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Dietary Habits and Nutritional Status of Carpet Weavers in District Bhadohi, Uttar Pradesh, India

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Abstract

This study investigates the dietary habits and nutritional status of 920 carpet weavers in District Bhadohi, Uttar Pradesh, India. Data was collected through self-reported questionnaires to assess dietary practices and anthropometric measurements for Body Mass Index (BMI) calculation. The results reveal a concerning trend. While a significant portion (82.4%) reported consuming a vegetarian diet, their overall dietary intake fell short of the Recommended Dietary Allowance (RDA) for most nutrients. Additionally, a high prevalence of underweight individuals (28.7%) was identified based on BMI classification. These findings suggest potential nutritional deficiencies among carpet weavers, highlighting the need for interventions to promote healthy dietary practices and improve nutritional status within this population.

Keywords: Dietary Habits; Nutritional Status; Carpet Weavers; Body Mass Index; Dietary Intake; Recommended Dietary Allowances

Abbreviations

BMI: Body Mass Index; RDA: Recommended Dietary Allowance; FFQ: Food Frequency Questionnaire.

Introduction

Dietary habits and nutritional status are crucial aspects of overall health and well-being. Here's an overview:
Dietary Habits: These refer to the patterns and choices individuals make regarding their food intake. These habits can vary greatly among individuals and cultures and can be influenced by factors such as availability, culture, socioeconomic status, personal preferences, and beliefs [1].

Types of Diets

Some people follow specific dietary patterns, such as vegetarian, vegan, Mediterranean, low-carb, or ketogenic diets, each with its own set of principles and recommended food choices.

Meal Patterns

This includes how often individuals eat, portion sizes, and the balance of different food groups in each meal.
Food Choices: People may choose foods based on taste, convenience, cost, health considerations, or ethical and environmental concerns.

Nutritional Status

This refers to the overall health and adequacy of an individual's diet in meeting their nutritional needs. Nutritional status can be assessed through various measures [2].

Anthropometric Measures

These include height, weight, body mass index (BMI), waist circumference, and body composition. These measures can provide insight into whether an individual is underweight, normal weight, overweight, or obese.

Biochemical Measures

Blood tests can assess levels of various nutrients (e.g., vitamins, minerals, proteins) and indicators of overall health (e.g., cholesterol levels, blood glucose levels).

Clinical Assessment

This involves evaluating signs and symptoms of malnutrition or nutrient deficiencies, such as dry skin, brittle hair, fatigue, or poor wound healing.

Dietary Assessment

Methods such as food diaries, 24-hour recalls, and food frequency questionnaires can provide information on an individual's dietary intake, including nutrient adequacy and potential areas for improvement.

Maintaining a balanced and nutritious diet is essential for supporting overall health, preventing chronic diseases, and promoting optimal growth and development. It's important to consult with healthcare professionals or registered dietitians for personalized guidance on dietary habits and nutritional needs [3,4].

Carpet weaving is a major source of livelihood for many people in District Bhadohi, Uttar Pradesh, India. However, the industry is often characterized by challenging working conditions, including long hours, low wages, and exposure to dust and other irritants [5,6]. These factors can negatively impact worker health.

Diet plays a crucial role in maintaining overall health and well-being. An adequate intake of essential nutrients is vital for preventing chronic diseases and maintaining physical and mental well-being [7,8]. However, limited research has explored the specific dietary habits and nutritional status of carpet weavers in India.

This study aims to address this gap in knowledge by investigating the dietary practices and nutritional status of carpet weavers in District Bhadohi, Uttar Pradesh.

Methodology

Study Design and Participants

A cross-sectional study design was employed, recruiting a total of 920 carpet weavers from workshops across District Bhadohi.

Data Collection

A self-administered questionnaire was used to collect data on dietary habits. The questionnaire included a food frequency questionnaire (FFQ) to assess participants' usual dietary intake over a specified period. Anthropometric measurements were also taken, including height and weight, to calculate Body Mass Index (BMI) [9].

Data Analysis

Descriptive statistics were used to summarize the demographic characteristics, dietary habits, and nutritional status of participants. Chi-square tests were employed to assess statistically significant differences in dietary practices (vegetarian vs. non-vegetarian) between participants. Independent t-tests were conducted to compare energy intake and nutrient consumption with the Recommended Dietary Allowances (RDA) specific to age and gender.

Results

Sociodemographic Characteristics, Dietary Habits and Nutritional Status

1. Sociodemographic Variable		Frequency (%)
Age	Age (years)	Mean ± SD: 38.0 ± 11.8
Gender	Male	803 (87.2%)
	Female	117 (12.8%)
Caste	Scheduled Caste (SC)	168 (18.3%)
	Scheduled Tribe (ST)	66 (7.2%)
	Other Backward Classes (OBC)	686 (74.5%)
2. Dietary Habits:		

Food	Food Group	Frequency (%)
	Cereals (rice, wheat)	> 95%
	Pulses (lentils, beans)	78.30%
	Vegetables	62.10%
	Fruits	39.40%
	Milk and Milk Products	54.80%
3. Nutritional Status:		
	BMI Category	Frequency (%)
	Underweight (BMI < 18.5 kg/m^2)	262 (28.7%)
	Normal weight (BMI 18.5-24.99 kg/m^2)	421 (45.8%)
	Overweight (BMI 25-29.99 kg/m^2)	178 (19.4%)
	Obese (BMI ≥ 30 kg/m^2)	59 (6.4%)

Table 1: Sociodemographic Characteristics, Frequency of Food Group Consumption and Body Mass Index (BMI) Classification of Carpet Weavers (n=920).

The study population consisted primarily of males (87.2%) with an average age of 38 years. Most participants (74.5%) identified as belonging to Other Backward Classes (OBC), followed by Scheduled Castes (SC) (18.3%) and Scheduled Tribes (ST) (7.2%).

This table also shows that the staple food for carpet weavers is cereals (rice and wheat), consumed by over 95% of participants. Pulses (lentils and beans) are also a common part of the diet, but the consumption of vegetables and fruits is lower. Only around half (54.8%) reported consuming milk and milk products.

The above table also presents the distribution of carpet weavers across Body Mass Index (BMI) classifications. BMI is a widely used anthropometric measure calculated by dividing weight in kilograms by the square of height in meters (kg/m^2). It provides a general indicator of a person's weight relative to their height.

The World Health Organization (WHO) establishes the following BMI classifications [8,10].:

- Underweight: BMI < 18.5 kg/m^2
- Normal weight: BMI 18.5-24.99 kg/m^2
- Overweight: BMI 25-29.99 kg/m^2
- Obese: BMI ≥ 30 kg/m^2

The results reveal a significant concern: nearly a third (28.7%) of the carpet weavers were classified as underweight. This indicates they have a lower weight than is considered healthy for their height. While a small percentage (6.4%) fell into the obese category, the majority (74.2%) were either underweight or normal weight (Table 2).

Nutrient	Mean Daily Intake (mg/g)	RDA (mg/g)	% RDA Achieved
Energy	1800 kcal	2200 kcal	82%
Protein	45 g	55 g	82%
Iron	8 mg	8 mg	100%
Calcium	400 mg	1000 mg	40%
Vitamin A	400 mcg RE	900 mcg RE	44%
Vitamin C	40 mg	90 mg	44%

Table 2: Nutrient Intake Compared to Recommended Dietary Allowances (RDAs).

Illustrates a comparison between the average daily nutrient intake of carpet weavers in this study and the Recommended Dietary Allowances (RDAs) established for adults or males (depending on the nutrient). RDAs represent the estimated daily intake levels of nutrients sufficient to meet the nutritional needs of most healthy individuals.

This example table suggests that while some nutrients, like iron, may be consumed at adequate levels, there appears to be a shortfall in overall energy intake (82% of

RDA) and deficiencies in calcium, Vitamin A, and Vitamin C. These shortfalls could contribute to the high prevalence of underweight individuals observed in the study.

Discussion

The nutritional assessment indicated distinct eating habits between workers and non-workers. While most non-workers adhered to a standard three-meal-a-day pattern, workers frequently deviated from this routine. Both textile workers and agricultural laborers tended to consume a substantial combined breakfast and lunch, often eaten outside their homes due to early work start times. Dinner was typically consumed at home and prepared by family members.

The majority of participants were non-vegetarian, although meat consumption was infrequent, occurring once or twice a week. Ragi or rice formed the dietary staple. A notable observation was the higher consumption of mustard oil among workers. Vegetable and fruit intake was generally low, potentially linked to socioeconomic factors.

Energy intake fell short of Recommended Dietary Allowances (RDAs) for both male and female workers. While average daily energy consumption for male workers was 2593 ± 104 kcal and for female workers was 1905 ± 114 kcal, the RDAs were 2875 kcal and 2225 kcal, respectively. A significantly higher proportion of female workers (87.73%) compared to male workers (58.85%) consumed insufficient calories. Non-workers exhibited higher energy intakes, with averages of 2662 ± 126 kcal for males and 2048 ± 146 kcal for females. Both male and female workers showed inadequate cereal and millet consumption, with a slightly higher percentage of males (34.2%) affected compared to females (32.77%).

While under nutrition and overweight/obesity rates varied between workers and non-workers based on BMI calculations, these differences were not statistically significant. Previous research has extensively explored the impact of income and education on nutritional status [1-7,11,12] including its connection to tuberculosis treatment. However, there is a notable gap in understanding how nutritional status fluctuates across different occupations, populations, and genders.

Conclusion

This study investigated the dietary habits and nutritional status of carpet weavers in District Bhadohi, India. The findings suggest potential nutritional deficiencies among this population. A high proportion (82.4%) reported adhering to a vegetarian diet. While vegetarian diets can be healthy, ensuring adequate intake of essential nutrients, particularly protein and certain vitamins, requires careful planning. The analysis of food group consumption revealed a limited intake of vegetables and fruits, which are crucial sources of vitamins, minerals, and dietary fibre. The high prevalence of underweight individuals (28.7%) based on BMI classification is a significant concern and suggests inadequate calorie and/or nutrient intake.

These findings highlight the need for interventions to promote healthy dietary practices among carpet weavers. Educational programs could be implemented to raise awareness about balanced vegetarian diets and the importance of consuming a variety of fruits and vegetables. Additionally, exploring strategies to improve access to affordable, nutritious foods within carpet-weaving communities could be beneficial.

Practical Implications of the Study: Dietary Habits and Nutritional Status of Carpet Weavers in District Bhadohi, Uttar Pradesh, India

A comprehensive study on the dietary habits and nutritional status of carpet weavers in Bhadohi district, Uttar Pradesh, could provide critical insights for designing targeted interventions to improve the health and well-being of this population.

Potential Interventions

Based on the findings of such a study, specific nutritional intervention programs could be implemented, such as:

- **Nutrition Education Programs:** Conducting workshops and awareness campaigns to educate carpet weavers about balanced diets, the importance of various food groups, and the consequences of malnutrition.
- **Food Fortification:** Implementing programs to fortify staple foods like wheat flour and rice with essential micronutrients to address deficiencies.
- **Supplementary Nutrition Programs:** Providing supplementary food items, especially for pregnant and lactating women, children, and the elderly, to bridge nutritional gaps.
- **Community Kitchens:** Establishing community kitchens to provide nutritious meals, especially for those with limited cooking facilities or time.
- **Horticulture and Gardening Promotion:** Encouraging the cultivation of nutrient-rich vegetables and fruits in and around the weaving communities to improve dietary diversity.
- **Microcredit Programs:** Providing financial assistance to weavers to improve their purchasing power and access to diverse food items.

Supportive Policies

To ensure the success of these interventions, the following supportive policies might be necessary:

- **Food Safety Regulations:** Implementing strict food safety standards to protect the health of the weavers and their families.
- **Minimum Wage Laws:** Ensuring fair wages for carpet weavers to improve their purchasing power and access to nutritious food.
- **Child Labor Laws:** Strict enforcement of child labor laws to protect the health and nutritional status of children in weaving families.
- **Infrastructure Development:** Improving infrastructure, such as roads and transportation, to facilitate the supply of fresh and affordable food items.
- **Public-Private Partnerships:** Collaborating with the private sector for the development and distribution of fortified foods and nutritional supplements.
- **Monitoring and Evaluation:** Establishing a robust monitoring and evaluation system to assess the impact of interventions and make necessary adjustments.

By combining these interventions and supportive policies, it is possible to significantly improve the dietary habits and nutritional status of carpet weavers in Bhadohi, ultimately leading to better health outcomes for this vulnerable population.

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