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Assessing the Role of Nutrition Knowledge in Shaping Dietary Practices Among Secondary Level School Students: Implications for Healthcare Management

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Abstract

Introduction: This study investigates the nutrition knowledge and dietary practices among secondary-level school students, a demographic prone to unhealthy habits such as junk food consumption, meal skipping for weight loss, and non-compliance with balanced diets. These behaviors increase the risk of non-communicable diseases like obesity and diabetes in adolescents. This study has aims to examine the nutrition knowledge and dietary practices of secondary-level school students, a demographic that is increasingly susceptible to unhealthy eating habits. Specifically, it focuses on behaviors such as junk food consumption, meal skipping for weight loss, and the neglect of balanced diets. These specific practices contribute to a heightened risk of non-communicable diseases, including obesity and diabetes, among adolescents.

Methodology: The quantitative research approach was employed an exploratory design, analyzing data from 121 students in Kathmandu valley using a close-ended questionnaire during 7th April to 28th May 2024. The systematic sampling technique was used, and respondents were selected by using a lottery system. As a result, Grade 11 was picked up randomly. Descriptive analyses were made to describe the practices of the students.

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Result (s): Study indicates that out of 121 respondents, about near to half (48.8%) were male and little more than half (51.2%) were female. Similarly, there were no significant relationship exists between nutrition knowledge and dietary practices among the students. Likewise,, independent variables such as age, gender, and religion do not significantly influence either nutrition knowledge or dietary practices. Despite the students' understanding of nutrition, this knowledge does not translate into healthier eating behaviors.

Conclusion and recommendation: The study reveals that there are notable gaps in their knowledge, particularly regarding the energy content of fat-free foods, the role of dietary fiber, and the impact of empty-calorie foods and meal-skipping on health. Likewise, findings highlight the disconnect between what students know about nutrition and how they apply it in their daily lives, suggesting the need for more effective interventions to encourage healthier dietary practices. Moreover, targeted nutritional education programs at school could address these gaps in knowledge and encourage healthier dietary practices.

Keywords: Adolescence, Dietary Practice, Nutrition Knowledge, Secondary Level School Students

Introduction

Children and adolescents are the most vulnerable due to the impact of improper nutrition. The mode of nutrition is one of the factors influencing the proper development and growth of young organisms and maintaining good health until advanced old age (Duma-Kocan, Barud, Głodek, & Gil, 2017). Nutritional educational programs are operated by government agencies, schools, and health agencies. These educations are provided for sound dietary intake which directly links up with sound health. (Spronk, Kullen, Burdon, & O'Connor, 2014; Neupane, Food choice motives of guardians of Trilok Academy Kathmandu with reference to gender, 2018). Adolescence, spanning ages 10 to 19, is the transitional period between childhood and adulthood. This stage is marked by rapid growth and the onset of puberty, influenced by nutritional changes.. (Bah, et al., 2023). Adolescence is the only time following infancy when the rate of physical growth is actually high. For this to happen, there is a greater demand for calories and nutrients. Thus, it is a time of increased nutritional requirements (Arage, Assefa, & Worku, 2019; Neupane, 2019). Adolescence is subject to cultural, social, and environmental influences reflected in dietary habits. This age group is associated with a dietary profile in which a lower consumption of beans, salads, and vegetables in general is common, along with a higher consumption of sweets, sodas, pizza, and fried and baked snacks (Santos, Paiva, Pedrosa, & Viana, 2014). As a result, over 390 million children and adolescents aged 5–19 years were overweight in 2022, including 160 million who were living with obesity. (WHO, 2024). In Nepal, the prevalence of overweight among the age group 15-69 years was 18.0 percent in men and 17.3 percent in women (Aryal, et al., 2013; Neupane & Dawadi, 2018). Poorer nutritional status becomes observable during adolescence, with a hindrance in maturation which may have a consequence effect on the consequent ability of the biologically immature female to bear a normal pregnancy. (Bhattarai & Bhusal, 2019). According to Global

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School Based Student Health Survey (GSHS) 2015, 10.9 percent (male 13.8%, female 8.1%) adolescent students were underweight, 6.7 percent (male 7.6%, female 5.8%) were overweight (heavy for their height) and 0.6 percent (male 0.8% and female 0.4%) of the school going adolescent were obese (Bhattarai & Bhusal, 2019).

During adolescence, there is a chance to teach and equip them with Nutrition knowledge and develop positive healthy eating behaviour that can last a life time and hence mitigate the current trend of non-communicable diseases. (Kamanu, 2019; Ghimire & Neupane, 2022). School Health and Nutrition Programme can be the cost-effective and easiest way to improve students' health in Nepal (Department of Health and Service, 2006). So this study is associated with understanding the correlation between Nutrition knowledge and dietary practice among school students.

Adolescents occupy a transitional stage, sharing some nutritional challenges with children and others with adults. When properly nourished, adolescents can fully develop their skills, talents, and energy, allowing them to thrive today and become healthy, responsible citizens and parents of healthy children in the future. (World Health Organization, 2006). Investing in the health and development of young people is not only the right thing to do, it's the smart thing for countries that want their economies to grow faster (World Bank, 2002).

Since diet is the cornerstone of good health and essential for managing and preventing various medical conditions, understanding the level of nutrition knowledge and its impact on dietary intake is crucial. (Spronk, Kullen, Burdon, & O'Connor3, 2014). The association between nutrition knowledge and dietary behaviour is multifaceted and influenced by many other individual and environmental factors such as hunger, appetite, taste, food preferences, beliefs, culture, and experiences. (Thapa, et al., 2023; Neupane & Timsina, 2015).

Despite the increasing focus on adolescent nutrition, there is a significant research gap concerning the relationship between Nutrition knowledge and dietary practices among secondary-level school students in Nepal (Neupane, 2014). While existing studies emphasize the importance of proper nutrition during adolescence, they often overlook how well students understand nutrition and how this knowledge influences their eating habits. This study aims to bridge this gap by assessing the level of nutrition knowledge among these students and examining its impact on their dietary practices. The findings are expected to guide the development of targeted nutritional education programs, ultimately improving adolescent health and reducing the risk of non-communicable diseases in Nepal.

Research method

The research approach used is a quantitative research approach in which each of the statements and questions have been provided with certain scores. A descriptive research design is used for the study. The research is conducted in Arunima Secondary School, Bouddha, Kathmandu. Grade Eleven students of Arunima Secondary School of Bouddha, Kathmandu are asked to fill out the questionnaire which consists of some socio-demographic information, and questions regarding Nutrition knowledge and dietary practice. The systematic sampling technique was used. The samples were selected by using a lottery system. As a result, Grade 11 was picked up randomly.

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Results

Demographic information analysis

The following sections explore the demographic status of the respondents.

According to the table 1 a gender distribution of 121 individuals, with 59 males (48.8%) and 62 females (51.2%). This nearly equal distribution ensures a balanced representation of both genders in the sample. Like distribution of age groups study reveals that the majority of participants are 17 years old, accounting for 48.8 percent of the sample (n=59). This is followed by 18-year-olds, who represent 32.2 percent of the sample (n=39). In contrast, the younger age groups—15 years (5.0%, n=6) and 16 years (5.8%, n=7)—as well as the older age group of 19 years (8.3%, n=10), are less represented in the sample. Likewise, secondary school categorized according to religion. The table 1 shows that the majority of respondents are Buddhist which is 59 in number and 48.8 percent out of the total followed by Hindu which is 48 in number (39.7%). The Christians were 6 in number representing 5 percent of total and other religion is 5 percent.

Table 1: Demographic profiles of the respondents.

Variables		Frequency	Percent	Valid Percent
Gender	Male	59	48.8	48.8
	Female	62	51.2	51.2
Age	15 years	6	5.0	5.0
	16 years	7	5.8	5.8
	17 years	59	48.8	48.8
	18 years	39	32.2	32.2
	19 years	10	8.3	8.3
Religion	Hindu	48	39.7	39.7
	Buddhist	59	48.8	48.8
	Muslim	2	1.7	1.7
	Christian	6	5.0	5.0
	Others	6	5.0	5.0

Nutrition knowledge analysis

This section presents the students' knowledge of the nutrition of food and their analysis.

Table 2: Nutrition knowledge

		Count	Layer Total N %
Fat free foods are foods free from energy	yes	34	28.1%
	No	57	47.1%
	I Don't know	30	24.8%
	Total	121	100.0%
A high fibre diet is essential for good bowel functions	Yes	68	56.2%
	No	9	7.4%
	I don't know	44	36.4%
	Total	121	100.0%

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Excessive consumption of empty calorie foods (baked products, jams, jellies, sweetened fruit juices and ice cream) can have a positive effect on health	Yes	25	20.7%
	No	82	67.8%
	I don't know	14	11.6%
	Total	121	100.0%
Fruits and vegetables in the diet provide vitamins, minerals, water and fibre	Yes	120	99.2%
	No	0	0.0%
	I don't know	1	0.8%
	Total	121	100.0%
Skipping meals is acceptable for quick weight loss.	Yes	42	34.7%
	No	68	56.2%
	I don't know	11	9.1%
	Total	121	100.0%
Proteins (meats, poultry, dairy products, peas, beans and nuts) are a main source of energy for the body	Yes	108	89.3%
	No	8	6.6%
	I don't know	5	4.1%
	Total	121	100.0%
Milk and milk products are the best sources of calcium	Yes	99	81.8%
	No	3	2.5%
	I don't know	19	15.7%
	Total	121	100.0%

Table 2 presents responses from 121 participants on various aspects of Nutrition knowledge, revealing both strengths and gaps in understanding.

Regarding fat-free foods and energy content, 28.1 percent of participants incorrectly believe that fat-free foods are free from energy, while 47.1 percent correctly understand that fat-free foods can still contain energy. Additionally, 24.8 percent of respondents are uncertain. This suggests a significant gap in knowledge regarding the energy content of fat-free foods.

Concerning high-fiber diet and bowel function, a majority of 56.2 percent of participants correctly recognize the importance of a high-fiber diet for good bowel function. However, 7.4 percent disagree, and 36.4 percent are unsure, indicating a need for better education on the role of fiber in maintaining digestive health.

With respect to the impact of empty-calorie foods, 67.8 percent of participants correctly understand that excessive consumption of empty-calorie foods is detrimental to health. However, 20.7 percent mistakenly believe these foods can have a positive effect, and 11.6 percent are uncertain. This points to a considerable misconception about the health impact of empty-calorie foods.

Regarding the nutritional value of fruits and vegetables, nearly all participants (99.2%) correctly identified the nutritional benefits of fruits and vegetables, with only 0.8 percent expressing uncertainty. This indicates a strong understanding of this aspect of nutrition.

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Concerning skipping meals for weight loss, 56.2 percent of respondents correctly disagree with skipping meals as a weight loss strategy, while 34.7 percent believe it is acceptable, and 9.1 percent are unsure. This highlights a significant misconception regarding healthy weight management practices.

On the subject of proteins as an energy source, a large majority (89.3%) correctly identify proteins as a main source of energy, though 6.6 percent hold incorrect beliefs, and 4.1 percent are uncertain. This suggests that most participants have a sound understanding of the role of proteins in the diet.

Regarding milk and milk products as calcium sources, 81.8 percent of participants correctly recognize milk and milk products as the best sources of calcium, while 15.7 percent are unsure, and 2.5 percent hold incorrect beliefs. This indicates that while awareness is generally high, there is still a need for better education regarding calcium sources.

Overall, the data reveals strong knowledge in some areas, such as the benefits of fruits and vegetables and the role of proteins, but also significant gaps, particularly in understanding fat content, fiber's role, and the impact of empty calories and meal-skipping on health. These findings suggest targeted nutritional education could help address these misconceptions and improve dietary practices.

Dietary practice analysis

This section explores the dietary practices of the students and their analysis.

Table 3: Dietary Practice Analysis

		Count	Layer Total N %
How many meals do you eat a day, including snacks?	1-2 meals a day	37	30.6%
	3-4 meals in a day	80	66.1%
	5-6 meals in a day	4	3.3%
	More than 6 meals in a day	0	0.0%
	Total	121	100.0%
Which meal do you consider should be the heaviest in a day?	Breakfast	18	14.9%
	Lunch	87	71.9%
	Supper	16	13.2%
	Total	121	100.0%
Do you skip meals?	yes	56	46.3%
	No	65	53.7%
	Total	121	100.0%
Do you take any snacks?	Yes	101	83.5%
	No	20	16.5%
	Total	121	100.0%
Which food do you prefer depending on their preparation method?	Boiled	26	21.5%
	Fried	65	53.7%
	Baked	5	4.1%

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	Steamed	25	20.7%
	Total	121	100.0%
Do you think you apply concept of balanced diet when choosing your food?	Yes	40	33.1%
	No	81	66.9%
	Total	121	100.0%
Water intake in litres	Less than two liters	36	29.8%
	Two liters	46	38.0%
	More than two liters	39	32.2%
	Total	121	100.0%
How often do you eat fast foods (fried chicken, french fries, samosa, pizza or hamburger)?	Daily	11	9.1%
	Once per week	53	43.8%
	Twice per week	42	34.7%
	Never other (please specify)	15	12.4%
	Total	121	100.0%

Table 3 presents the dietary practice of the respondents. Out of 121 respondents reveals significant insights into their eating habits and preferences. A majority (66.1%) report eating 3-4 meals per day, which aligns with standard dietary recommendations, while a smaller proportion (30.6%) consumes only 1-2 meals daily, and very few (3.3%) eat 5-6 meals. None of the respondents reported eating more than six meals per day. When considering which meal should be the heaviest, 71.9 percent believe lunch is the most important, with breakfast and supper being less favored, at 14.9 percent and 13.2 percent, respectively. Despite the general adherence to regular meals, 46.3 percent of participants admit to skipping meals, highlighting a potential area of concern in their dietary routine. Additionally, a high percentage (83.5%) of respondents take snacks, indicating that snacking is a common practice among this group.

Regarding food preparation preferences, over half (53.7%) prefer fried foods, with a notable minority favoring boiled (21.5%) or steamed (20.7%) options, and very few choosing baked foods (4.1%). This preference for fried foods might contribute to less balanced dietary choices, which is reflected in the fact that only 33.1 percent of respondents believe they consistently apply the concept of a balanced diet when selecting their food. Water intake habits vary, with 38 percent consuming two liters per day, 32.2 percent drinking more than two liters, and 29.8 percent consuming less than two liters. Fast food consumption is also prevalent, with 43.8 percent eating fast food once a week, 34.7 percent twice a week, and 9.1 percent daily, while 12.4 percent claim to never or rarely eat fast food. These findings suggest a need for enhanced nutritional education focused on promoting balanced diets, healthier cooking methods, and the reduction of meal skipping among this population.

Correlation Analysis

This section presents the correlation analysis between the independent and the dependent variables; and between nutrition knowledge and dietary practices.

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Table 4: Correlation between Gender, Nutrition Knowledge and Dietary Practices.

Correlations				
		Gender	Mean of Nutrition knowledge	Mean of Dietary practices
Gender	Pearson Correlation	1	.023	.006
	Sig. (2-tailed)		.802	.949
	N	121	121	121
Mean of Nutrition knowledge	Pearson Correlation	.023	1	.140
	Sig. (2-tailed)	.802		.125
	N	121	121	121
Mean of Dietary practices	Pearson Correlation	.006	.140	1
	Sig. (2-tailed)	.949	.125	
	N	121	121	121

In table 4, the correlation between gender, Nutrition knowledge and dietary practices is presented. It is seen that Pearson Correlation between gender and mean of Nutrition knowledge is 0.023 which is nearer to 0. This shows that there is a weak relationship between gender and Nutrition knowledge. Similarly, the p value of mean of nutrition is 0.802 which is greater than 0.05 which indicates that the hypothesis i.e. there is no significant relationship between gender and Nutrition knowledge is not rejected.

Similarly, it is seen that the correlation between gender and mean of dietary practices is 0.006, which is almost near to 0. This indicates that there is a weak correlation between gender and mean of dietary practices. In addition to that, the p value of the mean of dietary practices is 0.949 which is greater than 0.05. It indicates that the hypothesis i.e. there is no significant relationship between gender and dietary practice is accepted.

Similarly, the Pearson correlation between the mean of dietary practices and mean of Nutrition knowledge is 0.140, which shows a low correlation between them. The data also shows that the p value of the mean of Nutrition knowledge and mean of dietary practices is 0.125, which is less than 0.05 indicating that the null hypothesis (there is no significant relationship between Nutrition knowledge and dietary practice) is not rejected.

Table5: Correlation between Age, Nutrition Knowledge and Dietary Practices.

Correlations				
		Mean of Nutrition	Mean of Dietary	Age
Mean of Nutrition	Pearson Correlation	1	.140	-.110
	Sig. (2-tailed)		.125	.232
	N	121	121	121
Mean of Dietary	Pearson Correlation	.140	1	-.016
	Sig. (2-tailed)	.125		.860
	N	121	121	121

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Age	Pearson Correlation	-.110	-.016	1
	Sig. (2-tailed)	.232	.860	
	N	121	121	121

Table 5 presents the correlation between age, mean of Nutrition knowledge and mean of dietary practices. The table shows that the Pearson Correlation between age and mean of Nutrition knowledge is -0.110 indicating very low degree of negative correlation. Similarly, the p value is 0.232, which is greater than 0.05. It indicates that the null hypothesis-that there is no significant relationship between age and Nutrition knowledge-cannot be rejected.

In addition to that, the Pearson correlation between age and the mean of dietary practices is 0.016, indicating a very low degree of negative correlation between these variables. The data also shows that the p-value for the correlation between age and the mean of dietary practices is 0.086, which is greater than 0.05. This suggests that the null hypothesis—that there is no significant relationship between age and dietary practices—cannot be rejected.

Table 6: Correlation between Religion, Nutrition Knowledge, and Dietary Practices

Correlations				
		Mean of Nutrition	Mean of Dietary	Religion
Mean of Nutrition	Pearson Correlation	1	.140	.012
	Sig. (2-tailed)		.125	.900
	N	121	121	121
Mean of Dietary	Pearson Correlation	.140	1	.001
	Sig. (2-tailed)	.125		.995
	N	121	121	121
Religion	Pearson Correlation	.012	.001	1
	Sig. (2-tailed)	.900	.995	
	N	121	121	121

Table 6 presents the correlation between religion, mean of Nutrition knowledge, and mean of dietary practices . The table shows that the Pearson Correlation between religion and mean of Nutrition knowledge is 0.012 which represents the weakest correlation between religion and the mean of Nutrition knowledge. In addition to that, the p value of religion and mean of Nutrition knowledge is 0.900 which is greater than 0.05. It can be interpreted as the null hypothesis i.e. there is no significant relationship between religion and Nutrition knowledge is accepted.

Similarly, the correlation between religion and dietary practice is 0.001 which is almost near to 0. It indicates that there is no linear correlation between religion and dietary practices. The p value of the mean of dietary practices and religion is 0.995 which is greater than 0.05. It indicates that the null hypothesis i.e. there is no significant relationship between religion and dietary practices is accepted.

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Conclusion

The findings of this research highlight significant insights into the Nutrition knowledge and dietary practices of secondary-level school students in Nepal. While students exhibit a strong understanding of certain nutritional aspects, such as the benefits of fruits and vegetables and the importance of proteins, there are notable gaps in their knowledge, particularly regarding the energy content of fat-free foods, the role of dietary fiber, and the impact of empty-calorie foods and meal-skipping on health. These misconceptions are reflected in their dietary practices, with a preference for fried foods, a tendency to skip meals, and a significant reliance on fast foods. The study also found weak correlations between demographic factors—such as gender, age, and religion—and both Nutrition knowledge and dietary practices, suggesting that these factors do not significantly influence students' understanding of nutrition or their eating habits. However, the low correlation between Nutrition knowledge and dietary practices indicates that knowledge alone may not be sufficient to influence healthier eating behaviors among adolescents. These findings underscore the need for targeted nutritional education programs that address these gaps in knowledge and encourage healthier dietary practices. By focusing on improving both awareness and behaviour, such initiatives could play a crucial role in promoting better health outcomes for adolescents, reducing the risk of non-communicable diseases, and supporting the overall well-being of the younger population in Nepal.

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