Original Research Article

STUDY ON WEIGHT GAIN EFFORTS THROUGH INDIGENOUS TECHNICAL KNOWLEDGE

ABSTRACT

Introduction: In India, under-five child malnutrition is a serious public health issue. This is demonstrated by the fact that India has one of the highest rates of underweight children worldwide.

Aims: The study was carried out to assess the spatial distribution of nutritional status of children of 1-5 years through weight-for-age, height-for-age, weight-for-height data collected by the KVK. Preschoolers' dietary health was regressed on several sociodemographic factors after eliminating the effect of age. The information reveals that children's nutritional condition varies geographically and by gender in India.

Methodology: A study was conducted in district Seoni of Madhya Pradesh to eliminate malnutrition via using indigenous technical knowledge (ITK). The trials were conducted in three following years viz 2020 to 2023. Primarily the training was conducted of mothers along with Anganwadi workers regarding the addition of sweet rice to kids from 1-5 years age group.

Results: There was twice-daily portions of sweet rice, was prepared by using Jaggery by adding water, desi ghee, and roasted rice dry fruits added to it and then it cooked for 15-30 min and given for 45 days. The average body weight gain after evaluation and personal conversations of mothers was recorded as 9.91 kg and the proportion change against farmers practice was 13.48.

Conclusion: The study concluded that rice prevalent areas and rice-based food habits for mothers and children should be adopted the sweet rice (ITK) the recommended practice against farmers' practice.

Keywords: - Malnutrition, kids, body mass, rice consumption, sweet rice, consumption of food.

1. INTRODUCTION

"Malnutrition among under-five children is a major public health problem in India. This is reflected by the fact that the prevalence of under-weight children in India is among the highest in the world. It is also observed that the malnutrition problem in India is a concentrated phenomenon that is, a relatively small number of states, districts, and villages account for a large share of the malnutrition burden only 5 states and 50% of villages account for about 80% of the malnutrition burden" [12].

"It is associated with poverty and disease. So, the three factors, viz. malnutrition, poverty, and disease, are connected so that each contributes to the presence and sustained effect of the other. Due to poverty, a significant portion of the population is unable to procure enough food. And ultimately, they become malnourished and vulnerable to diseases like diarrhea and parasitic infection" [4].

"Childhood malnutrition can cause deficiencies in growth, delayed and impaired intellectual and motor development, and other negative health impacts. It is reported that 55% of the deaths of children below five years of age is due to malnutrition" [11].

Growth of children is a function of food intake and nutrition absorption, health condition and prevalence of disease of the child as well as the socioeconomic and ecological environment in which the child lives and grows.

"In India, many studies have been conducted on the nutrition and health status of pre-school children, but they are very inadequate on the causative factors of malnutrition. The nutritional status of pre-school children in Kerala and Goa discovered a significant relationship between socioeconomic variables and the extent of malnutrition" [6]. It was also been studied in the north-east of India by [7].

"Indigenous Technical Knowledge (ITK) is a significant component of the indigenous knowledge base. The cumulative and intricate systems of information, know-how, customs, and representations that are upheld and expanded by local communities are referred to as local or indigenous knowledge, which have long histories of interaction with the natural environment" [2]. "Indigenous knowledge grows within a specific community and continues to be shared through informal channels" [1].

Jaggery contains nutrients like protein, vitamins, and minerals like iron and copper. A good quality jaggery has golden yellow color, hard texture, crystalline structure, sweeter taste and less moisture content. Jaggery comes in three different forms: liquid, solid, and granular [5].

2. MATERIALS AND METHOD

The present study was undertaken in Setewani, (Nutri smart village, NSV) of Kurai block of Seoni district of Madhya Pradesh by the Krishi Vigyan Kendra, Seoni, the village having majority of tribes and fully depended on agriculture and migratory work in nearby states namely Maharashtra and Telangana State, three training were designed which was conducted from 2020 to23.

Twenty women from each training were selected and five randomly 01-05 years age group of children was for the study as on-farm trial. The data were collected with the help of a conversation schedule. A knowledge test was developed to ascertain the knowledge gap of the women on ITK practices. The gain in knowledge was operationalized as the difference between the knowledge regarding various aspects of nutrition and healthy foods by the respondents before and after the exposure to induction program. Thus, the the total score is regarded as the knowledge of the respondent at before training stage. In a similar way, post-training knowledge scores were calculated separately. Mothers of the 15 children were asked the difference in weight of child and an assertative response was received.

2.1 Selection of samples: -For drawing the desired sample, a village was selected and 5 children in each year for three subsequent years the study was carried out. The scientific procedure for identification and selection of farm trails was adopted and accordingly in all 60 young farm women among them 15 were finally selected to respondent in the study of sweet rice uptake and the effect of the same on body weight gain.

2.2 Preparation of sweet rice: Sweet rice is prepared by using Jaggery by adding water, desi ghee, roasted rice, water, and crushed dry fruits to it and then it is cooked for 15-30 min [3]. Two servings per day for 45 days were given to respondents and the firstly and final weight of body was observed. The observations were taken with the help of Anganwadi personals at Anganwadi.

2.3 Quantification of the data: - Each 'Yes' and correct' response was given a score of one and 'No' and 'Incorrect' responses a score of zero, Altogether, there were 20 queries, and 60 responses included in the test. Therefore, the total possible score that a respondent could obtain would vary from zero to 50.

3. RESULTS AND DISCUSSION

The data regarding the assessment of the effects of ITKs on the knowledge of the respondents was measured with the help of random selection. In India 45·0% of girls and 43·0% of boys are underweight. The percentage of underweight girls is slightly more than the percentage of underweight boys. Depending on the evaluation methods there was a wide range of under-nutrition prevalence among children under five (underweight: 39-75%, stunting: 15.4-74%, wasting: 10.6-42.3%). There have been few studies on evaluating the over-nutrition status of children under five. The distribution of different risk variables and how they affect children's nutritional status in a certain setup should be evaluated to make a strategy the control strategies [8].

Table 1. Knowledge level of respondents in the scene of malnutrition and children's health (N60).

S. No.	Malnutrition and children's health	Class	Knowledge (n=60)		Percentage	
			Pre-exposure	Post-exposure	Pre-	Post-
1	Children's health and institutional assistance	Low (0-3) Medium (4-6) High (7-9)	45 15 00	22 28 10	75 25 00	36.7 46.7 16.7
2	Traditional consumption pattern	Low (0-1) Medium (2-3) High (4-5)	41 17 02	00 29 31	68.3 28.3 3.3	00 48.3 51.7
3	Conservation of nutrients	Low (0-3) Medium (4-6) High (8-10)	55 05 00	13 34 13	91.7 8.3 00	21.7 56.7 21.7
4	Preservation technique and value addition	Low (0-2) Medium (3-4) High (5-6)	56 04 00	05 45 10	93.3 6.7 00	8.3 75.0 16.7
5	Hygiene & Quality control	Low (0-2) Medium (3-4) High (5-6)	58 02 00	08 44 08	96.7 3.3 00	13.3 73.3 13.3
6	ITK (Sweet rice preparation)	Low (0-2) Medium (3-4) High (5-6)	57 03 00	06 47 07	95.0 5.0 00	10.0 78.3 11.7

As per datas of Table 1 knowledge gained by answerers about different aspects of nutrition through the course of study on ITK indicated that before exposure to training majority of respondents had a poor level of knowledge related to the dietary intake of children. Few of the respondents obtain an intermediary level (5%) of knowledge while none (0%) of the respondents obtain an elevated level of knowledge. Additionally evident from Table 1 is that after exposure to training and OFT program, majority of the respondents (78.3%) had a median level of knowledge followed by high and low extent (11.7%) of knowledge scores [2].

Table 2. Pre- and post-training comparison means score **on malnutrition and children's health (5).**

S. No.	Malnutrition and children's health	Mean score (5)		Difference	Rank
		Pre-training	Post- training		
1	Children's health and institutional assistance	1.36	4.71	3.35	II
2	Traditional consumption pattern	1.32	3.54	2.22	V
3	Conservation of nutrients	1.18	3.34	2.16	VI
4	Preservation technique and value addition	1.07	3.76	2.69	III
5	Hygiene & Quality control	1.21	3.72	2.51	IV
6	ITK (Sweet rice preparation)	1.11	4.95	3.84	I

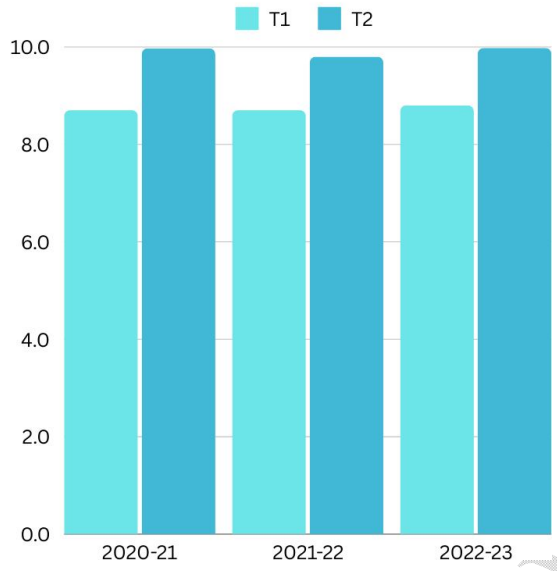
From the data depicted in table no. 2 it was clear gap between pre and post-training where the children's health institutional assistance knowledge out of 5 scale pre-training was recorded at 1.36 and post-training it was 4.71 and ranked 2nd in the same scale of 5 mean scores for the ITK (Sweet rice preparation) was scored 1.1 and 4.95 pre and post-training respectively and the difference frequency was recorded 3.84 with the rank 1st. The lowest score difference was a recorder of conservation of nutrients 2.16 and secured 6th rank. It was reported from the data (Table 2) that intervention emphasized the incorporation and gained to tackle malnutrition among under 5 children [10].

Table 3. Performance of OFT on ITK (Nutritional security through sweet rice supplementation)

Detail of Technology	Parameter of enterprise (Kg)	No. of trails			Body Weight (Kg)			% increase in body weight		
		2020-21	2021-22	2022-23	2020-21	2021-22	2022-23	2020-21	2021-22	2022-23
T1 (FP)	Increase in Body weight	-	-	-	8.7	8.7	8.8	-	-	-
T2 (RP)	Increase in Body weight	05	05	05	9.97	9.80	9.98	14.59	12.46	13.40
Average gain					**9.916**			**13.48**		

Findings displayed in Table 3 and Figure 1 for three years show the supply of sweet rice to the children increased the weight by 9.97, 9.80, and 9.98 respectively while the average across all three years was 9.916 which is about 13.48 percent increase. The sum of 15 children (1-5 years) was taken as respondents and body weight on day one and after one and half of the month [9] and [2].

Figure: 1. Performance of sweet rice supplementation for nutritional security



4. CONCLUSION

From the findings, it was concluded that the rice grown areas and rice dominant food habits for mothers and kids should be taken as delight rice (ITK) the recommended practice against control practice. A significant increase in the body weight of kids was observed to eliminate malnutrition.

Mother's ability to access the resources needed for their child's health and nutrition, which are strongly associated with low birth weight as well as poor feeding attitude in the first year of life and starter at early stages. Not only health infrastructure facilities for children and mothers, the status of women should be enhanced but also increasing mothers' literacy and giving empowerment to mothers in the decision-making process on every aspect of life, including the health care of children.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

Option 2:

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the writing or editing of manuscripts. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology

Details of the AI usage are given below:

1.

2.

3.

References

1. Bharati S, Pal M, Bharati P. Determinants of Nutritional Status of Pre-School Children in India, Journal of Biosocial Science. 2008; 40 (6): 801-814.

2. Borthakur A, Singh P. Indigenous Technical Knowledge (ITK) and their role in sustainable grassroots innovations: An Illustration in Indian context, Proceedings of international conference on innovation & research in technology for sustainable development, ICIRT, 2012; 01-03 November, pp-38-42.

3. Das P, Subba Reddy G, Verma LRA, Mishra M, Rani G, Arya HPS, Ray DP, Singh RP. Inventory of Indigenous Technical Knowledge in Agriculture Document 2 (Supplement 2), Indian Council of Agricultural Research New Delhi. 2004; pp286.

4. Dasgupta M, Lokshin M, Gragnolati M, Ivaschenko O. Improving Child Nutrition Outcome in India – Can the Integrated Child Development Services Program be More Effective? World Bank Policy Research Working Paper No. 3647.2005; World Bank, Washington, DC.

5. Hirpara P, Thakare N, Kele V D and Patel D, (2020). Jaggery: A Natural Sweetener, Journal Of Pharmacognosy And Phytochemistry 2020; 9(5): 3145-3148.

6. Rajaram S, Sunil TS, Zoharelli L K. An analysis of childhood malnutrition in Kerala and Goa. Journal of Biosocial Science. 2003; 335–351.

7. Rao GR, Ladusingh L, Pritamjit R. Nutritional status of children in North-East India. Asia Pacific Population Journal. 2004; 19, 39–56.

8. Sahu SK, Kumar SG, Bhat BV, Premarajan KC, Sarkar S, Roy G. Malnutrition among Under-Five Children in India and Strategies for Control. J Nat Sc Biol Med. 2015; 6:18-23.

9. Sawada K, Takemi Y, Murayama N, Ishida H. Relationship between rice consumption and body weight gain in Japanese workers: white versus brown rice/multigrain rice, University of Winnipeg, Japan, unpublished.2018; pp-1-18.

10. Ulimwengu J, Badiane O. Vocational training and agricultural productivity: Evidence from rice production in Vietnam, Journal of Agricultural Education and Extension.2010; 16(4), 399-411.

11. UNICEF. The State of the World's Children. UNICEF, 2001; New York.

12. World Bank. India, Undernourished children: A call for reform and action. Available from: hp://web.worldbank.org/Wbsite/External/Countries/Southasiaext/0,contentMDK:20 916955~pagePK: 146736~piPK: 146830~theSitePK. 2014;: 223547, 00.html.