An Investigation into the Nutritional Condition of Children at a Specific School in Ernakulam, Kerala

Mrs. Rojalin Dash[1] and Mr Sathish Rajamani[2]

1. Assistant Professor, School of Nursing - DRIEMS University

2. Professor, School of Nursing - DRIEMS University

Corresponding author email id: rojalinjena1702@gmail.com

Abstract

Background of the Study: Children represent the foundation of a nation's future; thus, protecting their health is crucial for sustainable development within the country. Malnutrition remains a significant threat to child health, especially in developing areas. **Aim:** The objective is to evaluate the health status of school children and explore the relationship between their nutritional condition and certain demographic variables. **Materials and Methods:** A cross-sectional study was carried out involving 86 students at St. Joseph School in Ernakulam, Kerala, chosen through a convenience sampling method. Data collection utilized a structured instrument that included demographic information and a checklist for nutritional assessment. Statistical analysis was conducted to determine the relationships between nutritional status and demographic factors. **Results:** The outcomes indicated that 32.4% (28) of the children experienced grade I malnutrition, while 23% (20) had grade II malnutrition. Statistical evaluation revealed a significant correlation between nutritional status and factors such as age (χ^2=3.15, P=2.05), gender (χ^2=4.05, P=0.06), religion (χ^2=0.12, P=0.25), and monthly family income (χ^2=20.28, P=12.59) at the 0.05 level of significance. **Conclusion:** The study highlights a notable prevalence of malnutrition among school-aged children and its connection to sociodemographic factors. These results stress the importance of implementing school-based nutritional programs and focused public health initiatives aimed at addressing the broader social determinants affecting child health.

Keywords: Malnutrition, Children's health, Nutritional assessment, Demographic variables, School children, Public health, Kerala.

INTRODUCTION

The nutrition of primary school children is critically important as it builds the basis for their lifelong health, strength, and ability to think. It is an important time for growth - both physical and mental. In India people eat many ways of nourishment but many are malnourished. Lacking

proper nutrition at a primary school age might cause improper physical or mental growth-- growth retardation, brittle nails and anemic complexion with iron-deficiency anemia, weak bones, decreased academic performance, and the beginning of psychosocial problems.

There are 151 million under-five children were found worldwide to be stunted in 2017, 51 million wasted and 38 million overweight.(which may imply an increasingly sedentary lifestyle?) According to National Family and Health Survey findings, the percentage of underweight kids in the rural areas is relatively high -- 38 percent -- while this number comes down dramatically (to 29%) for cities. Data from the State Hunger Index developed by International Food Policy Research Institute shows that 19% of children in Kerala are underweight. 28.6% of the whole population, on the other hand, is not getting enough food.

Need and significance of the study

Children are a precious gift from nature and the source of life. By ensuring their well-being, we contribute to the growth of families, nations, and the world. According to the National Family Health Survey IV, 38.4% of children in India experience stunted growth, 21% suffer from wasting, and about 35.7% are underweight. Ganganahalli (2016) conducted a cross- sectional study to evaluate the nutritional status of children attending private primary schools in western Maharashtra. Using a purposive sampling method, 176 students were selected, and data was gathered through a questionnaire. The findings indicated that 19.9% of the children were undernourished, 8% were classified as grade I short/stunted, while 10.2% were overweight, and 5.7% were obese.

Objectives of the study:

1. To analyze the nutritional status of children.
2. To investigate the relationship between children's nutritional status and demographic factors

HYPOTHESIS:

H_1: The study hypothesizes that a statistically significant relationship exists between children's health status and specific demographic variables under investigation.

METHODOLOGY:

In this study, a quantitative research approach was applied to food systems and a description survey method used to measure the nutritional condition of children at St. Joseph School, Ernakulam in Kerala. In total 86 students were taken using convenience sampling method and based on pre-determined inclusion and exclusion criteria. Data collection involved two types

of tools: a demographic questionnaire including age, gender, religion and monthly family income, another investigative tool was nutritional assessment done through anthropometric measurements which were classified using the Gomez classification. We made sure that this tool was trustworthy, and subject matter experts confirmed it. The instrument's reliability, as determined by a coefficient alpha test that returned the value 0.95 (Cronbach's alpha), lent support to those judgments Data were organized using school records and direct assessments, tests of descriptive statistics were run alongside inferential statistics to look at connections between nutritional status in demographic variables, With school records and direct evaluation data in hand, a cross utilization of both inferential and descriptive statistics was employed to explore the relationship between nutritional status and demographic data.

Data Analysis and Results:

Table 1: Distribution of children based on demographic variables

(N=86)

Demographic variables	Frequency (f)	Percentage (%)
Age in years		
3-5	40	46.5
5-7	30	34.8
7-9	16	18.7
Gender		
Male	44	51.1
Female	42	48.9
Religion		
Hindu	30	34.9
Muslim	15	17.4
Christian	41	47.7
Monthly family income		
Below Rs. 5000	15	17.4
Rs 5000-10000	16	18.7

Rs 10000-15000	40	46.5
Rs 15000 above	15	17.4

Table 1 outlines the demographic characteristics of the 86 participating children. In terms of age, the largest group (46.5%) was between 3 and 5 years old, followed by 34.8% aged 5 to 7 years, and 18.7% aged 7 to 9 years. The gender distribution was nearly equal, with males making up 51.1% and females 48.9% of the sample. Regarding religion, 47.7% identified as Christian, 34.9% as Hindu, and 17.4% as Muslim. Monthly family income data revealed that most participants (46.5%) came from households earning Rs. 10,000 to 15,000, while 18.7% earned Rs. 5,000 to 10,000, and 17.4% each fell below Rs. 5,000 or above Rs. 15,000. The age distribution indicates that the sample primarily consisted of early childhood students, underscoring the importance of nutritional screening during this critical developmental stage. The nearly equal gender representation supports a balanced gender-based analysis. The religious and income diversity within the sample provides an opportunity to explore how sociocultural and economic factors may influence nutritional outcomes.

Table-2: Distribution of children based on nutritional status

(N=86)

CATEGORY	FREQUENCY	PERCENTAGE
BOYS		
Normal	22	25.5
Grade I	14	16.2
Grade II	8	9.3
Grade III	0	0
Grade IV	0	0
GIRLS		
Normal	24	27.9
Grade I	12	13.9
Grade II	6	6.9

Grade III	0	0
Grade IV	0	0

Table 2: Distribution of Children Based on Nutritional Status This table splits children's nutritional level into so-called normal, low or high status. Normal weight Jinbei's percentage was 52%. Grade I malnutrition among Jinbei was 42.5%. In Grade II malnutrition, it was only 5.5%. In Grade III and Grade IV the would be similar No boys fell into these malnutrition categories. Normal weight in girls was 35%. In Grade I malnutrition such girls accounted for 38.1% and those with Grade II malnutrition 8.2 %. No girls fell into these severe malnutrition categories either. The findings show that a significant number of both boys and girls suffer mild to moderate malnutrition, although there were no severe cases of malnutrition. There were slightly more but not significant number of girls in the normal category when compared to boys, while severity of lesions at grade I and II was slightly greater in boys. This suggests the need of improved school-based nutrition surveillance and early interventions that could prevent them from turning into the severe form of nutritional status.

Table 3: Relationship between students' nutritional status and chosen demographic variables.

(N=86)

Variables	Normal f (%)	Grade I f (%)	Grade II f (%)	Chi square
Age				0.9
3-5	20(23.2)	12(13.9)	8(9.3)	
5-7	16(18.6)	10(11.6)	4(4.6)	
7-9	10(11.6)	4(4.6)	2(2.3)	
Gender				0.4
Male	22(25.5)	14(16.2)	8(9.3)	
Female	24(27.9)	12(13.9)	6(6.9)	

Religion				1.4
Hindu	15(17.4)	9(10.4)	6(6.9)	
Muslim	7(8.1)	6(6.9)	2(2.3)	
Christian	24(27.9)	11(12.7)	6(6.9)	
Monthly family income				20.2
Below Rs.5000	2(2.3)	7(8.1)	6(6.9)	
Rs.5000-10000	6(6.9)	6(6.9)	4(4.6)	
Rs.10000-15000	26(30.2)	10(11.6)	4(4.6)	
Above 15000	12(13.9)	3(3.4)	0	

Significance at p-value < than 0.05 level of significance

This table examines the connections between nutritional status and four demographic factors: age, gender, religion, and family income. The chi-square values reveal no statistically significant links for age ($\chi^2 = 0.9$), gender ($\chi^2 = 0.4$), and religion ($\chi^2 = 1.4$). In contrast, a notable chi-square value of 20.2 was observed for family income, indicating a possible association. Although age, gender, and religion did not exhibit significant correlations with nutritional status, monthly family income emerged as a significant determinant. Children from lower-income households, particularly those with earnings below Rs. 5,000, exhibited higher levels of malnutrition. This observation underscores the socioeconomic dimension of nutritional disparities and highlights the critical need for economic support and targeted nutritional programs for underprivileged families.

DISCUSSION

The findings were discussed based on study objectives and hypothesis. In the study of 86 children, boys showed 25.5% (22) normal, 16.2% (14) grade I malnutrition and 9.3% (8) grade II malnutrition. For girls, 27.9% (24) were normal, 13.9% (12) had grade I malnutrition and 6.9% (6) had grade II malnutrition. A similar study by **Sharma (2017)** in Moradabad assessed nutritional status of 300 primary school children. Results showed 83.4% had normal nutrition, 9.5% moderate malnutrition, 2.0% severe malnutrition, and 4.4% and 0.2% were overweight and obese respectively. Association between nutritional status and demographic variables showed significant correlation with monthly family income (calculated =20.2, table value =12.5) at 0.05 significance level. This supports **Banstola's (2013)** study of 290 primary school

children in Nepal, which found 44.2% underweight with significant association to family occupation ($\chi2=15.679$) and economic status ($\chi2=15.464$).

CONCLUSION

The present investigation reveals that, out of the 86 children studied, 46 were found to be undernormal nutritional status, 26 were suffering from Grade-I malnutrition and 14 were found to be affected with Grade-II malnutrition, which is a matter of serious concern. It was also showed that the demographic factors such as the family's monthly income, had effects on the children's status. Thus, the results were returned to the school authority, who initiated the health education and distribution of information leaflets on the importance of nutrition for growth and development of children.

REFERENCE

1. Ghada El Said Ali, Nagat S Habib, Gehan Ismail. Nutritional status among primary Governmental school students. Med J Cairo university. 2016 March; 84 (1): 157-65.

2. www.who.int/gho/child-malnutrition/en

3. https://www.legallyindia.com/malnutrition-in-india-the-national-nutrition-strategy

4. Mukesh Sharma, Bhaskar Watode, Anurag Srivastav. Nutritional status of primary school children through anthropometric assessment in rural areas of Moradabad. Annals of International Medical and Dental research. 2017 January; 3 (2): 1-3.

5. Saima Batool, Aneela Shaheen, Rabeya Rehman, Sabia Qamar, S Muhammad Ashan Raza, Rakshanda Jabeen et.al. To assess nutritional status of primary school children in pumi Bhumi village of Kaski district, Nepal. PJMHR journal. 2012 September; 6(3): 776-79.

6. Sanju Banstola. nutritional status of primary school children in pumi Bhumi village of Kaski district, Nepal. International journal of health science. 2015 May; 5(5): 1-5.

7. Polit D.F, Beck C.T. Nursing research generating evidence for nursing practice.8th edition, Philadelphia: J.B. Lippincott. Williams and Wilkins publishers; 2008.

8. Praveen Ganganhalli, Mahesh B Tondare, Prakash M Drgawala. Nutritional assessment of private primary school children in western maharashtra. National Journal of Community Medicine. 2016 February 29; 7 (2): 97-100.

9. Mehrotra Monika, Arora Santosh, Nagar Veenu. Nutritional health status of primary school children in Bareilly district. Indian educational review. 2011 January; 48 (1): 18-29.

10. Shahab Rezaeian, Jamal AhmadZadeh, Nader Esmailnasab, Yousef Veisani, Mina Shayan, Noorolah Moradi. Assessment of health and nutritional status in children based on school screening programs in sarvabad, a city in kurdistan province, Iran. Health Scope. 2014 February 17; 3 (1): 1-6.

11. Fatim Omer Nabag. Comparative study to assess nutritional status of urban and rural school girl's children in khartoum state, sudan. Journal of Science and Technology. 2011 December; 60-68.

12. Stella Ngozi Lemchi, Veronica C opera. Nutritional status of pre-school children in urban and rural areas of owerri north, Imo state, Nigeria. International Journal of Innovative Research and Development. 2015 September; 4(10): 70-77.

13. Mansur DI, Haque MK, Sharma K, Mehta DK, Shakya R, A study on nutritional status of rural school going children in kavre district. Kathmandu University Medical Journal. 2015 June; 13 (50): 146-51.

14. Ghad El- Said Ali, Nagat S Habib, Gehan M Ismail. Nutritional status among primary governmental school student's, cairo governorate. Medical Journal Cairo University. 2016 March; 84: 157-65.

15. Kaushik A, Richa, Mishra CP, Singh SP. Assess the nutritional status of rural primary school children and their socio demographic correlates. Indian Journal of Community Health. 2012; 24: 310-18.

16. Sandeep G Yankanchi, Praveen Ganganahalli, Rekha Udgiri, Shailaja S patil. Nutritional status of primary school children in urban field practice area, Vijayapura. International Journal of Community Medicine and Public Health. 2018 February 5; 5 (2): 779-83.

17. M Kamran Shaikh, Nitin Kamble, Dhiraj Bhawani, Samir Bele, Sita Ram Rao. nutritional status among school children of Karimnagar, Telangana, India. Medical Journal Cairo University. 2016 March; 84: 157-65.