



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.03

TPI 2019; 8(5): 187-190

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www.thepharmajournal.com

Received: 19-03-2019

Accepted: 23-04-2019

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## Knowledge of minor millets among growers and non-growers of minor millets

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### Abstract

The research study was conducted in Dharwad taluk of Dharwad district of Karnataka state during 2018 to know the knowledge of minor millets among growers and non-growers. Two villages of millet growing area i.e. Garag and Yadwad and two villages of non-millet growing area i.e. Nigadi and Kavalageri were selected with help of RSK. Little millet (savi) and foxtail millet (navane) generally grown in this areas. Sixty millet growers, 60 non millet growers from same village and 60 non millet growers from different village was randomly selected as sample. Thus sample constituted was total 180 respondents were selected for the study. The data was collected from the respondents through pre-tested self-structured schedule. Co-relation research design was used in the present study. The collected data was tabulated and analysed by using suitable statistical tools. The result revealed that, knowledge about minor millets among respondents analysed. Three fourth (75.00%) of the growers had medium knowledge and only one fourth (25.00%) of the growers had high knowledge however there was none in low knowledge category. A similar trend was seen in the non-growers in the same villages. In non-growing area about 48.00 percent of the non-growers had medium knowledge and only 11.67 percent of the non-growers having high knowledge and 44 per cent of the non-growers had low knowledge. About the government related program to millets very few of the respondents were aware of such programs.

**Keywords:** millet growers, knowledge, foxtail millet, little millet

### Introduction

Minor millets are tiny seeds, grown around the world for food and fodder in dry land regions of world. These were important staple foods prior to introduction of fine cereals in India. Millets are grown on about 17 million ha. With an annual production of 18 million tonnes and contribute 10 per cent to the country's food grain basket (Rao *et al* 2017). Millets are highly nutritious food grains. They are rich in fibre, vitamins and especially minerals like calcium, iron, zinc and potassium. Due to their low glycaemic index, millets are good for diabetic patients. However over a period of time the consumption as well as cultivation of minor millets has significantly declined. The decline of minor millets cultivation in India can be attributed to many factors including economic, agronomic and social. During the 1970s Green Revolution of the government promoted high yielding varieties there by pushing the minor millets in to declining stage. Traditional processing methods often carried out by women are highly drudgery prone.

India is the top most producers of millets followed by Nigeria during the period 2000 and 2009. In India, seven millets species (Finger millet (*Ragi*), Foxtail millet (*Navane*), Pearl millet (*Bajra*), little millet (*Savi*), Kodo millet (Harka) and Barnyard millet (Oodal), Proso millet (Baragu)) are grown commonly under rain fed conditions. Generally, these are rain fed crops grown in areas with low rainfall and thus resume greater importance for sustained agriculture and food security. Further, in each of the millet cultivating areas at least 4 to 5 species are grown either as primary or allied crop in combination with oilseeds or pulses.

A Kannada proverb likens the, little millet (Savi) eater enhances his life span and foxtail millet (Navane) becomes stronger, jowar eater to a wolf and ragi consumer to be free of illness (Nirogi) where as rice eater to a frail bird. Thus indicating the superiority of coarse and minor millets. Minor millets are used for human consumption in most of the developing countries but their use has been restricted to animal feed in developed countries. Millets are nutritionally superior compared to cereals and serve as good source of protein, micronutrients and macronutrients. Processing methods like soaking, malting, and cooking affect the anti-oxidant content and activity (Saleh *et al.*, 2013) [4]. Minor milled contains 12-16% protein and 2-5% lipids, millets are very good sources of micronutrients such as vitamins and minerals and

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Millets have a better amino acid profile. We can see that highly nutritious grains are neglected but now a days gaining more popularity among health conscious people. So to know the knowledge of these nutritious millets this study has been initiated.

**Methodology**

The present study was conducted in Dharwad taluk of Dharwad district of Karnataka during the year 2018. Dharwad taluk was purposively selected for the study keeping in view the cultivation of millets, availability of time, cost and convenience of the researcher. A list of millet growing villages was prepared in consultation with the Raith Samparka Kendra. Two millet growing villages which have more number of millet growers were selected from Dharwad taluk viz., Garag and Yadwad. From millet growing villages 30 farm women from each village millet growers and 30 women non-millet growers same villages selected. Non-

millet growing area selected were Kavalgeri and Nigadi from each village 30 women non-millet growers were selected. Thus total sample constituted was 180. Pre tested self-structured schedule was used to collect the data from the respondents by personal interview method.

**Result and Discussion**

Table 1 reveals that in Yadwad village almost all respondents (99.67 %) were grown foxtail millet (*Navane*). About 43.00 per cent of grown little millet (*Savi*). In Garag cent percent of respondents grow little millet (*Savi*) and one third (33.33 %) per cent of respondents were growing foxtail Millet (*Navane*) in restricted area. The possible reasons might be millets were cultivated to meet feed and fodder requirement for cattle ( Hemalath *et al.*2013) [2] and other added advantage was of early maturity of these crops and requires less fertile soil and low rainfall, thus providing livelihood security for the farming families.

**Table 1:** Minor millets grown by the respondents n = 60

| Sl. No. | Village         | Minor millets                    | Frequency | Percentage |
|---------|-----------------|----------------------------------|-----------|------------|
| 1.      | Yadwad (n = 30) | Little millet ( <i>Savi</i> )    | 13        | 43.33      |
|         |                 | Foxtail millet ( <i>Navane</i> ) | 29        | 99.67      |
| 2.      | Garag (n = 30)  | Little millet ( <i>Savi</i> )    | 30        | 100.00     |
|         |                 | Foxtail millet ( <i>Navane</i> ) | 10        | 33.33      |

Note: Multiple responses are possible

**Table 2:** Knowledge about minor millets

| Sl. No.                  | Statements   | Growers (n = 60) |        | Non-growers (Same village) (n = 60) |        | Non-growers (Different village) (n = 60) |       |
|--------------------------|--|------------------|--------|-------------------------------------|--------|--|-------|
|                          |  | F                | %      | F                                   | %      | F  | %     |
| Agronomic practices      |  |                  |        |                                     |        |  |       |
| 1.                       | Less fertile soil is suitable to grow minor millets  | 44               | 73.33  | 41                                  | 68.33  | 29                                       | 48.33 |
| 2.                       | Karif is suitable season to grow minor millets   | 52               | 86.67  | 46                                  | 76.67  | 16                                       | 22.67 |
| 3.                       | Crop duration of little millet ( <i>Savi</i> ) and foxtail millet ( <i>Navane</i> ) is only 3 months | 54               | 90.00  | 50                                  | 83.33  | 23                                       | 38.33 |
| 4.                       | Seed rate of foxtail millet ( <i>Navane</i> ) is 5-7.50 kg per hectare                               | 20               | 33.33  | 19                                  | 31.67  | 9  | 15.00 |
| 5.                       | Seed rate of little millet ( <i>Savi</i> ) is 12-15 kg per hectare                                   | 48               | 80.00  | 46                                  | 76.67  | 16                                       | 22.67 |
| Knowledge Index          |  | 72.67            |        | 67.33                               |        | 31.00                                    |       |
| Post-harvest management  |  |                  |        |                                     |        |  |       |
| 6.                       | Yield of little millet ( <i>Savi</i> ) and foxtail millet ( <i>Navane</i> ) is 12-18 quintal         | 16               | 26.67  | 14                                  | 23.33  | 6  | 10.00 |
| 7.                       | Consumption of millets has decreased due to difficulty in processing of minor millets                | 60               | 100.00 | 58                                  | 96.67  | 43                                       | 71.67 |
| 8.                       | Millets can be stored without husk only 3 months   | 42               | 70.00  | 40                                  | 66.67  | 32                                       | 53.33 |
| 9.                       | Millets can be stored with husk for even more than year  | 38               | 63.33  | 38                                  | 63.33  | 34                                       | 56.67 |
| 10.                      | Navane is best millet to prepare holige during Shige hunnime festival                                | 60               | 100.00 | 60                                  | 100.00 | 45                                       | 75.00 |
| Knowledge Index          |  | 72.00            |        | 70.00                               |        | 53.33                                    |       |
| Health benefits          |  |                  |        |                                     |        |  |       |
| 11.                      | The slow digestion quality of minor millets is helpful for general health                            | 23               | 38.33  | 17                                  | 28.33  | 19                                       | 31.67 |
| 12.                      | Minor millets are more suitable diet for diabetic patients   | 49               | 81.67  | 47                                  | 78.33  | 40                                       | 66.67 |
| 13.                      | Minor millets help to reduce the body weight   | 29               | 48.33  | 25                                  | 41.67  | 24                                       | 40.00 |
| 14.                      | Minor millets helpful to keep away many diseases   | 19               | 31.67  | 16                                  | 26.67  | 15                                       | 25.00 |
| 15.                      | Minor millets are rich in fibre content  | 16               | 26.67  | 14                                  | 23.33  | 16                                       | 26.67 |
| Knowledge Index          |  | 45.33            |        | 39.67                               |        | 38.00                                    |       |
| Over all Knowledge Index |  | 63.33            |        | 53.11                               |        | 40.78                                    |       |

Data from table 2 indicates that, regarding agronomic practices majority (90.00 %) of the growers had knowledge that little millet (*Savi*) and foxtail millet (*Navane*) are short duration crops, suitable season to grow minor millets was known by 86.67 per cent, followed by seed rate for little millet (*Savi*) (80.00 %) and suitable soils (73.33%). Over all knowledge index for agronomic practices was the extent of 72.67. In case of post-harvest management cent per cent of

respondents had knowledge about processing aspects and its specific usage. Seventy per cent of the respondents had knowledge about storage of millets. Over all knowledge index for post-harvest management was the extent of 72.00. In case of health benefits, respondents had knowledge about the suitability for diabetic patients (81.67%), followed by its use in reduction of body weight (48.33%) and the slow digestion improving the health. Over all knowledge index for

health benefits was the extent of 45.33. The overall knowledge index of growers was 63.33 *i.e.*, their knowledge is to the extent of 63.83 per cent.

Whereas non-growers of same village majority (83.33%) of respondents had knowledge that little millet (*Savi*) and foxtail millet (*Navane*) are short duration crops followed by suitable season to grow minor millets (76.67%), seed rate for little millet (*Savi*) (76.67%) and suitable soils (68.33%). Over all knowledge index for agronomic practices was the extent of 67.33. In case of post-harvest cent per cent of respondents had knowledge about specific usage of minor millets for preparation of holige and 96.67 per cent of respondents had knowledge about processing of minor millets. About 67.00 per cent of respondents had knowledge about storage of millets. Over all knowledge index for post-harvest management was the extent of 70.00. In case of health benefits 78.33 per cent respondents had knowledge that millets were suitable for diabetic patients. Next was that they help to reduce the body weight (41.67%) and slow digestion improving the health condition (28.33%). Over all knowledge index for health benefits was the extent of 39.67. The overall knowledge index of non-growers of same village was 53.11 *i.e.*, their knowledge is to the extent of 53.11 per cent.

In non-growers of different village nearly half (48.33 %) of the respondent shad knowledge about suitability of soil to grow minor millets. About 38 per cent respondents had

knowledge that little millet (*Savi*) and foxtail millet (*Navane*) are short duration crops, suitability of season for growing minor millets (22.67 %) and seed rate for little millet (*Savi*) (15.00 %). Over all knowledge index for agronomic practices was the extent of 31.00. In case of post-harvest 75.00 per cent of respondents had knowledge about specific usage of minor millets. About 57.00 per cent of respondents had knowledge about storage of millets. Over all knowledge index for post-harvest management was the extent of 53.33. In case of health benefits respondents had knowledge about millets were suitable for diabetic patients (66.67 %). Next was that they help to reduce the body weight (40.00 %) and slow digestion improving the health condition (31.67 %). Over all knowledge index for health benefits was the extent of 38.00. The overall knowledge index of non-growers of different village was 40.78 *i.e.*, their knowledge is to the extent of 40.78 per cent.

From the above result among growers except seed rate other knowledge was high. The seed rate used by the respondents was 4 kg/ha. Whereas actual seed rate was 7-8 kg/ha. The respondents getting low yield with minimum agronomic practices. They were not aware of any improved varieties, grown with no pesticides and fertilizers, it is cultivated under less water or under the drought condition (Hemalath *et al.* 2013) [2]. Among health benefits, respondents having less knowledge. More intervention of extension workers, scientists and mass media is needed on this line.

**Table 3:** Overall knowledge level of respondents n = 180

| Sl. No. | Category        | Growers (n <sub>1</sub> = 60) |       | Non-growers (Same village) (n <sub>2</sub> = 60) |       | Non-growers (Different village) (n <sub>3</sub> = 60) |       |
|---------|-----------------|-------------------------------|-------|--|-------|---|-------|
|         |                 | F                             | %     | F  | %     | F   | %     |
| 1.      | Low (< 6)       | 0                             | 0     | 3  | 3.33  | 24  | 40.00 |
| 2.      | Medium (6 – 10) | 45                            | 75.00 | 44   | 73.33 | 29  | 48.33 |
| 3.      | High (> 10)     | 15                            | 25.00 | 13   | 21.67 | 7   | 11.67 |

The scores obtained by the respondents categorised based on class interval method low (0-6), medium (6-10), high (>10). Table 3 reveals that, regarding importance and cultivation of minor millets 75.00 per cent of the growers had medium knowledge and only 25.00 per cent of the growers had high knowledge however there was none in low knowledge category (Aski *et al.* 2010) [1]. A similar trend was seen in the

non-growers in the same villages in medium category (73.33%) and 21.67 per cent in high category and only 3.33 per cent in the low category. In non-growing area about 48.33 per cent of respondents had medium knowledge followed by 44.00 per cent had high knowledge and only 11.67 percent of the non-growers of different village having low knowledge.

**Table 4:** Relationship between the independent variables and knowledge of the respondents n = 180

| Sl. No. | Independent variables         | Growers knowledge “r” value (n <sub>1</sub> = 60) | Non-growers knowledge(same village) “r” value (n <sub>2</sub> = 60) | Non-growers knowledge (Different village) “r” value (n <sub>3</sub> = 60) |
|---------|-------------------------------|---|---|---|
| 1.      | Age                           | 0.413**   | 0.383**   | 0.161 <sup>NS</sup>   |
| 2.      | Education                     | 0.066 <sup>NS</sup>                               | 0.188 <sup>NS</sup>   | 0.158 <sup>NS</sup>   |
| 3.      | Annual income                 | 0.345**   | 0.345**   | 0.113 <sup>NS</sup>   |
| 4.      | Land holding                  | 0.343**   | 0.345**   | 0.045 <sup>NS</sup>   |
| 5.      | Size of family                | 0.349**   | 0.345**   | 0.182 <sup>NS</sup>   |
| 6.      | Mass Media exposure           | 0.371**   | 0.345**   | 0.008 <sup>NS</sup>   |
| 7.      | Contact with extension agency | 0.375**   | 0.345**   | 0.168 <sup>NS</sup>   |

Note: \*\* Correlation coefficient significant at 0.01 per cent level \*Correlation coefficient significant at 0.05 per cent level NS: Non-significant

When millet grower’s knowledge was tested for correlation with selected independent variables age, annual income, land holding, size of family, mass media exposure and contact with extension agency, it was found that, these variables were positively and significantly correlated at one per cent level. As age increases due to their diet experience and their traditional food might have influenced the knowledge. As respondents economically sound, they grow millets in the small patches. Mass media exposure and contact with

extension agency might have influenced to grow minor millets. Education was non-significant with knowledge. Education was not influencing knowledge only experience was counted. Whereas in case of non-growers of same village similar relationship was found. Regarding non-growers of different village there was non-significant relationship between knowledge and with all selected independent variables.

**Table 5:** Awareness on government programmes related to millets n = 180

| Sl. No. | Government programmes                         | Frequency | Percentage |
|---------|---|-----------|------------|
| 1.      | Inclusion of millets in midday meal programme | 5         | 1.67       |
| 2.      | Millet mela                                   | 6         | 2.78       |
| 3.      | Financial incentives                          | 26        | 16.11      |

Note: Multiple responses are possible

Table 5 shows that 16.11 per cent of respondents were aware about the financial incentives given by the government to encourage the growers to grow minor millets. About three per cent of respondents were aware of millet melas conducted by government. Only 1.67 per cent of respondents were aware of inclusion of minor millets in mid-day meal programme. The probable reason might be that only few respondents were aware about the millet related government programmes. This is because of lack of extension contact, low mass media exposure and less exposure of women to outside world. However in order to popularise millet growing and consumption among people the Government of Karnataka has started many programmes some of them are millet mela, financial incentives and inclusion of millets in the mid-day meal programme.

### Conclusion

It was observed from the study that knowledge of growers regarding agronomic practices, post-harvest management and health benefits about minor millet was quite good with an overall knowledge index of 63.33. In case of non-growers of same village the overall knowledge index was 53.11. They were growing millets from generation, so they have more knowledge and experience in agronomic practices like suitability of soil, best season for growing, crop duration and seed rate per hectare., they had good knowledge about health benefits and nutritional aspect of minor millets. The knowledge of non-growers of different village about minor millets overall knowledge index was 40.78. The respondents were having low knowledge level about agronomic practices. The reason is because they are not growing and so may not be familiar with millet cultivation. Since respondents had good irrigation facilities in the village they prefer to grow commercial crops like sugarcane, paddy and chilli +cotton. So the extension worker can be planned to give more knowledge about health aspects and marketing aspects in that value added products fetches more price. Thus efforts may be made to bring about a positive change in knowledge. The farm women may be motivated to participate in the extension activities like training, demonstration, exhibitions, millet mela, millet based food competition etc. so that they may have opportunity to learn new things. Hence more extension activities can be initiated to create more awareness and knowledge. Establishment of millet processing units would also help millet growers.

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