



COMPARATIVE ASSESSMENT THE NUTRITIONAL STATUS AMONG SCHOOL GOING CHILDREN OF EMPLOYED AND UNEMPLOYED MOTHERS: A STUDY IN SELECTED SCHOOLS OF NEPALGUNJ, BANKE, NEPAL

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Abstract

The science of nutrition focuses primarily on how nutrients contribute to human growth, development, and maintenance. Nutrition is the study of the relationship between diet and health. The goal of healthy nutrition is to keep people in a nutritional state that promotes growth and optimum health. The six to twelve year old school going is a vital time for children's physical and intellectual development. The socioeconomic standing of families, community social well-being, community access to quality healthcare, and environmental influence are all significant determinants of children's health. Malnutrition can be prevented using a variety of strategies if it is seen as a problem in human ecology. This study's goal was to assess the nutritional status of school going children in Nepalgunj, Banke, whose mothers were employed or unemployed and attended selected schools. The study used a descriptive comparative research approach, and 120 students from Nepalgunj, Banke were chosen using stratified random selection. A systematic questionnaire that was self-developed was used to gather the data. The study's findings indicated that children with underweight (51.6%) were more common among children of employed moms than of jobless mothers (20%). However, children of unemployed moms (43.3%) had a higher prevalence of normal weight children than did children of employed mothers (25%). The body mass index (BMI) of the children was found to be correlated with the type of school and maternal job level, with P-values of <0.001 and <0.02 respectively. Children's nutritional status is a critical component of their growth and development. According to this study, children of employed moms were less likely to be underweight, whereas those of jobless mothers were typically sized. Children's BMI was correlated with the work position of the mother and various school kinds, including public and private schools. When developing treatments to improve children's nutritional status, these elements should be taken into account.

Keywords: Nutrition, School-age children, Employed and unemployed mothers, Underweight, BMI, Public schools, Private schools



Introduction

The knowledge of food and its connection to human health can be summed up as nutrition. It focuses primarily on the role that nutrients have in the growth, development, and maintenance of the body. Maintaining a healthy nutritional status that supports healthy growth and development is the definition of excellent nutrition (Park, 2015). According to Todhunter (1970), nutritional status is the state of a person's health as it is affected by their nutrient intake and utilisation. Theoretically, consuming an adequate amount of calories, vital minerals, and other food ingredients (such dietary fibre) that are free of toxins or other pollutants should result in optimal nutritional status (Tim et al., 1990; Shahid, Asif, & Pasha, 2022).

A disease created by humans is malnutrition. It affects human cultures as a whole. It frequently starts in the womb and ends in death. Malnutrition can be viewed as a problem in human ecology, which opens the door to a range of preventative strategies. Malnutrition is a condition of slowed physical growth or a particular clinical illness brought on by a persistent deficiency in one or more nutrients. It is the deteriorating health consequence brought on by nutrient deficiencies, excesses, or imbalances. The population groups who are most prone to be undernourished are infants, young children, teenagers, pregnant women, and the elderly (Joshi, 2012). The most prevalent types of malnutrition in Nepal include iron deficiency anaemia, iodine deficiency disease, vitamin A deficiency, and protein energy malnutrition (Joshi, 2012).

The various types of malnutrition are:

- a) **Under nutrition:** It results after the insufficiency of food consumed over prolonged time. It is called starvation in extreme cases. (Burgess, 2016)
- b) **Over nutrition:** This pathological condition is brought about by the intake of too much amount of food over an extended period of time. Over nutrition attributes to obesity, atheroma and diabetes in people. (Burgess, 2016)

Undernutrition, morbidity, poverty, and food insecurity in Nepal are caused by a dearth of access to basic education and basic health facilities, poor hygiene and dietary habits, a vulnerability to natural disasters, the distribution and quality of land, the level of infrastructure development, and employment prospects (UNICEF and World Bank, 2014). According to WHO estimates, malnutrition contributes to over half of the 10.7 million annual child deaths among children under the age of five (Pramod Singh et al., 2009).

School age from 6 to 12 years old is a vibrant age for bodily growth and intellectual development and growth of the child (Boma et al., 2014). Balanced nutrition is vital for school children. However, the nutritional status of school going children is quiet lacking for the reason that the nutritional needs of infants, toddlers and pregnant women are only focused (Shrestha et al., 2020).



Nutritional status of children reveals and reflects the socioeconomic position of the family, social wellbeing, and proficiency of the health care system of the community as well as the effect of the surroundings upon children (Boma et al., 2014). Poverty and ignorance are underlying factors of malnutrition and malnutrition is the most common reason of diseases and mortality among children in developing and under-developed countries (Boma et al., 2014). Apart from being caused by biomedical reasons, malnourishment is deep-rooted in poverty and disadvantaged public settings. (Pramod Singh et al., 2009). Protein energy malnutrition is responsible for more than half of all child deaths in Nepal as it possess a severe risk to the existence of young children (Asser & Mohammed, 2020).

During the school ages, malnutrition may hinder a child's physical and intellectual development and growth. Low height for age, or stunting, can have long-term effects on a person's intelligence and academic performance as well. It also has a connection to adult body size decrease, diminished job capacity, and obstetric challenges. The effects of thinness (low BMI-for-age) in school going children include delayed maturation, impairments in physical strength, working aptitude, and lower bone density in later stages of life (Best et al., 2010).

Rational of the Study

Physical and mental developments are impaired during childhood as a result of malnutrition at premature age. Undernourishment affects school performance and often leads to poorer earnings as a grown-up (WFP, 2018). The school going children gain education either from private or public schools. Higher income families are likely to admit their children to private schools whereas less privileged people tend to admit their children in public schools. However, in both categories of schools, nutrition education seems to be lacking. Although the families have enough funds for balanced and nutritious food, they lack knowledge about nutrition and the balanced diet, causing malnourishment in the kids.

In 2017, a cross-sectional study was carried out in Enugu, Nigeria, 2616 children concerning the ages of 6 to 12 years old were included in the study's samples. According to the survey, the majority (78.9%) fell into the category of normal growth. According to Eze et al. (2017), 9.3%, 6.3%, 4.4%, and 0.9% of the children had wasted, were overweight, were obese, or were underweight. In 2021, a community-based cross-sectional survey was conducted with a sample size of 1012 students in Sri Lanka. According to the study's findings, wasting was observed in 30.6% of boys and 29.1% of girls who met the WHO's 2007 guideline for BMI for age. Similarly, 6.3% of the population was obese and 11% of the population was overweight Boys (4.2%) were more likely than females (2.1%) to be obese, which showed a significant difference (Sathiadas et al., 2020).

A descriptive cross-sectional study done in Pokhara in 2020 showed that 12.49% of the students were overweight and 5.03% were thin (Maskey et al., 2020). A cross sectional study was done to identify the determinants of nutritional status in western Nepal with a sample size of 786



students in 2011 found that 26% of the students were found to be undernourished. The prevalence of under nutrition was quite high in Lumbini province i.e. 39% stunting, 11.8% wasting and 24.4% underweight (Ministry of Health and Population (MOHP, 2016).

As a growing metropolis, the sub-metropolitan area of Nepalgunj lacks research on the nutritional health of children. As a result, the goal of this study is to evaluate the nutritional status and related variables among primary school students so that it may be used as a guide when prioritising needs and developing nutritional programmes.

Significance of the Study

The current is significant in the following ways;

- Help school children to know their nutritional status.
- Determine the issues related to nutrition, care practices and feeding behaviour of this community.
- It will be helpful for researchers to continue further with qualitative component for explore more on this topic.
- This assessment will increase the knowledge of stake holder working in the Nepalgunj to develop the future work plan in this statement.

Objective of the Study

The main objectives of the study are as under;

- To evaluate the nutritional status of students attending particular schools in Nepalgunj, Banke.
- To evaluate the nutritional status of school-age children of mothers with and without jobs using the BMI and the Nutritional Assessment Scale.
- To determine if the socio-demographic factors chosen by the mothers of school-aged children who are working or jobless are associated with their nutritional condition.

Hypotheses

At a significance threshold of 0.05, all hypotheses will be evaluated.

H₁ = There is a no significant association between nutritional status among school going children of employed and unemployed mothers.

H₂ = There is a significant association between nutritional status among school going children of employed and unemployed mothers in connection with selected socio-demographic variables.

Assumptions



The nutritional status of school going children of unemployed mothers may be healthy compared to employed mothers.

Study Variables

This study have two types of variables, research variable and demographic variables. Which are as under;

- a. Research Variable.** Nutritional status of school going children of mothers who are employed and unemployed.
- b. Demographic Variables.** Age, gender, family income, school type, education of mother, birth order, maternal employment status.

Delimitations

The delimitations of the study are as under;

1. School going children of employed and unemployed mothers were only be the participants.
2. School student of age between 6 to 12 years will only be included.
3. Only those respondents who are willing to participate.

Literature Review

To fully understand the issues surrounding the study, many associated literatures were carefully read. In order to learn more about the study topics, a systematic search of published work is known as a literature review. Reviewing a variety of available research articles, scholarly journals, books, text books, thesis reports, essays, etc. in both electronic and paper editions allowed for the collection of literature relevant to the study. Through the use of academic research library databases like Scopus, PubMed, Web of Science, Google Scholar, Science Direct, Directory of Open Access Journals (DOAJ), etc., an Internet search for electronic resources has been conducted while carrying out the study.

The study of nutrition focuses on how food interacts with an organism to maintain and advance health and wellbeing. Nutrition is the sum of all mechanisms by which all bodily organs get and use the substances or nutrients required for their operation as well as for the growth and regeneration of all components (Joshi, 2012). In particular, food-related deficiency illnesses are prevented and maintained by proper nutrition (WHO, 2020).

The term "malnutrition" refers to the effects of insufficient, excessive, or improper calorie and/or nutrient intake. Malnutrition refers to two main categories of illnesses. The first one covers undernutrition, which encompasses micronutrient deficiencies, stunting (low height-for-age), wasting (low weight-for-height), and underweight (low weight-for-age). Overweight and obesity are among the other (WHO, 2020). Undernutrition results from the inability to consume or absorb



enough nutrients to meet an individual's needs for energy, for growth, or to maintain a strong immune system. When the body does not get one or more necessary micronutrients, micronutrient deficiencies occur (Burgess, 2016).

In order to assess the nutritional status of school-age children in the Abakalika metropolitan, Nigeria, a descriptive cross-sectional research of 780 children, ages 6 to 12, was conducted in 2020. Participants were chosen using a random selection approach. The study employed a self-developed structured questionnaire. According to the study, undernutrition was present in 15.7% of people, whereas over nutrition was present in 2.1% (Umeokonkwo et al., 2020). In 2017, a cross-sectional survey conducted at schools in the Fayoum Governorate, Egypt, with a sample size of 736 pupils, sought to uncover malnutrition and related causes among rural school children. Samples were chosen by simple random sampling. 14.9% of students were judged to be over nourished. According to Abdel Wahed et al. (2017), fathers who were younger and had jobs had a higher chance of developing malnutrition by 0.75 and 2.21 times, respectively.

In 2017, a community-based comparison research was conducted in Adama town, central Ethiopia, to determine the nutritional health of children under the age of five, as well as the job status of mothers. In 2017, a sample of 319 non-employed moms and 319 employed mothers was drawn using a multistage sampling procedure. The prevalence of stunting, underweight, and wasting was found to be 33.8%, 12.6%, and 8.3%, respectively, according to the study findings (M et al., 2017).

In 2015, a cross-sectional study methodology was utilised to assess undernutrition and related variables among schoolchildren in Addis Abeba, Ethiopia. The research comprised 459 school-age children who were chosen at random. The prevalence of undernourished children was 30.9%, with variables such as high birth order (>2) having a 2.14 times greater probability of suffering from malnutrition and working mothers having a 1.89 times higher chance of suffering from malnutrition (Degarege et al., 2015).

A descriptive cross-sectional research was conducted in Dagoretti, Nairobi, Kenya, from November 2009 to February 2010. 208 pupils aged 4 to 11 years old from four public elementary schools were chosen at random. Among the children polled, 24.5% were stunted, 14.9% were underweight, and 9.7% were wasting. Boys were stunted in greater numbers than females. Malnutrition levels were high among schoolchildren as well as children under the age of five, according to this study (Mwaniki & Makokha, 2013).

In order to understand the nutritional condition and eating habits of students aged 6 to 12 enrolled in both public and private elementary schools in Zagazig, Egypt, a study was carried out. According to the WHO standard, kids attending private schools had higher mean BMIs, greater rates of obesity and overweight, and higher rates of underweight than students attending public schools (18.7% vs. 7.5%). In comparison to 27.4% of students in private schools, more than half of pupils in public schools (52.7%) had small statures (El-Sabely, Tork, & Hussien, 2013).



In order to determine the nutritional condition of school-age children in the northern region of the nation in 2021, a community-based cross-sectional study was conducted. Students were chosen using multistage stratified proportionate cluster sampling. According to the study's findings, stunting was present in 10.9% of boys and 11.8% of girls based on their height for age. Wasting was observed in 30.6% of boys and 29.1% of girls based on BMI for age WHO standard (WHO, 2007). According to Sathiadas et al. (2020), 6.3% of the population was obese and 11% of the population was overweight.

In order to evaluate the nutritional status of schoolchildren in rural and urban areas of Bankura, West Bengal, an observational cross-sectional study based at schools was carried out in 2018. The study involved 80 schoolchildren in all. The study's included pupils were chosen at random. According to the study's findings, 65% of people were underweight overall (Karak et al., 2018). A cross-sectional study was conducted in Sri Lanka in 2017 with a sample size of 547 kids aged between one and fifteen years to determine the nutritional condition and associated socioeconomic determinants among preschool and school children in plantation villages. A systematic random sampling was used, and it revealed that a large percentage of youngsters (35.6%), stunted (26.9%), and wasting (32.9%). However, only a tiny percentage of kids were fat (3.1%) and overweight (2.7%). Malnutrition is increased by 6.39 times with each additional sibling, and by 3.16 times with each additional sibling, according to research by Galgamuwa et al. (2017). Children of working moms also have a 2.21 times higher risk of malnutrition.

To assess the nutritional status of rural school children (6 - 12 years old) in Mandya district, Karnataka, a descriptive cross-sectional study was carried out. 484 children in total were chosen. Stunting and underweight prevalence combined to reach 30.3% and 27.9%, respectively. In 25.4%, pallor was evident. 3.9% of people experienced hair change. Conjunctival xerosis was observed in 20.7% of cases, and bitot's spots in 2.1%. Dental caries accounted for 28.3% of the teeth's alterations, while enamel mottling accounted for 3.9%. In 1.4% of children, skeletal alterations were discovered. 11.8% of people had flat nails, also known as koilonychia (Shivaprakash & Joseph, 2017).

Nutritional assessment of school going children and adolescent was the descriptive cross sectional study done in Pokhara, with a sample size of 1160 students of government and private school in year 2020 using a structured questionnaire. Simple random sampling was used to select participants. Body mass index (BMI) was calculated and found that 12.49% were overweight and 5.03% were thin. The factors associated with nutritional status were housewife, (p-value 0.00) private school (p-value 0.00) and less than 3 siblings (p-value = 0.008) were significantly associated (Maskey et al., 2020).

In Dagoretti, Nairobi, Kenya, between November 2009 and February 2010, a descriptive cross-sectional study was conducted. 208 pupils, both genders, ages 4 to 11, were randomly chosen from four public primary schools. 24.5% of the children surveyed were stunted, 14.9% were



underweight, and 9.7% were wasted. Boys were more likely to be stunted than girls. According to this study's findings (Mwaniki & Makokha, 2013), malnutrition rates among school-aged children were just as high as those among children under the age of five.

A cross-sectional study done to identify the nutritional status of 5 to 10 years children of Namje, vedetar VDC of Dhankuta district in 2017. Simple random sampling was used to select the children. Prevalence of malnourished children was determined based on the WHO classification. Based on WHO classification, out of fifty children, 38% were found to be stunted as per height-for-age (10% were severely stunted and 28% were moderately stunted), 18% were found underweight as per weight-for-age (4% were severely underweight, 14% moderately underweight) and 6% were found to be overweight as per BMI-for-age (Udash, 2017).

A cross sectional study was done to identify the determinants of nutritional status in western Nepal with a sample size of 786 students in 2011 found that 26% of the students were found to be undernourished and associated factors were service holder mothers had 2.90 times (p-value 0.001) of higher risk for malnourish children, mother with inadequate knowledge had 1.53 times (p-value 0.005) higher risk for malnourish children (Cetala et al., 2011).

Based on the study objectives, search was done and completed to make all search a relevant one. The finding of the literature review indicates that most of the school children were malnourish and there is gap between public and private school. This may be due to parent's occupation, family size, birth orders, knowledge about malnutrition. These literature provided information which enabled the investigator to extend the study of the selected problem, to develop conceptual framework, data analysis and for interpretation.

Research Methodology

The research methodology adopted for the current study is as under:

Research Approach

Descriptive comparative study design was used to compare the nutritional status of employed and unemployed mothers studying in private and government school

Target Population

School student of age between 6 to 12 years old of employed and unemployed mothers studying in private and government school were selected for the study. They were measured through their nutritional status.

Study Setting

The study was done in selected school of Nepalgunj sub-metropolitan city. Spring Dell Academy and Lagdahawa Madhyamika Bidhyalaya.

Sample Size



The sample size for the study was 120 school students.

Sampling Technique

Stratified random sampling technique was adopted.

Sample Selection Criteria

Inclusion Criteria

- All school going children of age between 6-12 years.
- School student whose mothers were either employed or unemployed.

Exclusion Criteria

- Student who were not interested to participate were excluded from the study.
- Student who were ill or unable to respond/speak properly.

Development of Research Tool

Using a self-developed structured questionnaire, the nutritional status of school going children was evaluated. It was first prepared in English, translated into Nepali, and then presented to the research guide for additional revisions.

Description of Tool

Self-developed structure data collection tool was used to identify the nutritional status of school going children. The question was divided into 3 parts.

Part-1: Distribution of socio-demographic information.

Part-2: Nutritional assessment scale to measure nutritional status of school going children of employed and unemployed mothers.

Part-3: Measurement of nutritional status by using BMI formula.

Validity and Reliability

Content validity of the research tool was obtained by showing the research tool to subject specialist teacher, nutritional expert and paediatrician expert. Reliability of the instrument was maintained through inter-rater methods.

Data Collection Technique

The data collection process was carried out after getting approval of the research committee of Bheri Nursing Campus, Nepalgunj, Banke. Then permission was obtained from the founder of the selected school. The objective of the study was briefed to the teachers and students and verbal consent was taken. Data was collected through a self-administered questionnaire which was in the Nepali version. Data collection was done between 11 am to 3 pm, when they were free especially during lunch break or leisure period. Each student was interviewed for about 10 – 15 minutes.



Plan for Data Analysis

The collected data was checked for precision, accuracy, and totality. Then the data was edited, organized, and coded manually and entered into Statistical Package for Social Science (SPSS) version 21. Descriptive statistics was used for calculate mean, median, standard deviations, range, and frequency of subjects. Chi-square testing was done to show the association between research variable and socio-demographic variables. The finding of data is presented through relevant tables and bar graphs.

Ethical Consideration

The research was conducted after the approval of research committee of Bheri Nursing Campus, Nepalgunj, Banke. Then permission was obtained from the founder or head of the selected school. Verbal informed consent was taken from each participant. Privacy and confidentiality were maintained.

Data Analysis and Interpretation

This section is divided into four parts, which include background characteristics of respondents, comparison between nutritional status of school children between employed and unemployed mothers, nutritional assessment scale and association between sociodemographic variables and nutritional status of children. The total sample size for the study was 120. In order to facilitate the interpretation, the data were presented in the tables. The obtained data were analyzed according to the objective of research by using descriptive and inferential statistics and reported in term of frequency and percentage. The association of two variables was tested by chi-square test ($P < 0.05$) was considered significant. Data were analyzed by using statistical package for social science. (SPSS, version 21) which is mostly being used for social sciences research (Asif, Khan, Pasha, 2019; Asif, 2021).

All the obtained data were analyzed on the basis of the objective of the study. The data were organized and presented under the following sections

Section I: Description of socio-demographic characteristics

Section II: To assess nutritional status among school age children of employed and unemployed mothers by using BMI and Nutritional assessment scale

Section III: association between nutritional status among school age children of employed and unemployed mothers with their selected social demographic variables

Section I: Socio-demographic characteristics of school age children of employed and unemployed mothers.

The section includes information regarding age, sex, school type, educational status of mothers and father, birth order, type of food and monthly family income



Table 1

Frequency and percentage distribution of nutritional status of school children based to their age group.

Age (n=60)	Employed mother		Unemployed mother	
	Frequency	Percentage	Frequency	Percentage
Age category 6-7 years	13	21.7	28	46.7
8-10 years	17	28.3	29	48.3
11-12 years	30	50	3	5

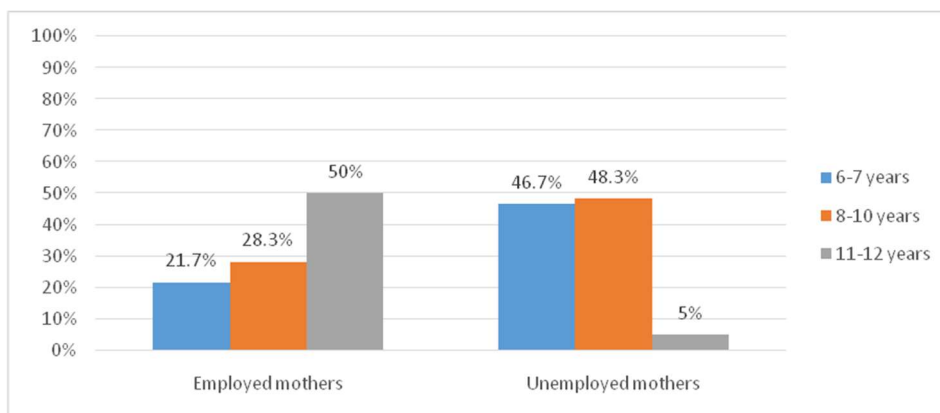


Figure 1 Distribution of nutritional status of school children of employed and unemployed mothers according to their age groups.

Table and figure 1 showed that, for employed mothers (50%) were from age group between 11 to 12 years and (21.7%) were from 6 to 7 years. For unemployed mothers (48.3%) were from 8 to 10 years age group and (5%) were from 11 to 12 years age group.

Table 2

Frequency and percentage distribution of nutritional status of school children based to their gender.

Gender (n=60)	Employed mother		Unemployed mother	
	Frequency	Percentage	Frequency	Percentage
Male	31	51.7	28	46.7
Female	29	48.3	32	53.3

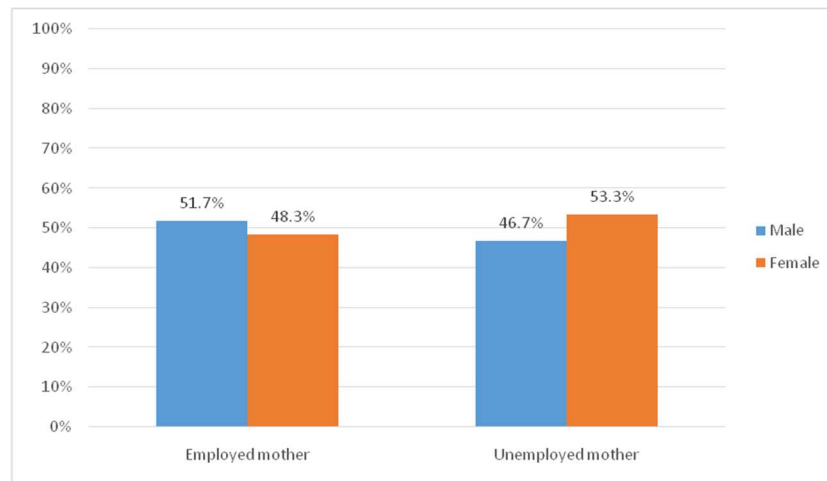


Figure 2 Distribution of nutritional status of school children according to their sex.

The above table and figure 2 illustrated that male participants were higher in employed mother (51.7%) whereas female participants were higher in unemployed mothers (53.3%).

Table 3

Frequency and percentage distribution of nutritional status of school children based to their school type.

Gender (n=60)	Employed mother		Unemployed mother	
	Frequency	Percentage	Frequency	Percentage
Government	8	13.3	28	46.7
Private	52	86.7	32	53.3

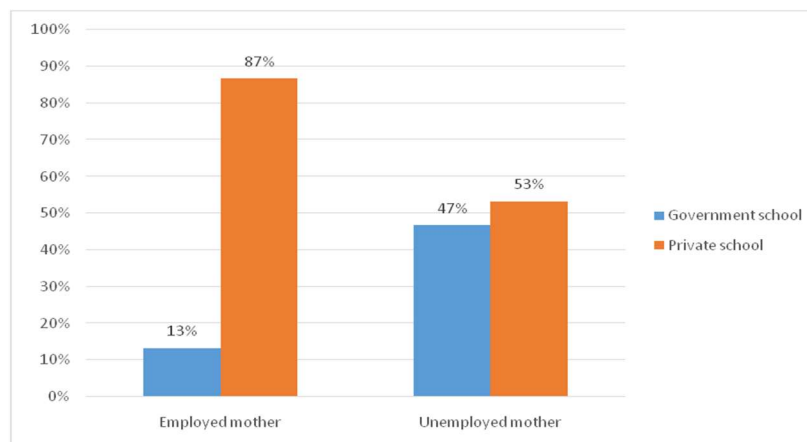




Figure 3 Distribution of nutritional status of school children according to their school type.

The above table and figure 3 showed that (13.3%) of school children of employed mothers were studying in government school and majority of children (86.7%) were studying in private school. Similarly (51.7%) children of unemployed mother were studying in private school and remaining (46.7%) in government school.

Table 4

Frequency and percentage distribution of nutritional status of school children based educational status of mothers.

Educational Status of Mothers (n=60)	Employed mother		Unemployed mother	
	Frequency	Percentage	Frequency	Percentage
No formal education	8	13.3	2	3.3
Primary	0	0	6	10
Secondary level completed	9	15	23	38.3
Higher secondary level completed	21	35	18	30
Bachelor level and above	22	36.7	11	18.3

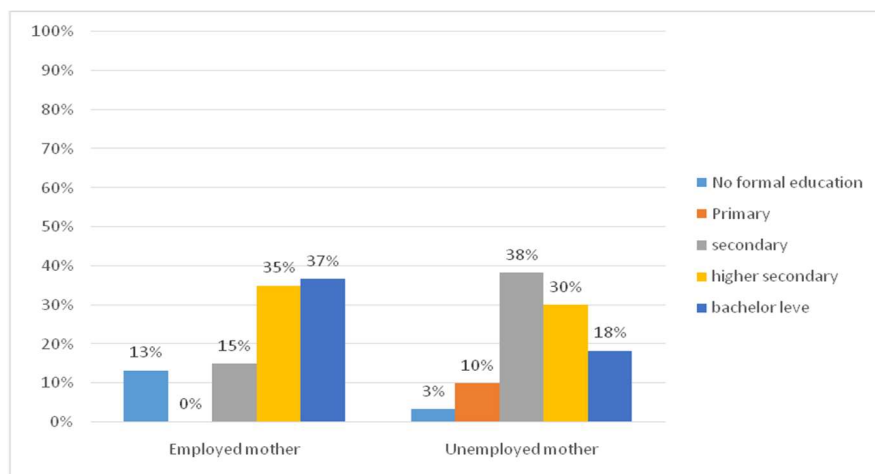


Figure 4 Distribution of nutritional status of school children according to their educational status of mothers.

Table and figure 4 show that, regarding educational status of mothers, (36.7%) of employed mothers had completed bachelor level and above and (35%) had completed higher secondary level of education. Whereas (38.3%) of unemployed mothers had completed secondary level education.



Table 5

Frequency and percentage distribution of nutritional status of school children based educational status of fathers.

Educational Status of Mothers (n=60)	Employed Father		Unemployed Father	
	Frequency	Percentage	Frequency	Percentage
No formal education	0	0	0	0
Primary	6	10	3	5
Secondary level completed	23	38.3	14	23.3
Higher secondary level completed	8	13.3	24	40
Bachelor level and above	23	38.3	19	31.7

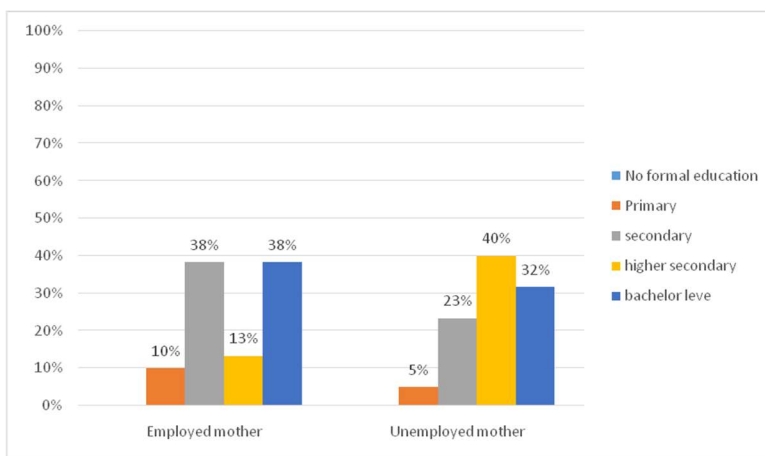


Figure 5 Distribution of nutritional status of school children according to their educational status of fathers.

Table and figure 5 show that educational status of father, (38.3%) of the fathers had completed their bachelor level of education and secondary level in employed mothers. Similarly, (31.7%) of husband of unemployed had completed their bachelor level of education and (23.3%) had completed their secondary level of education.

Table 6

Frequency and percentage distribution of nutritional status of school children based on birth order.

Birth Order (n=60)	Employed mother		Unemployed mother	
	Frequency	Percentage	Frequency	Percentage
Less than and equal to 2	27	45	49	81.7
More than 2	33	55	11	18.3

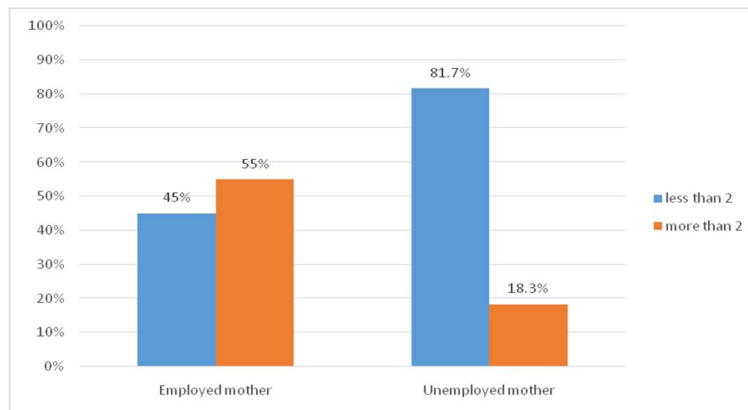


Figure 6 Bar graph showing the distribution of nutritional status of school children according to their birth order

The above chart shows that employed mothers' children birth order was (45%) less than and equal to 2 and more than 2 was 55%. For unemployed mothers less children birth order was (81.7%) less than and equal to 2 and more than 2 was 18%.

Table 7

Frequency and percentage distribution of BMI classification based on employed and unemployed mother's status

BMI	Employed mother		Unemployed mother	
	Frequency	Percentage	Frequency	Percentage
Under weight	31	51.6	12	20
Normal	15	25	26	43.3
Overweight	14	23.3	22	36.7

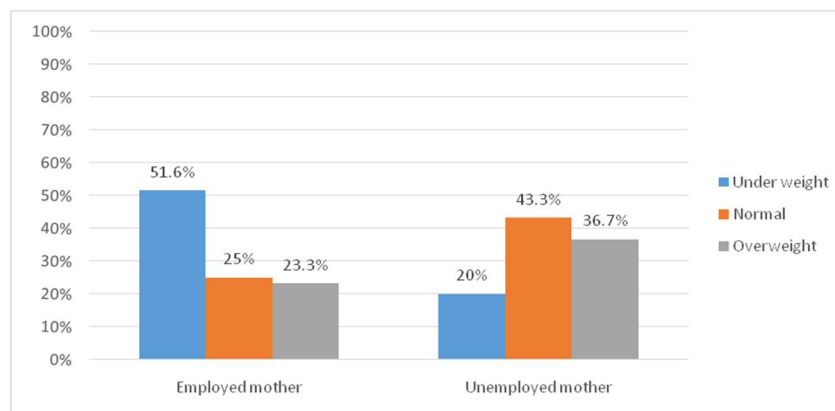


Figure 7 Distribution of BMI classification according to their employed and unemployed mother's status.



The above table 7 shows nutritional status difference between employed and unemployed mothers through Body mass index. It illustrates that underweight (51.6%) was high among children of employed mothers than in unemployed mother. Similarly, normal weight is high among children of unemployed mother than in employed mothers (43.3%) and (25%) respectively.

Section II: To assess nutritional status among school age children of employed and unemployed mothers by using BMI and Nutritional assessment scale

Table 8

Nutritional assessment scale of children among employed and unemployed mothers

Sr. No.	Site	Signs	Employed		Unemployed	
			No	%	No	%
1.	Face	Moon face	0	0	0	0
		Simian face	0	0	0	0
2.	Mouth	Angular stomatitis	10	16.7	8	13.3
		Spongy bleeding	0	0	6	10
		Parotid gland enlargement	0	0	0	0
3.	Teeth	Enamel mottling	36	60	35	58.3
		Delayed eruption	30	50	0	0
4.	Hair	Brittle hair	25	41.7	17	28.3
		Hyperpigmentation	0	0	0	0
		Alopecia	0	0	0	0
5.	Skin	Loose wrinkle	17	28.3	3	5
		Shine and oedematous	0	0	0	0
		Poor wound healing	1	1.7	0	0
		Dermatitis	4	6.7	8	13.3
6.	Nail	Beau's Lines	0	0	0	0
		Terry's Nails	0	0	0	0
7.	Skeletal	Muscles wasting	20	33.3	0	0
		Deformities result by deficiency	0	0	0	0
8.	Abdomen	Distended	0	0	0	0
		Hepatomegaly	0	0	0	0
		Ascites	0	0	0	0
9.	Cardiovascular	Bradycardia	0	0	0	0
		Hypertension	0	0	0	0
10.	Neurological	Development delay	0	0	0	0
		Poor Memory	0	0	0	0
		Loss of knee and ankle reflex	0	0	0	0



The nutritional assessment scale shows that 16.7% and 13.3% of children had angular stomatitis of employed and unemployed mothers respectively. It's a sign of vitamin- B complex deficiency. About 60% and 58.3% of children had brittle hair of employed and unemployed mothers respectively. Here in the table, 28.3% of children of employed mothers had loose wrinkle in their skin, showing a sign of malnutrition. Similarly, 33.3% of employed mothers children had muscles wasting, which means they are suffering from malnutrition

Section III: Association between nutritional status among school age children of employed and unemployed mothers with their selected socio-demographic variables

Table 9

Association between socio-demographic variables and nutritional status of children

Variables	BMI			Chi square(χ^2)	D F	P value
	Over	Normal	under			
Age						
6-7	11	18	12	4.70	4	0.30
8-10	16	15	15			
11-12	9	8	16			
Sex						
Male	18	24	17	3.04	2	0.21
Female	18	17	26			
School Types						
Government school	14	15	31	13.124	2	0.001*
Private school	22	26	12			
Educational Status of Mother						
No formal education	8	9	14	14.56	8	0.06
Primary level completed	6	9	13			
Secondary level completed	7	15	10			
Higher secondary level completed	11	5	2			
Bachelor level and above	4	3	4			
Educational Status of Father						
No formal education	5	4	13	12.39	8	0.13
Primary level completed	4	5	8			



Secondary level completed	9	15	13
Higher secondary level completed	9	10	5
Bachelor level and above	9	7	4

*Statistically significant

The above table shows that school type (government and private school) is associated with body mass index (BMI) of children with P-value <0.001. The other demographic variables are not associated with BMI of children.

Table 10

Association between socio-demographic variables and nutritional status of children

Variables	BMI			Chi-square χ^2	DF	P value
	Over	Normal	under			
Maternal Employment Status						
Unemployment mother	14	24	22	2.99	2	0.02*
Employed mother	22	17	21			
Birth Order						
Less than and equal to two	20	25	16	5.20	2	0.07
More than 2	16	16	27			
Types of Food						
Vegetarian	8	4	10	3.07	2	0.21
Non- Vegetarian	28	37	33			
Monthly Family Income						
Less than and equal to 5000						
5001 to 10,000	2	1	0	9.16	4	0.05
10,001 to 20,000	8	7	18			
More than and equal to 20,001	26	33	25			

*statistical significant

The above variables show that maternal employment status (employed and unemployed) is associated with BMI of children with p-value of less than 0.05.



Discussion

The present study was conducted to assess the nutritional status among school age children studying in selected schools of Nepalgunj, Banke. The age group was from 6 to 12 years. For employed mothers 50% were from age group between 11 to 12 years. For unemployed mothers 48.3% were from 8 to 10 years age group. Male participants were higher in employed mother with 51.7% whereas female participants were higher in unemployed mothers with 53.3%.

Regarding educational status of mothers 36.7% of employed mothers had completed bachelor level and above and 35% had completed higher secondary level of education. The similar result is seen in a study done to identify the nutritional status of school children living in northern part of Sri-Lanka with high number of male 51% and education status of mothers was 39% for higher secondary level (Sathiadas et al., 2020).

Among employed mothers 51.7% had monthly family income of more than 10,001 to 20,000, whereas about 96.7% of the unemployed mothers had family income more than and equal to 20,001. This result is similar with a study done in west Bengal to identify the nutritional status of school children in West Bengal with monthly family income was more than 20,000 was 51% (Karak et al., 2018).

The result of nutritional assessment scale showed that 16.7% and 13.3% of children had angular stomatitis of employed and unemployed mothers respectively. About 60% and 58.3% of children had brittle hair of employed and unemployed mothers respectively.

Further the result showed that 28.3% of children of employed mothers had loose wrinkle in their skin, showing a sign of malnutrition. Similarly 33.3% of employed mothers children had muscles wasting, which means they are suffering from malnutrition

This result is similar with a study done in west Bengal to identify the nutritional status of school children in West Bengal with angular stomatitis 4% and 11% of children had brittle hair (Karak et al., 2018).

The result showed that underweight was 51.6% was high among children of employed mothers than in unemployed mother. Similarly normal weight is high among children of unemployed mother than in employed mothers i.e. 43.3% and 25% respectively. The prevalence of overweight was 23.3% and 36.7% in employed and unemployed mothers. This result is similar with a study done in west Bengal to identify the nutritional status of school children in West Bengal with underweight was 50% and normal weight was 40.1% (Karak et al., 2018). The above result is similar with a study done in Pokhara city which showed that overweight was among 20% of children in employed mothers (Maskey et al., 2020).



Conclusion

Nutritional status of children is an important factor for children growth and development. This study showed that underweight was high among children of employed mothers and children were of normal weight for unemployed mothers. Children's BMI were associated to maternal work status and school types i.e. public and private schools. These aspects should be considered before devising any intervention to improve children's nutritional status.

Limitation

The study was limited to: -

- Nepalgunj-18, Banke only.
- Comparison between employed and unemployed mothers were only done.
- 120 school students were only involved. So, the study finding could not be generalized.

Recommendations

Based on the research conducted, it is recommended that there is need to create awareness regarding nutritional status of children. A similar study can be conducted on other community settings as meet. Such research and studies must aim to assess or evaluate the way of prevention of nutritional problem. Further studies are needed to have an accurate view of nutritional problem and its different determinants.

Practical Implications

Assessment of nutritional status can be used to identify the percentage of malnourished children in the employed and unemployed mothers and to improve the health status of school-age children.

Nursing Practice

Nutritional status helps to screen the malnourished children. We can focus the area in which percentage of malnourished children is more and can provide the nutritional supplement for the malnourished school-age children.

Nursing Education

It can be added to the nursing curriculum as a clinical requirement to assess the nutritional status of the limited number of school-age children so that the student nurse will be able to learn nutritional assessment of school-age children.

Nursing Administration

The nurse administrator can plan to conduct nutritional assessment and awareness program to assess the nutritional status of school-age children in the schools.



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