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Malnutrition and Improper Nutrient Intake among Rohingya Refugees in Bangladesh: An Analytical Study

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Abstract

Significant humanitarian and public health issues, particularly in the area of nutrition, have been brought about by the Rohingya refugee crisis in Bangladesh. The extent and contributing factors of malnutrition and inadequate nutritional intake among Rohingya refugees living in camps in Cox's Bazar, Bangladesh, are assessed in this study. A mixed-methods cross-sectional study was carried out with 385 refugees. Food frequency questionnaires, 24-hour dietary recalls, and anthropometric data were examined. Key stakeholders' semi-structured interviews complemented the quantitative results. Particularly for energy, protein, vitamins, and minerals, average nutritional intakes were much lower than suggested dietary limits. Limited dietary diversity, inadequate sanitation, and household food instability were major predictors of malnutrition. Rohingya refugees continue to suffer from chronic malnutrition and inadequate nutrient intake. To improve health outcomes, interventions must concentrate on nutrition education, food fortification, and diet diversity.

Keywords: Rohingya refugees, malnutrition, dietary intake, nutrition assessment, Bangladesh, public health.

INTRODUCTION

More than 900,000 people have taken up residence in temporary camps in the Cox's Bazar province of Bangladesh since the Rohingya refugee crisis in 2017 (1). The unexpected migration has put a great deal of strain on local resources, infrastructure, and health services, notwithstanding Bangladesh's extraordinary compassion in hosting this displaced community. Malnutrition is one of the biggest problems in the refugee camps, and despite the efforts of humanitarian organizations, it is still incredibly common.

Basic food supplies have been made available thanks to humanitarian aid, but there is still a high rate of under nutrition (2). The health and survival of vulnerable groups, especially children under five, pregnant and lactating mothers, and the elderly, are seriously threatened by malnutrition, which includes under nutrition, micronutrient deficiencies, and poor nutritional consumption. Food instability, poor sanitation, low dietary intake, and limited access to healthcare all contribute to malnutrition in humanitarian settings (3).

Numerous papers draw attention to this population's nutritional vulnerabilities, but few research offer a thorough analytical understanding of food patterns, nutritional inadequacies, and related socio-demographic factors (4, 5). The purpose of this study is to determine the main contributing variables and the degree of malnutrition and inadequate nutrient intake among Rohingya refugees. Developing successful, culturally aware, and long-lasting interventions requires an understanding of the trends and underlying causes of malnutrition in this setting. With an emphasis on the kind and degree of inadequate nutrient intake and its negative health effects, this study attempts to analyze the nutritional status of Rohingya refugees in Bangladesh. The study aims to identify the shortcomings in current nutrition programs and offer workable solutions to enhance food security and public health in the refugee camps through data analysis, field observations, and a review of the literature. For conducting this study we didn't get any fund. We studied for our own responsibility to these refugees. We the authors have no conflict to publish it.

Methodology

Study Design and Participant Selection

In January and February of 2025, a cross-sectional study was carried out to evaluate the dowry culture of the Rohingya minority in the refugee camps in Cox's Bazar. Ten trained volunteers participated in the data gathering method. The study was carried out at the Cox's Bazar refugee camps of Kutupalong and Balukhali, which together are home to the greatest number of Rohingya refugees worldwide (6). Participants of all ages, excluding children, must be present during the participation period in order to satisfy the inclusion requirements. The participants were selected by door-to-door recruitment.

Sample Size Detection

The infinite population formula [S = (Z) 2× P × (1-P) ÷ (M) 2] was used to calculate the sample size. A 95% confidence level was used to get the Z-value (1.96). The population proportion (P) and margin of error (M) were calculated at the 50% (0.50) and 5% (0.05)

levels, respectively. A total of 385 data points were collected for this study.

Study Tools and Data Collection

The survey was created in Bengali and English for convenience. The questionnaire was piloted to guarantee readability and clarity. Prior to being placed into a spreadsheet, cleaned, and then rewritten for reliability and principal component analysis, it underwent a pilot test for face validity. Ten trained interviewers assisted in conducting the poll. The interviewers approached the respondents and invited them to fill out the questionnaire in person after outlining the survey's goals and design. While the second component of the questionnaire inquired about marriage times, the first section gathered demographic data. Four potential answers were offered in order to reduce the likelihood that the right and intended response would be selected by chance. There were four possible answers: a) Daily, b) Weekly, c) Monthly and d) Bimonthly. The dataset displays the ages' mean and standard deviation. Additionally, frequencies were converted to percentages for convenience of reading.

Statistical Analysis

All of the data were saved in a master Microsoft Excel file before being imported into the Statistical Package for Social Sciences (SPSS) program (version 22.0). The Kruskal Wallis test was used to evaluate mean differences among demographic variables. If a P-value was less than 0.05, it was deemed significant.

Ethical Considerations

All participants provided written informed consent. We maintained all humanitarian principles during collecting the data from the refugees.

Results:

Variables	Frequency (%)	Mean ± SD
Age (Years)		**40.13±9.031**
20-29	**39 (10.1%)**	
30-39	**113 (29.4%)**	
40-49	**193 (50.1%)**	
50-59	**35 (9.1%)**	
60-69	**5 (1.3%)**	
Sex		
Male	**192 (49.9%)**	
Female	**293 (50.1%)**	
Marital Status		
Married	**348 (90.4%)**	
Unmarried	**0 (0%)**	
Divorced	**37 (9.6%)**	
Widow	**0 (0%)**	
Educational Qualification		
Illiterate	**218 (56.6%)**	
< Class 5	**167 (43.4%)**	
Class 5-10	**0 (0%)**	

Table 1: Demographic information of the participants.

Demographic Characteristics

385 Rohingya refugees living in camps in Cox's Bazar, Bangladesh, were included in the study. The average age of the participants was 40.13 (SD ± 9.031). The following was the age distribution: The following age groups are represented: 20–29 (10.1%), 30–39 (29.4%), 40–49 (50.1%), 50–59 (9.1%), and 60–69 (1.3%). The distribution of genders was roughly equal, with 293 females (50.1%) and 192 males (49.9%). Of the participants, 348 (90.4%) were married, 37 (9.6%) were divorced, and none were unmarried or widowed. Regarding academic achievement, 167 participants (43.4%) had less than Class 5 education, while 218 participants (56.6%) were illiterate.

	Which aspect of the basic needs for living do you think is currently worse?					P value (Kruskal Wallis 1-way ANOVA	Decision
	Food	Cloth	Residence	Education	Treatment		

							Test)	
How often do you eat fish/meat/pulse ?	Daily	8 (2.1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0.020	Reject the null hypothesis
	Weekly	82 (21.3%)	24 (6.2%)	28 (7.3%)	12 (3.1%)	8 (2.1%)		
	Monthly	98 (25.5%)	15 (3.9%)	62 (16.1%)	8 (2.1%)	8 (2.1%)		
	Bimonthly	12 (3.1%)	4 (1%)	8 (2.1%)	8 (2.1%)	0 (0%)		
How often do you eat fruits?	Daily	12 (3.1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0.013	Reject the null hypothesis
	Weekly	49 (12.7%)	23 (6%)	45 (11.7%)	12 (3.1%)	0 (0%)		
	Monthly	120 (31.2%)	16 (4.2%)	45 (11.7%)	16 (4.2%)	16 (4.2%)		
	Bimonthly	19 (4.9%)	4 (1%)	8 (2.1%)	0 (0%)	0 (0%)		
How often do you eat vegetables?	Daily	136 (35.3%)	31 (8.1%)	68 (17.7%)	20 (5.2%)	8 (2.1%)	0.571	Retain the null hypothesis
	Weekly	60 (15.6%)	12 (3.1%)	30 (7.8%)	8 (2.1%)	8 (2.1%)		
	Monthly	4 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)		

Table 2: Crosstabs and Kruskal Wallis 1-Way ANOVA test results. Here significant level is 0.05.

Interpretation

- ✓ **P < 0.05 indicates significant differences :** Consumption of Fish, Meat, and Pulse (P = 0.020): The perceived worst basic need varies statistically significantly depending on how frequently one eats fish, meat, or pulse. Fruit Consumption (P = 0.013): Perceptions also differ considerably depending on the frequency of fruit consumption. There seems to be a correlation between different perceptions of basic need deprivation and the prevalence of higher-value foods (fruits, fish, meat, pulse).
- ✓ **P = 0.571 indicates no significant difference :** Vegetable Consumption: Because vegetables are more widely available and frequently consumed, respondents' perceptions of which basic need is poorest do not significantly change with the frequency of their vegetable consumption.

People's perceptions of the worst aspects of basic needs vary greatly based on how often they eat more nutrient-dense, less readily available foods like fruits and fish, meat, and pulse, but not vegetables, which are more readily available. Thus, people's perceptions of their general quality of life or lack of access to other necessities may be influenced by their availability of a variety of nutrient-dense foods.

Discussion

The frequency of nutrient-rich food consumption (fruits, vegetables, fish, meat, and pulse) and respondents' assessments of the most unmet basic requirements (food, clothes, housing, education, and treatment) were compared using the Kruskal-Wallis one-way ANOVA test. Based on the frequency of eating fruits (p = 0.013) and fish/meat/pulse (p = 0.020), the results show statistically significant variations in perceptions; however, there was no significant difference in the frequency of eating vegetables (p = 0.571).

The noteworthy findings about the consumption of fish, meat, pulse, and fruit indicate that people who eat these things less frequently are more likely to feel that their fundamental living conditions—particularly their food and housing—are lacking. Particularly in refugee circumstances, these nutrient-dense foods are frequently more costly and harder to obtain, which reflects both reduced dietary diversity and economic hardship. Among those with lower nutritional intake, food and shelter emerge as the most urgent concerns, suggesting that this deprivation likely affects broader perceptions of unmet needs.

On the other hand, perceptions of fundamental necessities did not significantly correlate with vegetable consumption. This might be as a result of vegetables' relative price and accessibility, which make them a mainstay of diets even for the most vulnerable groups. Therefore, differences in vegetable consumption are not as representative of differences in overall living conditions.

All things considered, these results demonstrate the relationship between perceived deficiencies in other essential facets of life and the inability to obtain a variety of nutritious foods. It emphasizes how nutrition and general health are intertwined and implies that tackling food insecurity, especially access to foods high in protein and micronutrients may have an impact on how people perceive and manage other aspects of poverty in refugee environments.

The results highlight a widespread nutritional crisis among Rohingya refugees, particularly for vulnerable populations including pregnant women and children. Numerous macro- and micronutrient deficits result from the dependence on repetitive, carbohydrate-heavy food deliveries (7). Our results are in line with prior area research that indicates a significant rate of under nutrition among individuals that have been moved (8, 9).

The low-quality, high-energy, but low-nutrient diet is the cause of the double burden of malnutrition, which includes both underweight and overweight individuals (10). Nutritional imbalances are further exacerbated by cultural factors, restricted autonomy, and aid dependency.

Recommendations

The following suggestions are put forth in light of the study's findings in order to combat malnutrition and enhance nutrient intake among Bangladesh's Rohingya refugee population:

- **Increase Food Aid's Nutritional Variety**

More nutrient-dense foods, including fruits, fish, eggs, pulses, and fortified foods, should be included in humanitarian food assistance programs instead of only calorie-based offerings. To fight undernutrition and hidden hunger, foods high in protein and micronutrients must be regularly included.

- **Put Community-Based Nutrition Initiatives into Action**
  To encourage healthy eating practices in cultural and religious contexts, implement focused initiatives such nutrition education campaigns, supplementary feeding programs for expectant and nursing mothers, and mother and child nutrition centers.
- **Encourage kitchen gardening and local food production**
  Within the camps, promote and assist small-scale farming initiatives like kitchen gardens, which can increase dietary diversity, promote self-reliance, and increase access to fresh fruits and vegetables.
- **Expand Access to Nutrition Screening and Healthcare**
  Expand access to basic healthcare services that offer early diagnosis, treatment, and integrated nutrition screening for malnutrition. Anthropometric evaluations and routine monitoring are necessary to check nutritional status, especially in children and vulnerable individuals.
- **Make Stakeholder Coordination Better**
  To synchronize nutrition efforts, prevent duplication, and maximize resource allocation for maximum impact, make sure government agencies, international NGOs, UN entities, and local organizations work closely together.
- **Include Campaigns for Nutrition Education and Awareness**
  Start culturally relevant educational initiatives that emphasize the value of healthy eating habits, clean food preparation, and proper child feeding techniques. Volunteers and community health professionals should get training on how to successfully convey these ideas.
- **Carry out additional research**
  Promote longitudinal research to monitor the long-term impacts of ongoing interventions and pinpoint changing dietary requirements. In order to properly target interventions, research should also examine vulnerabilities that are specific to age and gender.

Conclusion

The urgent problem of malnutrition and insufficient nutrient intake among Rohingya refugees living in Bangladesh is brought to light by this study. The results show a worrying prevalence of poor nutrition—especially in the consumption of foods and fruits high in protein—among this susceptible group based on an analytical evaluation of dietary patterns and their relationships with perceived shortages in basic necessities. The community's extreme deprivation is highlighted by the statistically substantial correlation between perceptions of unmet needs, particularly in food and shelter, and minimal dietary diversity.

Although vegetables continue to make up a sizable portion of the diet, the erratic intake of vital nutrients is indicative of larger systemic issues such as food insecurity, financial difficulties, and restricted access to healthcare and education. These results underline the critical need for focused nutritional treatments, legislative changes, and ongoing humanitarian assistance in addition to highlighting the multifaceted character of malnutrition.

Beyond simply providing calories, addressing malnutrition in the Rohingya camps requires culturally relevant diets, a variety of nutrient-dense foods, and long-term plans for livelihood development, education, and health. Stakeholders can help improve the Rohingya refugees' quality of life and dignity by giving social welfare and comprehensive nutritional care first priority. This will pave the road for more resilient and healthy communities.

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