. Out of all the respondents 46% (n=96) of the participants knew correctly about International Year of Millets (IYoM) through media sources like Facebook, X, television news channels or from YouTube educational videos. Millets are available in all local shops in one or the other form like multi grain atta, bread or biscuits, however, only 38% (n=80) were aware about the availability in local markets.

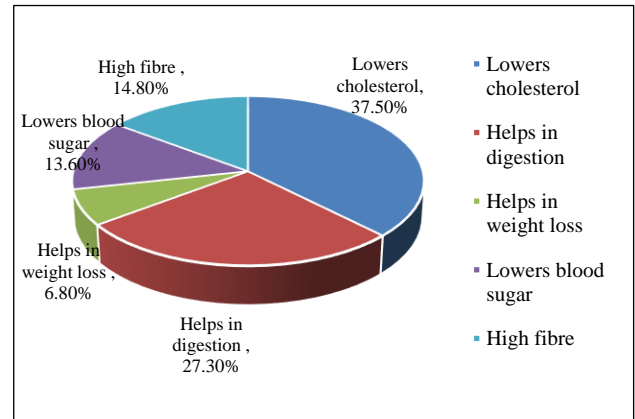


Figure 4: Health benefits of millets.

There is a significant (p<0.05) association between level of education (graduate and above) and knowledge of health benefits of millets as per Table 3.

Table 3: Education of respondent vs awareness of health benefits of millets (p<0.05).

	Know health benefits	Doesn't Know health benefits	Total
Class 12 and below	27	69	96
Graduate and above	60	53	113
Total	87	122	209

Table 4: Education of respondent vs awareness of health benefits of millets (p>0.05).

	Used millets	Not used millets	Total
Class 12 and below	65	31	96
Graduate and above	77	36	113
Total	142	67	209

There is no significant (p>0.05) association between level of education (graduate and above) and use of millets as per Table 4.

There is no significant (p>0.05) association between age and usage of millets as per Table 5.

**Table 5: Age of respondent vs awareness about use of millets (p>0.05).**

Age (in years)	Used millets	Not used millets	Total
Age <30	70	34	104
Age 30 and above	72	33	105
<b>Total</b>	142	67	209

## DISCUSSION

Indian Army is dependent on ration comprising of dry and fresh food supply from the Army Supply Corps (ASC). Seasonal changes and procurement policies depict the availability of aforementioned ration to serving Armed Forces personnel and their dependents. In line with the IYoM-2023 and wide scale promulgation of health benefits of use of millets, majority of the Military garrisons in India, have started use of millets and issue the grains on weekly and monthly basis to the dependent clientele.

In the present study around 50% of the women belonged to 20-29 yrs age group, and 42% of them were graduates and all of them belonged to nuclear families. In a study conducted by Kalaiselvi et al in Coimbatore city, maximum respondents (45%) were of 31-40 yrs age group and 44% were in the 21-30 yrs age group. 37% respondents in the aforementioned study were graduates and 65% of them were belonging to nuclear families.<sup>10</sup> In the present study, there is a significant association between level of education and knowledge of health benefits of millets which is similar to the study conducted by Kalaiselvi et al in Coimbatore.<sup>10</sup>

In the present study about 69% of the individuals had consumed millets once or more previously, out of which 55.6% of them had millets occasionally and only 20% of them were consuming millets daily, whereas in a study conducted by Prashanti et al among students of Andhra Pradesh, 86.6% of them were consuming millets and 10% of them were eating millets daily in some form or the other. 43% of the students in the study conducted by Prashanti et al were eating millets in the frequency of two to three times per week.<sup>3</sup> In another study conducted by Senthamarai et al among rural women of Madurai district of Tamilnadu, all the respondents consume millets in one or the other form and majority of the millets were consumed at least once per month.<sup>11</sup>

National Nutrition Monitoring Bureau has reported that the consumption of millets was higher in the states of Gujarat (pearl millet, maize), Karnataka (finger millet), Maharashtra (sorghum) but negligible in the states of Kerala, Orissa, West Bengal and Tamil Nadu where rice is the most consumed cereal.<sup>12</sup> In our present study, the acceptance of using millets in diet was higher amongst respondents belonging to domicile of West Bengal and Tamil Nadu, it is felt that the ration supply of Armed Forces and multi-cultural close stay in military stations

have a direct role in improving the consumption behaviour.

Millets are available in all local shops in one or the other form (like biscuits, bread, multigrain atta, sweets) and only 38% (n=80) were aware about the availability in local markets. Most of the respondents were confined to the opinion that millets are available in large supermarkets only, especially in the State of West Bengal. The emerging principal uses of millets include production of biscuits and confectionery, beverages, weaning foods, cakes and beer. Other items like grits, flour, and meals from cereals such as millet, sorghum, and corn are now common items in the market.<sup>13</sup>

On completion of this KAP study the findings were shared with concerned authorities and health talks were conducted amongst residents of the Military garrison through Army Wives Welfare Association (AWWA) and Army Medical Corps collaboration to emphasize on the health benefits of millets.

This study has few limitations. As representation of some States were limited in the present study, a general opinion can not be formulated with regards to use and acceptance of millets in diet of an average Indian household. This study can comment only upon the KAP of women belonging to Armed Forces background, who are dependent upon the Government's Policy of Ration Scales.

## CONCLUSION

Health benefits of consuming millets is known to Indians from time immemorial. Millets were among the first ever cultivated crops in ancient India. However, the use of millets in diet in the present day is restricted to States which cultivate the grains. IYoM has paved the way to popularize the consumption of millets in every household in India. The Armed Forces have been the frontrunners in incorporating millets in their ration scale as clearly observed from our present study. With a booming Food Industry, availability of millets has improved across most parts of the Country, however, more sustained efforts are required to create awareness and improve acceptance of use of millets amongst population not belonging to millets cultivating belts. More studies should be conducted even amongst general population to assess the success of International Year of Millets (IYoM) 2023 and to fortify India's position as the 'Global Hub for Millets'.

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