

NUTRITION LITERACY AND ITS ASSOCIATION WITH FOOD HABIT AMONG ADOLESCENTS

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A Thesis

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ABSTRACT

Background: Nutrition Literacy and Food Habit are critical determinants of lifelong health outcome especially during vulnerable adolescence period. In Nepal, limited nutrition literacy and rapid adoption of unhealthy diets comprises adolescent food choices. Thus, making it significant to assess their nutrition literacy and food habit.

Objective: The objective of the study is to assess nutrition literacy and its association with food habit among adolescents studying in community schools.

Methodology: The descriptive cross-sectional study in Godawari municipality through Proportionate stratified random sampling technique was conducted among 281 students from grades 8, 9 and 10 of multiple government secondary schools. Data were collected using self-administered questionnaire which was developed based on pre-established tools and IBM SPSS V27 was used for analysis.

Major Findings: The finding of the study showed that 23.5% of adolescents had best food habits according to Adolescent Food Habit Checklist (AFHC) and 28.5% of the respondents had high nutrition literacy according to Adolescent Nutrition Literacy Scale (ANLS). A moderate, positive and statistically significant correlation was observed between nutrition literacy and food habits ($p < 0.001$). Logistic Regression showed that each unit increase in nutrition literacy raised the odds of having healthier food habits by 13.3%. Food habit was also significantly associated with level of self-education ($p = 0.022$), education of the mother of the respondents ($p = 0.032$), education of the father of the respondents ($p = 0.032$). However, place of residency and family type showed no significant association with food habits.

Conclusion: The study found that only about one fourth of the surveyed adolescents had healthy food habits and a similar proportion reported a good level of nutrition literacy. Furthermore, a positive association was observed between nutrition literacy and food habit, indicating that adolescents with higher nutrition literacy were more likely to practice healthier food habits.

Keywords: *Nutrition literacy, food habit, adolescents, dietary pattern, socio-demographic factors*

ABBREVIATION

AFHC	Adolescents' Food Habit Checklist
ANLS	Adolescent Nutrition Literacy Scale
BMI	Body Mass Index
CNL	Clinical Nutrition Literacy
FH	Food Habit
FNL	Functional Nutrition Literacy
HBM	Health Belief Model
IBM SPSS	Statistical Package for Social Sciences
INL	Interactive Nutrition Literacy
NCDs	Non-Communicable Diseases
NK	Nutrition Knowledge
NL	Nutrition Literacy
ON	Ontario
SCT	Social Cognitive Theory
SD	Standard Deviation
SEARO	South East Asian Regional Office
WHO	World Health Organization

LIST OF FIGURE

Figure 1. Conceptual Framework of the Study	18
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LIST OF TABLES

Table: 1: List of secondary school and their corresponding ward	12
Table: 2: Proportionate allocation of students from selected school	14
Table: 3: Adolescents Nutrition Literacy scale scoring categories	15
Table: 4: Adolescents Food Habit Checklist Scoring Categories	16
Table: 5: Socio-demographic Characteristics of Respondents	19
Table: 6: Socio-cultural Characteristics of Respondents	20
Table: 7: Family Characteristics of Respondents	21
Table: 8: Occupation of Parents of the Respondents	22
Table: 9: Food Habit of Respondents	23
Table: 10: Frequency of Meal Intake of the Respondents	24
Table: 11: Food Habit Score of the Respondents according to Adolescents Food Habit Checklist (AFHC)	24
Table: 12: Distribution Food habit of the Respondents based on Gender	25
Table: 13: Functional Nutrition Literacy of the Adolescents according to Adolescent Nutrition Literacy Scale (ANLS)	25
Table: 14: Functional Nutrition Literacy Score of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS).....	27
Table: 15: Interactive Nutrition Literacy of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS)	28
Table: 16: Interactive Nutrition Literacy Score of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS).....	29

Table: 17: Critical Nutrition Literacy of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS)	29
Table: 18: Critical Nutrition Literacy Score of the Adolescents	31
Table: 19: Nutrition Literacy Score of the adolescents according to Adolescent Nutrition Literacy Scale (ANLS)	32
Table: 20: Distribution of Nutrition Literacy among Adolescents based on Gender	32
Table: 21: Association between Socio-Demographic Variables and Food Habit among Respondents	34
Table: 22: Cross-tabulation of Functional Nutrition Literacy (FNL) and Food Habit with Chi-square Test Result	35
Table: 23: Cross-tabulation of Interactive Nutrition Literacy (INL) and Food Habit with Chi-square Test Result	36
Table: 24: Cross-tabulation of Critical Nutrition Literacy (CNL) and Food Habit with Chi-square Test Result	37
Table: 25: Cross-tabulation of Nutrition Literacy and Food Habit with Chi-square Test Result	38
Table: 26: Spearman Correlation Between Nutrition Literacy (ANLS Score) and Food Habit (AFHC Score) Among Adolescents.....	39
Table: 27: Logistic Regression Predicting Healthier Food Habits from Nutrition Literacy...	39

TABLE OF CONTENT

LETTER OF APPROVAL	Error! Bookmark not defined.
LETTER OF RECOMMENDATION	Error! Bookmark not defined.
ACKNOWLEDGEMENT	ii
ABSTRACT.....	iii
ABBREVIATION.....	iv
CHAPTER I.....	1
INTRODUCTION	1
1.1. General Background of the Study	1
1.2. Statement of the Problem	2
1.3. Significance of the Study	3
1.4. Research Questions	4
1.5. Objectives of the Study	4
1.5.1. General Objective	4
1.5.2. Specific Objectives	4
1.6. Scope of the Study.....	5
CHAPTER – II.....	6
LITERATURE REVIEW	6
2.1. Nutrition Literacy and its Association with Food Habit Among Adolescents in Global Context	6
2.2. Nutrition Literacy and its Association with Food Habit Among Adolescents in South Asian Context.....	7
2.3. Nutrition Literacy and its Association with Food Habit Among Adolescents in National Context	9
CHAPTER – III	11
RESEARCH METHODOLOGY.....	11

3.1. Research Design.....	11
3.2. Study Area.....	11
3.3. Study Population and Sample Size.....	12
3.4. Sampling Methods.....	13
3.5. Data Collection Tools and Techniques	14
3.6. Data Analysis	16
3.7. Ethical Consideration	16
3.8. Limitation of the Study	17
3.9. Operational Terms.....	17
CHAPTER- IV	19
DATA PRESENTATION AND ANALYSIS	19
4.1. Socio-demographic Characteristics of Respondents	19
4.2. Socio-cultural Characteristics of Respondents.....	20
4.3. Characteristics of Respondent’s Family.....	21
4.4. Dietary Habits of the Respondents.....	23
4.5. Food Habit of Respondents according to Adolescents Food Habit Checklist (AFHC).....	24
4.6. Nutrition Literacy of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS)	25
4.7. Association between Different Factors with Food Habit	33
CHAPTER V	41
DISCUSSION, CONCLUSION, AND RECOMMENDATION	41
5.1. Discussion	41
5.2 Conclusion.....	47
5.3 Recommendation.....	48
REFERENCE.....	49

ANNEX -I.....	Error! Bookmark not defined.
WORK PLAN.....	Error! Bookmark not defined.
ANNEX II.....	Error! Bookmark not defined.
Informed Assent Form for Students.....	Error! Bookmark not defined.
ANNEX -III	Error! Bookmark not defined.
SELF-ADMINISTERED QUESTIONNAIRE.....	Error! Bookmark not defined.
ANNEX IV	Error! Bookmark not defined.
LETTERS	Error! Bookmark not defined.

CHAPTER I

INTRODUCTION

1.1. General Background of the Study

Nutrition Literacy (NL) refers to the capacity to understanding and applying the healthy nutrition practices in order to prevent and manage nutrition related diseases. It is derived from the term health literacy. Nutrition literacy, a special health literacy is linked to various health outcomes. Nutrition Literacy can be acquired both formally and informally. Formal nutrition literacy is gained through structured classroom curriculum, while the informal nutrition literacy is gained at home, community, through peers, family, friends. Both can shape nutrition literacy (Benn and Carlsson, 2014). The nutrition literacy plays an important role in determining eating behavior (Doustmohammadian et al., 2017). Furthermore, Nutrition knowledge (NK) of an individual plays an important role in determining the food habit and dietary choices which ensures nutritional need are fulfilled at every stages of life (Chaudhary et al., 2020). NK is a foundation for developing attitude towards foods, nutrition and health as well as for determining food habit of an individual. The higher level of nutrition knowledge influences food choices and eating behavior, leading to increased consumption of healthy food and reduced intake of fast food and processed snacks. While the lack of nutrition knowledge may negatively affect dietary habit ultimately effecting health of an individual (Ashoori et al., 2021; Silva, 2023). Proper nutrition and consumption of healthy diet is needed in all stages of life. Better nutrition is related to improved health, immunity and lower risk of diet related non-communicable disease. Understanding the benefits of good nutrition and the value of the good food habit from an early age could determine dietary practices later in life (Chaudhary et al., 2020; Gupta et al., 2024).

Healthy diet habit starts early in life thus, supporting proper growth, cognitive development offering long term health benefits like reduced risk of any form of malnutrition and diet related non-communicable diseases (NCDs) later in life (WHO, 2020). Food habit (FH) is the consistent choice that an individual makes regarding consumption of food which includes food consumed, frequency of eating, proportion of food intake, mode of food preparation. These habits are shaped by variety of factors such as socio-demographic characteristics, education, cultural influences and environmental factors such as food availability and economic status.

Understanding food habit is important as they directly impact nutritional literacy and overall health of an individual (WHO, 2020).

Among the individual of various life stages, adolescence (10 to 19 years) is particularly crucial period for establishing lifelong nutrition and food habit. Adolescent is the most critical stage of life as it is characterized by major biological, psychological, emotional and social growth and development with increased nutritional need (Best and Ban, 2021). It is most appropriate time to develop positive health behavior which continues throughout life as it is a period of transition from childhood to adulthood. At the same time, this is also a most vulnerable period in terms of exposure to risk factor which can be seen as a disease in adulthood; as the dietary habit established in adolescent set a foundation for life long practice (Brown et al., 2021; Heslin and McNulty, 2023). Adolescent is a critical time for promoting healthier choices and life style behavior, despite the importance, the adolescents often lack the sense of urgency of taking care of their own health. Which is concerning and might lead to habits like skipping meal, frequent snacking and high intake of fast food. Nutrition education plays an important role in shaping adolescents food habit. To encourage adolescent to adopt healthy lifestyle practices, suitable environment in both school and home should be created (Singh et al., 2021).

This study aimed to assess nutrition literacy and its association with food habit among the adolescents attending a community school. It sought to evaluate their existing nutrition literacy, food habit of the adolescents and analyze the factors influencing their nutritional choices. The study intended to provide a foundation for adolescent nutrition awareness their food habit and it offers a foundation for identifying potential area improvement in school nutrition.

1.2. Statement of the Problem

The adolescents make about 16% of the total world's population and about 20% of 10-19 years old live in South East Asia region. Adolescence is a critical stage of growth and development, where proper nutrition and care is needed to obtain good health and wellbeing (SEAR) (*Adolescent Health - SEARO*, n.d.). It is a period of life where people often change their lifestyle, which may later affect the life of individual; when exhibiting poor food habit issues like poor dietary choices, diet related non-communicable diseases etc. can occur (Heslin and McNulty, 2023). In order for an adolescents to develop higher ability to interact with the

complex and evolving food system and ultimately achieve healthier dietary outcomes and to reduce the risk of developing diet related non-communicable diseases over life course, nutrition literacy is important to the adolescent (Chaudhary et al., 2020; Gupta et al., 2024). Despite the fact the nutrition education is not incorporate adequately in the curriculum of the various developing country (Ashoori et al., 2021; Doustmohammadian et al., 2020; FAO, n.d.; Silva, 2023; Singh et al., 2021).

A strong relationship between the food habit and nutrition literacy had been demonstrated through various studies, especially in young adults and adolescents but lack of comprehensive research to identify effective strategies to enhance nutrition literacy and improving food habit was observed (Koca and Arkan, 2020; Silva, 2023) . The studies on adolescent NL and FH are limited in Nepal when compared with the existing international studies. Few of the existing study on nutritional status and food habit among adolescents in Nepal focuses on dietary pattern or nutrition status without exploring the association between NL and FH. Inadequate evidence was found on the factors that influence food habit among Nepali adolescents, which suggested need for more research on NL and FH (Baral et al., 2025; Giri et al., 2023).

The research aimed to fulfill the gap by assessing the level of nutrition literacy of adolescent in community school, examining their food habit and analyzing the relationship in-between nutrition literacy and food habit.

1.3. Significance of the Study

Adolescents is a critical period of life which is marked by formation of lifelong habits along with proper growth and development. Long term health outcome, growth and academic performance of an adolescent is widely affected by the dietary choices they make. The empirical evidence suggests that the nutrition literacy significantly impacts the adolescent's food habit and health outcome. For instance, adolescents with high nutrition literacy is more likely to make healthier choices, leading to improved overall health, reduced risk of malnutrition and nutrition related NCDs (Mancone et al., 2024; Silva et al., 2023; Taleb & Itani, 2021). While, poor nutrition literacy has been identified as a factor contributing to the poor food habit among adolescents. Which can lead to negative health outcomes like malnutrition and other long term diet related issues (Koca and Arkan, n.d.; Silva et al., 2023; Taleb and Itani, 2021). Correlations between nutrition literacy and factors like gender,

education level and BMI of the adolescent has been shown by various research (Koca and Arkan, 2020).

Despite the growing body of knowledge internationally, there is still lack of context-specific data in Nepal. Thus, this study aimed to address the existing gap by deepening the understanding how the nutrition knowledge influenced the food habit among the adolescents attending community schools. By generating local based data aims, it contributed meaningfully to existing knowledge in the field of public health and adolescent nutrition in Nepal. In addition to its empirical contribution, the study offered theoretical relevance, the research aligns with behavior change model such as Health Belief Model and Theory of Behavior Change, which states that the knowledge and belief largely impact and are foundational to modification of health behavior. By examining the nutrition literacy and its association with food habit, this research provided insights for curriculum development and the design, delivery of effective school-based nutrition education programs and intervention.

Furthermore, this study served as a foundation for exploring the multiple factors influencing adolescent nutrition/food habit like, such as nutrition literacy, parental education and socioeconomic status and will encourage further research in the field. This study contributed to the growing pool of knowledge empirically and theoretically.

1.4. Research Questions

- a) What is the level of the nutrition literacy and food habit of the adolescents?
- b) What is the association between nutrition literacy and food habit?

1.5.Objectives of the Study

1.5.1. General Objective

The general objective of the study is to assess nutrition literacy and its association with food habit among the adolescents.

1.5.2. Specific Objectives

- To identify the level of the nutrition literacy.
- To assess the food habit of the adolescents.

- To determine the association between the nutrition literacy and food habit.

1.6. Scope of the Study

The study focused on assessing nutrition literacy and its association with the food habits of adolescents attending community schools. The research aimed to evaluate student's understanding of the concept of nutrition and the influence of the understanding on their dietary choices. Through this, the study tried to provide insight into the role of nutrition education in shaping food habit of adolescents. The study targeted the adolescent studying in community school, some of the unique challenges faced by the adolescents included limited access to diverse food due to limited socioeconomic state and also varying level of exposure to nutrition education (Hameed et al., 2023). Therefore, understanding the NL and FH helped identifying gaps in school-based nutrition program and also helped in developing the tailored intervention. Despite the wide scope the study was limited to the adolescents attending community school in Godawari municipality, Lalitpur and does not extend to those in private school or out of school youth. In addition, the study was focused on the self-reported behaviors, which might have had limitations related to recall bias and desirability bias. However, the findings of the study will be significant in guiding school level policy recommendations in future, curriculum development and school based tailored nutrition interventions to promote positive food habit and nutrition literacy.

CHAPTER – II

LITERATURE REVIEW

Adolescence is a period in life in which an individual becomes more independent and make various life choices including food choice on their own. It is also a period for rapid growth and development, adequate knowledge about nutrition is essential for promoting healthy eating habit and healthier food choices. Appropriate dietary choices plays a crucial role in shaping food habit particularly among adolescents which is only possible after understanding the basic nutritional information (Heslin & McNulty, 2023).

2.1. Nutrition Literacy and its Association with Food Habit Among Adolescents in Global Context

Several global studies highlight the importance of nutrition literacy and its association with food habit among adolescents.

The study conducted on London, Ontario, Canada with high school students showed that the nutrition knowledge on average was relatively low 52.2%. The findings of the study showed that the knowledge on food and nutrition increases by 1% for each one-year increase in an adolescent's age. It also revealed that the adolescence who were confident in reading, understanding food labels had higher food and nutrition scores, 7.63%, 6.36% respectively. It also revealed adolescents having higher total food and nutrition literacy knowledge lead to healthier eating (Brown et al., 2021).

A study conducted in Lazio region of Rome, Italy a high-income country stated the importance of adopting multidisciplinary and technology enhanced approaches to promote healthy eating among adolescents; as the study suggest that the nutrition and food literacy can facilitate a positive change in eating behavior. Significant increase in mean nutrition literacy from baseline (M= 49.08) to post intervention (M= 56.06), also the self-regulation score at baseline at M= 2.35 to post intervention score M= 2.62, highlights the role of nutrition literacy in adolescence health and wellbeing (Mancone et al., 2024).

Finding from upper middle income country Iran showed that the respondents from family having nutrition-related disease were despite the level of the nutrition literacy, the family with presence of nutrient related chronic diseases tend to be more concerned about the diet thus having higher score of food label reading skill (OR= 1.48, CI= 1.01-1.48) (Ashoori et al., 2021).

Additionally, another cross-sectional study conducted in Iran among primary school students, showed significant association between low level of functional food and nutrition literacy with higher odds of low dietary diversity score 2.19. This study demonstrated that the level of the nutrition literacy might potentially shape adolescents long term dietary intake and the low nutrition literacy could act as a barrier to healthy food habit (Doustmohammadian et al., 2020).

In Lebanon, an upper middle-income country, a cross-section study found greater than average level of nutrition literacy in 80% of the respondents. 64.6% adolescents had a medium/high food habit score. It indicates that there was no presence of association between nutrition literacy and food habit, expect for an inverse association with micronutrient; which means that micronutrients could have a role in shaping dietary choices (Taleb and Itani, 2021).

In another upper middle-income country, Turkey, when lifestyle behaviors were examined, it found that 88.2% respondents consumed fast food, respondents skipping meal during the day were 51.4%, 31.3% skipped breakfast and 70.9% consumed fast food as snacks. The finding for a study suggested that the adolescent nutrition literacy and food habit were good, with NL significantly influencing FH. The study further noted that various factors like gender, parent's education level, grade, BMI and daily behavior like meal skipping, watching TV, engagement in sports, fast food consumption, sleep time, number of meal impacted FB and NL (Koca and Arkan, 2020).

2.2. Nutrition Literacy and its Association with Food Habit Among Adolescents in South Asian Context

As a result of the changing food environment, adolescents in south Asia face a double burden of malnutrition; with increasing prevalence of both undernutrition and over nutrition (Sethi et al., 2025; Zulfiqar A Bhutta et al., 2025). In order to combat this understanding food habit of

adolescents and nutrition literacy is essential to develop effective intervention. Key demographic and socioeconomic factors influencing adolescents' nutrition literacy have been identified in studies across south Asia.

Scoping review of a total of 118 records in India found that peer influence 21.2%, parental unhealthy food behavior 15.1%, craving for taste, place of residence 6.06%, mass media exposure 18.1% and emotional status 6.06% were some of the factor influencing the food choices of an adolescent (Jena et al., 2023).

Similarly, a school-based cluster randomized control trial conducted in Mumbai, India, found that the adolescents pre intervention responding correctly to the knowledge related to serving of fruits and vegetables 33.6%, simple and complex carbohydrate 23%, allowable sugar consumption 15.6% were quite low. Also, 31% were skipping breakfast every day and 69% were purchased beverages from school canteen more than 2 – 3 times a day. Post intervention significant improvement in intake of mean daily intake of green leafy vegetable (58.9 (SD 18.4) g, $P < 0.001$). Thus, the study suggested, that adopting evidence-based learning can improve knowledge related to the nutrition and dietary choices of an individual. Thus, suggesting association in between nutrition knowledge and food habit (Moitra et al., 2021).

A study conducted in Deoria district, UP, India, suggested a link in between nutrition education and the dietary pattern of adolescence. Also, the study finding indicated that the dietary habit of adolescents in India is generally unhealthy. The post intervention (nutrition knowledge) revealed significant increase in the knowledge level of respondents. Cereal consumption increased from 98.57% to 99.04%, whole pulses consumption increased from 3.09% to 10.95%, green leafy vegetables from 3.33% to 54.78%, nuts and oil from 6.19% to 70.95%, milk and milk products from 45.47 to 70.95%, meat and meat products from 16.98% to 25.87% (Yadav & Mogra, 2024).

A study conducted in Dhaka district of Bangladesh showed 26% respondents regularly consuming fast food, 64.3% preferred traditional three meals per day, while 23.0%, 19.6%, 6.0% of adolescents in rural areas do not consume fruits, chicken/fish and vegetables respectively. This study explored associations revealing complex factors influencing dietary pattern and health status of the adolescents in rural setting. The factors associating were age, gender, parent's income, BMI etc. (Islam et al., 2024).

A comparative study conducted in Pakistan in between the school going adolescents in rural and urban area showed that the breakfast skipping habit was comparatively more in urban respondents 28% than the rural respondents 18%. 57% favored homemade food while 43% favored junk food, frequency of respondents from urban setting favoring junk food was high in comparison to rural respondents (Zainab et al., 2022).

A study conducted in Sri Lanka have shown that consumption of fast food among the adolescents is in an increasing trend, as a result of urbanization, changing lifestyle and income of the parents. 59% respondents belonged to high fast food consumption level while 41% belong to low fast food consumption level (Sewwandi and Himali, 2023).

Thus, the studies from south Asia critically highlights the role of nutrition literacy in shaping the adolescent food habit along with multiple factors influencing the food choices.

2.3. Nutrition Literacy and its Association with Food Habit Among Adolescents in National Context

Several studies have been carried out in Nepal to explore the adolescent's nutrition literacy and food habit. A nation-wide study conducted to assess nutrition of adolescents, showed unsatisfactory level of basic nutrition knowledge among adolescents and high processed food was preferred more in comparison to fruits, vegetables and dairy products and showed the socio-economic factor influence on food habit and diet choice. Most of the respondents 92% were non vegetarian. 94% usually consumed junk and processed food. Proportion is higher among early adolescents 93% than late adolescents 89%. Majority of respondents 67% consumed food from diverse food group i.e., 4 different food group. 37% and 69% of early and late adolescents respectively were familiar about the term nutrition (Aryal et al., 2014).

Result from the study found that the nutrition education significantly improved the awareness of healthy eating practices and their ability to make healthier food choices. Thus supported the nutrition education enhance food habit. Large majority of the respondents 91.3% had rice as a main diet. Nearly half respondents 50.7% had carbonated drinks less than 1 time per day. Almost all 93% respondents consumed junk food. (Baral et al., 2025).

A study conducted in Kathmandu valley identified multiple independent variables influencing nutrition literacy like age, ethnic group, family type and parents' education level. The study also suggested that the dietary diversity of the responded is influenced by various factors like sex, mother's education, junk food consumption habit and overall nutrition level. Indicating a strong correlation between nutrition literacy and food habit (Manandhar and Kakchapati, 2023).

A study conducted in Kathmandu valley among secondary level school student indicates that respondents have significant gap in knowledge regarding the energy content of the fat-free foods, 28.1% incorrectly believe that fat-free food is free from energy. 56.2% recognized the significance of high-fiber diet for good bowel function. 56.2% respondents disagreed with skipping meals as a strategy for losing weight. While, 89.3% identified as the protein being main source of energy. Majority 66.1% responded eating 3 to 4 times a day. 43.8% consume fast food once a week. 46.3% skip meal, 83.5% take snack. 33.1% respondents take balanced diet. As the Pearson correlation between mean of nutrition knowledge and dietary practice is 0.125, shows presence of no significant association between nutrition knowledge and diet practice (Sigdel and Giri, 2024).

The national level studies on adolescent nutrition literacy and food habits highlights several gaps and challenges reinforcing the significance between nutrition literacy and food habit while highlighting various external determinant factors.

CHAPTER – III

RESEARCH METHODOLOGY

In this chapter the researcher clearly elaborated the procedure used for obtaining data for this research. Study design and all the criteria that were required for identification of the nutrition literacy and its association with food habit among the adolescents attending the public school were estimated in this section. The findings were based on quantitative methods, using a survey for data collection.

3.1. Research Design

Descriptive cross sectional study design was used to assess nutrition literacy and its association with food habit among the adolescents in Lalitpur, Godawari.

3.2. Study Area

The study was carried out in Godawari municipality of Lalitpur district. Godawari Municipality is located in the southern part of the Lalitpur and consists of a total of 14 wards consisting total area of 96.11 Sq. km, of which 0.36 sq. km is habitable. (*Godawari Final 2075.Pdf*, n.d.). Although the area is located near the capital city of the Nepal, similar study has not yet been conducted there. Therefore, Godawari Municipality was selected using lottery method among municipalities of Lalitpur District to ensure an unbiased and random selection. The municipality depicts a diverse mix of semi-urban and rural communities, provided an opportunity to capture wide array of socio-demographic factors.

Godawari Municipality comprises 14 wards and a total of 38 governmental schools. However, only 17 government schools from 12 wards offer classes from grades 8 to 10. The study focused on the six different government schools, each selected from different wards of Godawari Municipality in Lalitpur district.

Table: 1: List of secondary school and their corresponding ward

Ward	Name of School
9	Chhampidevi Secondary School
11	Shree Bajrabarahi Secondary School
3	Kitini Secondary School
4	Patha Pradarshak Secondary School
14	Phulchoki Secondary School,
10	Udaya Kharka Secondary School

Source: Education section, 2082, Godawari Municipality, Lalitpur

3.3. Study Population and Sample Size

The study targeted adolescents aged 13 to 16 years who were enrolled in grades 8, 9 and 10 in all 17-government schools across twelve wards of Godawari Municipality. For this purpose, respondents were recruited from six different schools, each from a different ward.

According to official records from the Education section of the municipality, the total number of students enrolled in grades 8 to 10 was 2,364. However, this study focused on six schools comprising 1,116 students in grades 8 to 10, which served as a sampling frame (finite population). Consequently, the sample size was calculated using Cochran's formula with a 95% confidence level, a 5% margin of error and a 50% population proportion to ensure maximum variability.

$$\text{Sample size } (n_0) = \frac{Z^2 * p * (1-p)}{e^2}$$

Using, $Z=1.96$ (for 95% confidence), $p = 0.5$ (maximum variability), $e= 0.05$ (5% margin of error)

$$\text{Sample size } (n_0) = \frac{1.96^2 * 0.5 * (1-0.5)}{0.05^2} = 384.16 = 384$$

Adjusting for finite population ($N=1,116$)

$$n = \frac{n0}{1 + (\frac{n0-1}{N})} = 281$$

3.4. Sampling Methods

A Proportionate stratified random sampling technique was employed to ensure representativeness. Firstly, Godawari Municipality was randomly selected to ensure geographical representation using simple random lottery method. Similarly, out of twelve wards having secondary school in Godawari Municipality, six wards (approx. 50%) were randomly selected through lottery method to further ensure geographical representation. Afterwards, one community school from each selected ward was chosen randomly to keep the number of the study sites manageable. In wards with only one community school, that school was automatically included in the study. In wards with two or more community schools, one school was selected using lottery method. After selection of schools, the number of students to be included from each school and from each class was determined proportionately based on the total number of students studying in grades 8 to 10. Thus, some schools contributed as many as 86 students, while others contributed as few as 15 students. Proportional allocation was carried out using formula in Excel to ensure fairness and representativeness, as shown in Table 2. After determining the required number of students from each school and class, the students were selected using simple random lottery method, which ensured an equal chance of participation and a good representation of the population.

Table: 2: Proportionate allocation of students from selected school

School Name	Total Students	Proportionate Sample	Class 8		Class 9		Class 10	
			Total	Sample	Total	Sample	Total	Sample
Chhampidevi Secondary School	60	15	16	4	28	7	16	4
Shree Bajrabarahi Secondary School	33	84	109	27	119	30	105	27
Kitini Secondary School	340	86	102	26	129	32	109	27
Patha Pradarshak Secondary School	79	20	20	5	29	7	30	8
Phulchoki Secondary School,	238	60	78	20	85	21	75	19
Udaya Kharka Secondary School	66	17	25	6	22	6	19	5

Source: Education section, 2082, Godawari Municipality, Lalitpur

3.5. Data Collection Tools and Techniques

Data were collected using a self-administered questionnaire developed based on pre-determined tools, namely the Adolescent Nutrition Literacy Scale (ANLS) and the Adolescent Food Habit Checklist (AFHC). The questionnaire was divided into four sections. The first section included questions about the socio-demographic characteristic of the respondents, such as age, gender, grade, parent's educational status, occupations of the parents of the respondents, household type, family size and place of residency. The second section consisted of questions related to dietary pattern and the daily frequency of food intake. The socio-demographic section and the questions related to dietary pattern were developed by the researcher and pretested to ensure clarity, relevance and face validity.

The third section assessed the nutrition literacy level of the adolescents using Adolescent Nutrition Literacy Scale (ANLS), developed by Bari (Bari, 2012) in 2012 and was later adopted and validated by Turkmen et al. in 2017. The scale consisted of 22 items, refined through factor analysis to confirm construct validity. It demonstrated good internal consistency, with Cronbach's alpha of approximately 0.80 for the total scale. In the scale, each item was rated on a five-point Likert scale, where 1 (minimum score) indicated strongly disagree and 5 (maximum score) indicated strongly agree. However, 10 out of 22 items were reversely coded, meaning that for these items, 1 represented strongly agree and 5 represented strongly disagree. The minimum score that can be obtained from the scale was 22 and the maximum score that can be obtained was 110. Based on the 33.33rd and 66.66th percentile values of the scores obtained from the ANLS, the nutrition literacy levels were categorized into three groups: scores up to 70.0 indicated low nutrition literacy, scores from 70.1 to 77.0 represented moderate nutrition literacy and scores above 77.0 reflected high nutrition literacy. the scale encompassed of three sub-dimensions: functional nutrition literacy (items 1 to 7), interactive nutrition literacy (items 8 to 13) and critical nutrition literacy (items 14 to 22). The Nepali translated version of ANLS used in the study demonstrated acceptable reliability, with a Cronbach's alpha of 0.701 for 22 items.

Table: 3: Adolescents Nutrition Literacy scale scoring categories

Nutrition Literacy Level	Score range
Low Nutrition Literacy	<70.0
Moderate Nutrition Literacy	70.1 to 77.0
High Nutrition Literacy	>77.0

Lastly, another tool used for data collection was 'Adolescents' Food Habit Checklist (AFHC)', a self-report psychometric tool measuring the quality of young people aged 13 to 16 years. The AFHC contains 23 question that determine the food habits of the respondents. It was developed by Johnson et al (Johnson et al., 2002), with Cronbach's alpha of 0.83 and test-retest reliability of 0.90 (p<0.001). Scoring was done following the standard guidelines of the AFHC tool. The 'Healthy' responses were scored as one, while 'unhealthy' responses were scored zero. Certain items in the tool had alternative answer (e.g., don't buy, don't eat) which as per the criteria

were treated as not applicable. Then, the items marked as not applicable and missing responses were excluded from the denominator, and the formula was used to calculate the final score:

$$\text{AFHC} = \text{number of healthy responses} * \left(\frac{23}{\text{number of items completed}} \right)$$

The highest possible score was 23 points, and the lowest was 0, with higher score indicating healthier food habits. The AFHC scores were categorized using quartile values. Where, the first quartile (Q1) represented poor food habit with score from the lowest up to 11, the second quartile (Q2) represented below average food habit with scores from 11.01 to 14.64, the third quartile (Q3) represented above average food habit with score from 14.65 to 17.52, and fourth quartile (Q4) represented good food habit with scores from 17.53 to the highest. The Nepali translated version of the AFHC showed high internal consistency, with Cronbach's alpha of 0.813 for the 23 items.

Table: 4: Adolescents Food Habit Checklist Scoring Categories

Food Habit	Score range
Poor Food Habit	<11
Below Average Food Habit	11.01 to 14.64
Above Average Food Habit	14.65 to 17.52
Good Food Habit	>17.53

3.6. Data Analysis

The completed questionnaires were thoroughly reviewed by the researcher. Data were coded, entered, analyzed and interpreted according to the objectives of the study using the Statistical Package for Social Sciences (IBM SPSS V 27). Descriptive results were presented in the form of mean, standard deviations (SD), frequencies and percentages. The associations of different independent variables with dependent variables were determined using the Chi-square test and other relevant statistical tests. Logistic regression analysis was conducted for further analysis.

3.7. Ethical Consideration

Firstly, Formal approval was obtained from the central department of home science. Afterwards, permissions were obtained from the respective selected schools. Before data collection, written informed consent was obtained from the parents as the participants were

below 18 years of age clarifying the objectives of the research. Written informed assent was also obtained from the participants. No pressure or inducement of any kind was applied. The respondents were assured verbally that the information they provided would remain highly confidential and be used only for the study purpose.

3.8. Limitation of the Study

Since the study was conducted on government schools, adolescents enrolled in private schools and those who were out of school were not included. The study employed cross sectional study design, which provided a snapshot of the study population within relatively short time frame; therefore, the direction of causal relationship variable could not be established. Since the data collection were done using self-administered questionnaires, some respondents might have interpreted the questions differently, leading to information bias as well as social desirability bias. Additionally, the findings may not be generalizable to adolescents from other regions of Nepal.

3.9. Operational Terms

1. Food habit: Food habits referred to the way the respondents usually prepared food, their preferences, the type of diet they followed, the number of meals per day and the common cooking methods they used. They were assessed using the Adolescent Food Habit Checklist (AFHC) developed by Johnson et al in 2002.

2. Nutrition literacy: Nutrition literacy referred to how well the respondents could understand nutrition related information. In this study, it was measured through questions on Functional Nutrition literacy (FNL), Interactive Nutrition Literacy (INL) and Critical Nutrition Literacy (CNL). It was assessed using standard Adolescent Nutrition Literacy Scale (ANLS), originally developed by Bari in 2012.

3. Adolescents: In this study, adolescents were defined as young people in the early to mid-stage of adolescence, aged 13 to 16 years, based on self-reported age, who were studying in governmental schools of Godawari Municipality.

4. Snacking: In this study, snacking referred to the consumption of food between main meals.

5. Government/ community school: This term referred to the six secondary level governmental schools from six different wards in Godawari Municipality that were selected as the study sites.

Figure 1. Conceptual Framework of the Study

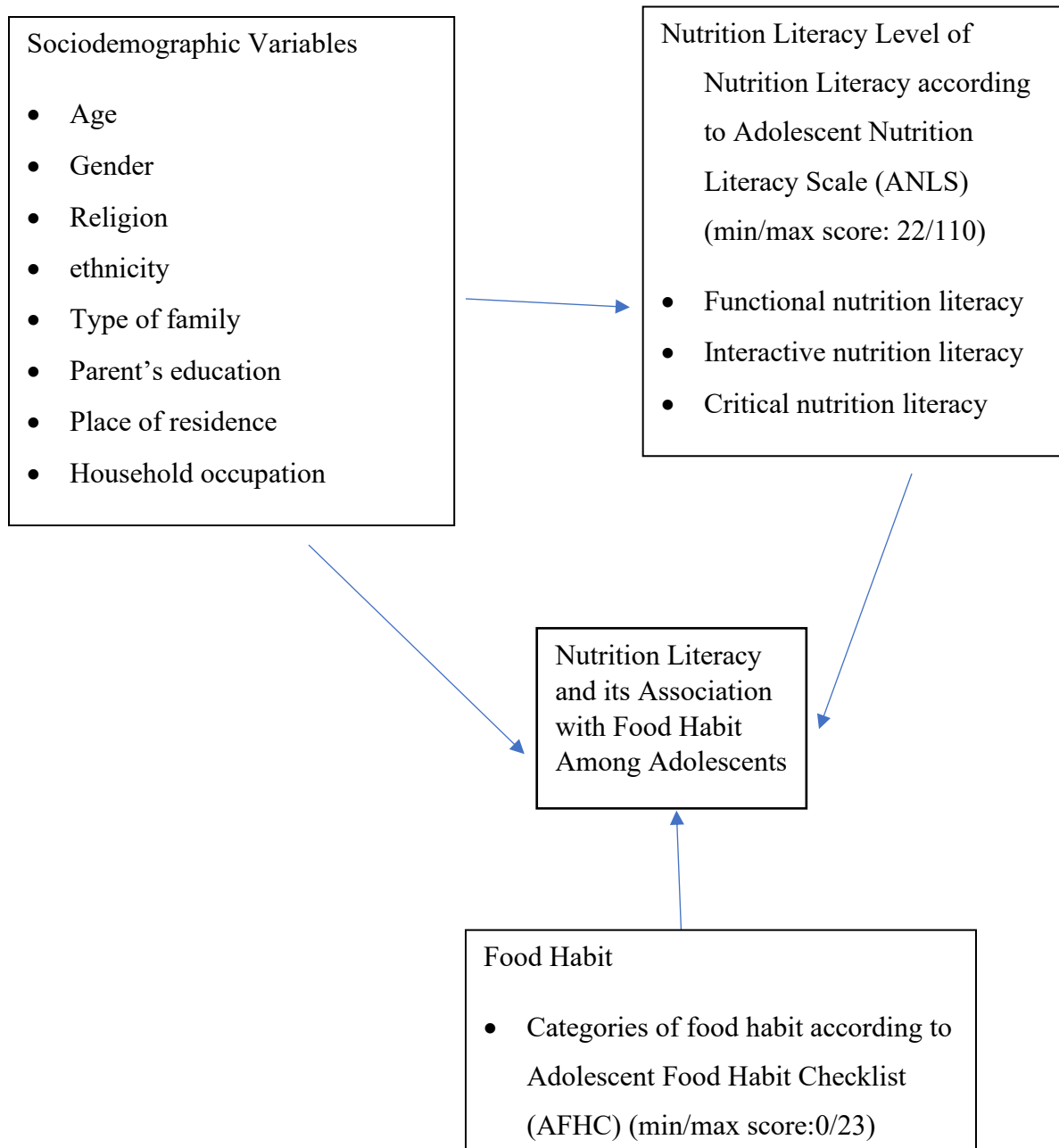


Fig 1: Conceptual framework illustrating the influence of sociodemographic characteristics and nutrition literacy on food habit among adolescents within the context of the study: Nutrition Literacy and its Association with Food Habits among Adolescents.

CHAPTER- IV DATA PRESENTATION AND ANALYSIS

This chapter presents the findings of the study. The main objective of the study was to assess the nutrition literacy and its association with food habits among adolescents studying in community school of Godawari municipality, Lalitpur.

The chapter includes the analysis and interpretation of primary data collected through a self-administered questionnaire from 281 respondents. In the first section, the socio-demographic characteristics of the respondents, such as age, gender, educational level of the parents and others were described. Furthermore, the associations between the independent and dependent variables were analyzed.

4.1. Socio-demographic Characteristics of Respondents

Table: 5: Socio-demographic Characteristics of Respondents

n=281		
Socio-demographic Characteristics of Respondents	Frequency	Percentage (%)
Age of Respondents		
13	37	13.2
14	77	27.4
15	72	25.6
16	95	33.8
Median (age) = 15 years, Max/Min= 16/13 years		
Sex of the Respondents		
Male	107	38.1
female	174	61.9
Grade of study of the respondents		
8	88	31.3
9	103	36.7
10	90	32

Source: Field Survey Data, 2025

The table 3 presents the personal characteristics of the respondents. The age of the respondents ranged from 13 to 16 years as per the criteria of the tool used, with median age of 15 years.

About one-third of the respondents (33.8%) were 16 years old, followed by 27.4% who were 14 years old, 25.6% who were 15 years old, and 13.2% who were 13 years old.

Regarding sex, the majority of the respondents (61.9%) were female, indicating higher participation of girls in the study. In terms of distribution of respondents based on grades, the largest proportion of respondents 36.7% were in grade 9, followed by 32% in grade 10, and 31.3% in grade 8 indicating that the respondents were fairly evenly distributed across age and selected grade.

4.2. Socio-cultural Characteristics of Respondents

Table: 6: Socio-cultural Characteristics of Respondents

n=281

Characteristics of Respondents	Frequency	Percentage (%)
Religion of the respondent		
Hindu	190	67.6
Buddhist	39	13.9
Christian	44	15.7
Others (Kirati)	8	2.8
Ethnicity of respondent		
Brahmin	47	16.7
Chettri	35	12.5
Janajati	168	59.8
Dalit	28	10.0
Others (Madhesi)	3	1.1
Place of Residence		
Sub-urban	172	61.2
Rural	109	38.8

Source: Field Survey Data, 2025

Table 4 presents the socio-cultural characteristics of the respondents. The majority of the respondents followed Hinduism (67.6%), followed by Christianity (15.7%), Buddhism (13.9%) and other religion, namely Kirati (2.8%). In terms of ethnicity, more than half of the

respondents belonged to the Janajati group (59.8%), while 16.7% were Brahmin, 12.5% were Chettri, 10.0% were Dalit and 1.1% belong to another ethnic group, namely Madhesi.

With respect to place of residence, 61.2% of the respondents lived in sub-urban area, indicating that the study population was more concentrated in suburban setting compared to rural setting.

4.3. Characteristics of Respondent's Family

4.3.1. Characteristics of the family of the Respondents

Table: 7: Family Characteristics of Respondents

n=281

Family Characteristics of Respondents	Frequency	Percentage (%)
Type of the Family of the Respondent		
Nuclear	125	44.5
Joint	156	55.5
Education of Father of the Respondent		
Illiterate	17	6.0
Literate (non-formal)	76	27.0
Primary (1-8)	87	31.0
Secondary (9-10)	56	19.9
Higher Secondary School (11-12)	35	12.5
Higher	10	3.6
Education of the mother of the Respondent		
Illiterate	44	15.7
Literate (non-formal)	85	30.2
Primary (1-8)	75	26.7
Secondary (9-10)	45	16.0
Higher Secondary School (11-12)	23	8.2
Higher	9	3.2

Source: Field Survey Data, 2025

Table 5 presents the family characteristics of the respondents. More than half of the respondents belonged to the joint families, while 44.5% were from nuclear families, indicating a slight predominance of joint family among the study population.

Regarding the educational status of the fathers, about one third (31%) had completed primary level education (grade 1-8), followed by 27.0% who were literate through non-formal education and 19.9% had completed secondary level education (grade 9-10). Smaller proportion had attained higher secondary education (12.5%) or education above higher secondary (3.6%), while 6.0% were illiterate. In case of mothers, the highest proportion (30.2%) were literate through non-formal education, followed by 26.7% who had completed primary education and 15.7% who were illiterate. About 16.0% had completed secondary level education, 8.2% had higher secondary education and only 3.2% had attained education above higher secondary. These findings suggest that, overall, fathers had slightly higher educational attainment than mothers, with a considerable proportion of parents having only non-formal education.

4.3.2. Type of Occupation of Parents of the Respondents

Table: 8: Occupation of Parents of the Respondents

n=281

Occupation of Parents of the Respondents	Frequency	Percentage (%)
Occupation of the Father of the Respondent		
Agriculture	84	29.9
Business	58	20.6
Government Office	19	6.8
Home Maker	4	1.4
Private Office	46	16.4
Others	70	24.9
Occupation of the mother of the Respondent		
Agriculture	76	27.0
Business	34	12.1
Government Office	15	5.3
Home Maker	95	33.8
Private Office	31	11.0
Others	30	10.7

Source: Field Survey Data, 2025

The occupational distribution of the fathers of the respondents showed that the largest population (29.9%), nearly one-fourth, were engaged in agriculture, followed by 20.6% in business and 16.4% in private office jobs. Smaller proportions worked in government offices (6.8%) and only 1.4% were homemakers. Approximately one-fourth (24.9%) were reported under the category of ‘others’ which included diverse occupations such as foreign employment, driving, mason/construction work, wage labor, security work and a few cases of deceased fathers.

For mothers, the most common occupation was homemaking (33.8%), followed by agriculture (27.0%). Around 12.1% of mothers were engaged in business, only 11.0% in private office work, 5.3% in government offices and 10.7% in other occupations such as handicraft, mason worker, driving and bamboo work.

These findings indicates that while fathers’ occupations were varied, with a majority engaged in agriculture and business, mothers were predominately homemakers, reflecting traditional gender roles in the study population.

4.4. Dietary Habits of the Respondents

4.4.1. Food Habit of the Respondents

Table: 9: Food Habit of Respondents

n=281		
Food Habit of Respondent	Frequency	Percent
Vegetarian	17	6.0
Non-vegetarian	248	88.3
Ovo-vegetarian	16	5.7

Source: Field Survey Data, 2025

The findings revealed that the vast majority of respondents (88.3%) followed a non-vegetarian dietary pattern. In contrast, only a small proportion of respondents (6.0%) reported being vegetarian, while 5.7% identified themselves as ovo-vegetarian. These results indicate that non-vegetarianism was the predominant dietary practice among the study population.

4.4.2. Frequency of Meal Intake of the Respondents

Table: 10: Frequency of Meal Intake of the Respondents

n=281

Frequency of Meal Intake among respondents	Frequency	Percent
One meal per day	6	2.1
Two meals per day	122	43.4
Three meals per day	105	37.4
More than three meals per day	48	17.1
Mean=2.69, Median= 3, min/max=1/6, IQR= 1		

Source: Field Survey Data, 2025

Table 8. presents the daily meal frequency of the respondents. Most respondents consumed two meals per day (43.4%), followed by three meals per day (37.4%) and more than three meals per day (17.1%). The mean meal frequency was 2.75 meals per day, with a median of 3 meals per day. The minimum and maximum meal frequencies were 1 and 6, respectively, and the interquartile range (IQR) was 1, indicating that the middle 50% of respondents typically consumed between 2 and 3 meals per day.

4.5. Food Habit of Respondents according to Adolescents Food Habit Checklist (AFHC)

4.5.1. Food Habit Score of Respondents according to Adolescents Food Habit Checklist (AFHC)

Table: 11: Food Habit Score of the Respondents according to Adolescents Food Habit Checklist (AFHC)

n=281

AFHC Score Category	Frequency	Percentage
Poor food habit	72	25.6
Below Average food habit	78	27.8
Above Average food habit	65	23.1
Best food habit	66	23.5
Mean=14.05, Median=14.53, SD=4.50, Min/Max=2/23, IQR= 6		

Source: Field Survey Data, 2025

The distribution of respondents based on the Adolescent Food Habit Checklist (AFHC) scores is shown in Table 8, 25.6% of adolescents showed poor food habit and 27.8% had below average habits, whereas 23.1% and 23.5% demonstrated above average and best food habits respectively. These results indicate that a considerable proportion of adolescents had

suboptimal dietary practices, with more than half falling into the poor or below average food habit categories.

The total AFHC scores among respondents ranged from 2 to 23, with a mean score of 14.05 ± 4.50 . The median score was 14.53, and the interquartile range (IQR) was 6, indicating that the middle 50% of the respondents scored within the range of 6 points, reflecting moderate variability in food habits among the respondents.

4.5.2 Distribution Food habit of the Respondents based on Gender of the Respondents

Table: 12: Distribution Food habit of the Respondents based on Gender

n=281

	Poor Food Habit	Below Average Food habit	Above Average Food habit	Best Food Habit	Total
Male	29 (27.1%)	29 (27.1%)	25 (23.4%)	24 (22.7%)	107 (100%)
Female	43 (24.7%)	49 (28.2%)	40 (23.0%)	42 (24.1%)	174 (100%)

Source: Field Survey Data, 2025

The table represents the gender wise distribution of food habits among the respondents, which appeared fairly similar between male and female adolescents. However, a slightly higher proportion of females showed better food habits compared to males. As 27.1% of male respondents had poor food habits, 27.1% had below average, 23.4% had above average and 2.7% had best food habits. In comparison, among females, 24.7% had poor food habits, 28.2% had below average, 23% had above average and 24.1% had best food habit.

4.6. Nutrition Literacy of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS)

4.6.1. Functional Nutrition Literacy of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS)

Table: 13: Functional Nutrition Literacy of the Adolescents according to Adolescent Nutrition Literacy Scale (ANLS)

n=281

ANLS Statement: Functional Nutrition Literacy (FNL)	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
I find that the language used by nutrition, health and food experts is difficult to be understood.	9 (3.2%)	122 (43.4%)	54 (19.2%)	88 (31.3%)	8 (2.80%)
I find it difficult to understand the jargon (technical words used by nutrition, health and food experts.	8 (2.80%)	134 (47.7%)	51 (18.1%)	80 (28.5%)	8 (2.80%)
When I read information about nutrition, food, or diet, I find it difficult to understand.	5 (1.80%)	65 (23.1%)	60 (21.4%)	132 (47.0%)	19 (6.8%)
I find it difficult to know how I should change my diet when I get dietary advice from the doctor, nurse or the like.	10 (3.9%)	84 (29.9%)	45 (16%)	114 (40.6%)	28 (10%)
When I read information about nutrition food or diet, I need someone to help me understand it.	6 (2.10%)	97 (34.5%)	38 (13.5%)	118 (42.0%)	22 (7.8%)
I am not familiar with World Health Organization (WHO) recommendations for daily intake of fruits and vegetables.	43 (15.3%)	95 (33.8%)	61 (21.7%)	68 (24.2%)	17 (5.0%)
When I read an article about nutrition, food or diet, I find words that I don't know.	19 (6.80%)	167 (59.4%)	45 (16.0%)	43 (15.3%)	7 (2.50%)

Source: Field Survey Data, 2025

The above table depicts the distribution of responses to statements assessing Functional Nutrition Literacy (FNL) among adolescents attending the community schools. The findings indicate that a significant proportion of respondents experienced difficulties in understanding

nutrition related information, particularly due to complex language, technical jargon and unfamiliar terms. Nearly, half of the respondents (43.4%) agreed that the language used by the health and nutrition experts was difficult to understand, while 31.3% disagreed. Similarly, 47.7% agreed that the jargon or technical terms used by experts were difficult to comprehend, and 59.4% reported often encountering unfamiliar words related to nutrition, food or diet.

When reading information about nutrition, food and diet 23.1% respondents agreed that they found it difficult to understand, while 47% disagreed. Moreover, 29.9% agreed that they found it difficult to know how to change the diet even after receiving dietary advice from the health professionals, whereas 40.6% disagreed. About 34.5% agreed that they required assistance to understand nutrition related information, while 42% disagreed. Additionally, 49.1% reported unfamiliarity regarding World Health Organization (WHO) recommendations for fruit and vegetables. Overall, these findings suggest that despite the availability of nutrition information, many adolescents struggle to interpret and apply it effectively.

4.6.2. Functional Nutrition Literacy Score of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS)

Table: 14: Functional Nutrition Literacy Score of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS)

n=281

Functional Nutrition Literacy (FNL) Score	Frequency	Percentage
Low	100	35.6 %
Medium	92	32.7 %
High	89	31.7%

Source: Field Survey Data, 2025

The table shows that the most participants scored in the low to medium range of Functional nutrition literacy (FNL), with the majority 35.6% scoring low, followed by 32.7% scoring medium and only 31.7% high. These findings suggest that a significant proportion of adolescents may have struggled to understand and apply nutrition related information effectively.

4.6.3. Interactive Nutrition Literacy of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS)

Table: 15: Interactive Nutrition Literacy of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS)

n=281

ANLS Statement: Interactive Nutrition Literacy (INL)	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
I have gathered information about diet from various sources that I think is relevant for me.	5 (1.80%)	129 (45.9%)	71 (25.3%)	70 (24.9%)	6 (2.10%)
I use the internet when I am looking for information about nutrition such as diet.	19 (6.8%)	194 (69%)	30 (10.7%)	32 (11.4%)	6 (2.10%)
I discuss about diet with my friends, family and relatives.	18 (6.4%)	171 (60.9%)	37 (13.2%)	44 (15.7%)	11 (3.9%)
I have changed my eating habits based on the information about diet that I have gathered.	15 (5.3%)	183 (65.1%)	38 (13.5%)	40 (14.2%)	5 (1.80%)
I often read material about what constitutes a balanced diet.	15 (5.3%)	115 (40.9%)	70 (24.9%)	72 (25.6%)	9 (3.20%)
I readily take the initiative to discuss with dietary experts (for example a doctor, nurse or the like) about healthy eating.	16 (4.8%)	141 (42.7%)	77 (23.3%)	83 (25.2%)	13 (3.9%)

Source: Field Survey Data, 2025

The table illustrates the distribution of responses related to Interactive Nutrition Literacy (INL) among adolescents. The results reflect participants' ability and willingness to actively engage, communicate and seek nutrition and diet related information from different sources. Nearly half of the respondents 45.9% agreed that they had gathered dietary information from various relevant sources, while about one-fourth disagreed. A large majority 69% reported using the internet to search for nutrition-related information, indicating that online media served as a major source of nutritional knowledge among adolescents.

More than half 60.9% stated that they discussed diet-related topics with friends, family or relatives suggesting a positive level of peer and family interaction. About 65.1% of respondents agreed that they had changed their eating habits based on the information they gathered, highlighting the influence of accessible nutrition information on adolescents' dietary behaviors. Additionally, 40.9% reported that they often read materials about what constitutes a balanced diet, while 25.6% disagreed. Around 42.7% adolescents indicated that they took the initiative to discuss healthy eating with dietary experts, such as doctors or nurses one fourth disagreed. Overall, these findings illustrate the need to ensure accuracy and reliability of information available online, as well as the potential of both social and digital channels to promote health eating.

4.6.4. Interactive Nutrition Literacy Score of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS)

Table: 16: Interactive Nutrition Literacy Score of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS)

n=281

Interactive Nutrition Literacy (INL)	Frequency	Percentage
Low	142	50.5%
Medium	72	25.6%
High	67	23.8%

Source: Field Survey Data, 2025

The table represents that the Interactive Nutrition Literacy (INL) was relatively low among the respondents, comprising 50.5% of total participants. In contrast, only about one quarter 23.8% of respondents demonstrated high level of INL. These findings indicate that many adolescents may lacked the motivation, confidence or resources to actively seek, discuss and apply nutrition related information.

4.6.5. Critical Nutrition Literacy of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS)

Table: 17: Critical Nutrition Literacy of the Respondents according to Adolescent Nutrition Literacy Scale (ANLS)

n= 281

ANLS Statement: Critical Nutrition Literacy (CNL)	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
I would readily get involved in political issues targeted at improving people's diet	47 (16.70%)	165 (58.7%)	30 (10.7%)	34 (12.10%)	5 (1.80%)
I am willing to take an active role in measure aimed at promoting a healthier diet at my school.	45 (16.0%)	182 (64.8%)	35 (12.5%)	14 (5.0%)	5 (1.80%)
I expect my school to serve healthy food.	87 (31.0%)	164 (58.4%)	17 (6.0%)	9 (3.2%)	4 (1.40%)
I try to influence others (for example my family and friends) to eat healthy food.	65 (23.1%)	168 (59.8%)	35 (12.5%)	12 (4.3%)	1 (0.40%)
It is important for me that the school canteens have a good selection of healthy food.	79 (28.1%)	166 (59.1%)	28 (10.0%)	8 (2.80%)	0
I tend to be influenced by dietary advice I read in newspaper, magazines or elsewhere.	22 (7.8%)	106 (37.7%)	56 (19.9%)	82 (29.2%)	15 (5.3%)
I tend to be influenced by the dietary advice I get from my family, friends.	7 (2.5%)	150 (53.4%)	66 (23.5%)	45 (16.0%)	13 (4.6%)
I believe that the media's presentation of scientific findings about nutrition, diet, food is correct.	9 (3.20%)	75 (26.70%)	83 (29.5%)	106 (37.7%)	8 (2.8%)
When I read information about nutrition, diet or food it is important to me that it is based on scientific evidence.	53 (18.9%)	166 (59.10%)	43 (15.3%)	11 (3.9%)	8 (2.8%)

Source: Field Survey Data, 2025

The responses related to Critical Nutrition Literacy (CNL) among adolescents reflected their attitudes, beliefs and behaviors towards evidence-based nutrition information and engagement

in actions promoting healthier diets. A majority of respondents 58.7% agreed and 16.7% strongly agreed that they would readily get involved in political issues aimed at improving diet. Likewise, 64.8% agreed to take an active role in initiatives promoting healthier diets within their school while 5% disagreed.

Majority of respondents 82.9% reported that they tried to influence their friends and family to eat healthy food, demonstrating proactive behavior in encouraging healthy eating habits among peers and relatives. Additionally, 87.2% agreed that it was important for school canteens to offer a good selection of healthy foods, further emphasizing adolescents' awareness.

Regarding sources of information, 45.5% agreed that they were influenced by dietary advice found in newspapers or magazines while 34.5% disagreed. However, over half 53.4% reported being influenced by dietary advice from friends and family. Only 29.9% believed that media presentations of scientific findings about nutrition were accurate, while 40.5% disagreed, indicating a lack of trust in the reliability of media for nutrition related information. A Majority 78% agreed that it was important for nutrition information to be based on scientific evidence, representing critical thinking and an emphasis on credible sources.

Overall, the findings suggest that adolescents were actively engaged in promoting healthy food habits within their social circles valued evidence-based nutrition, although they showed selective trust in information from various sources.

4.6.6. Critical Nutrition Literacy Score of the Respondents

Table: 18: Critical Nutrition Literacy Score of the Adolescents

n = 281		
Critical Nutrition Literacy (CNL)	Frequency	Percentage
Low	114	40.6%
Medium	99	35.2%
High	68	24.2%

Source: Field Survey Data, 2025

The findings suggest that a substantial proportion of the respondent 40.6% had low Critical Nutrition Literacy (CNL), while 24.2% had demonstrated high level of CNL. This highlights the need for interventions aimed at improving their level of understanding of clinical nutrition

literacy, indicating a significant gap in their ability to comprehend and practice evidence-based nutrition information. These results suggest that many adolescents may have limited capacity to utilize evidence-based nutrition knowledge in decision-making.

4.6.7. Nutrition Literacy Score of the respondents according to Adolescent Nutrition Literacy Scale (ANLS)

Table: 19: Nutrition Literacy Score of the adolescents according to Adolescent Nutrition Literacy Scale (ANLS)

n=281		
ANLS Score	Frequency	Percent
Low Nutrition Literacy	105	37.4
Medium Nutrition Literacy	92	34.2
High Nutrition Literacy	80	28.5

Source: Field Survey Data, 2025

The table above showed the distribution of respondents according to their overall Adolescent Nutrition Literacy Scale (ANLS) scores. The findings showed that more than one-third of the adolescents (37.4%) had low nutrition literacy, while 34.2% demonstrated medium nutrition literacy. Only, 28.5% of the adolescents fell into the high nutrition literacy category.

These findings indicated that, although a portion of adolescents possessed adequate nutrition literacy, the majority falls within the low to medium range, suggesting they had a limited ability to understand and apply nutrition-related information.

4.6.8 Distribution of Nutrition Literacy among Respondents based on Gender

Table: 20: Distribution of Nutrition Literacy among Adolescents based on Gender

	Low Nutrition Literacy	Medium Nutrition Literacy	High Nutrition Literacy	Total
Male	51 (47.7%)	33 (30.8%)	23 (21.5%)	107 (100%)
Female	54 (31.0%)	63 (36.2%)	57 (32.8%)	174 (100%)

Source: Field Survey Data, 2025

The table depicted that nearly half of the male respondents 47.7% had low nutrition literacy, 30.8% had medium and 21.5% had high nutrition literacy. On the other hand, among female 31.0% had low, 36.2% had medium and 32.8% had high nutrition literacy.

Overall, the table represented the distribution of nutrition literacy levels among male and female students, indicating that a higher proportion of male students had low nutrition literacy compared to female students. While in contrast, female students demonstrated relatively higher levels of medium and high nutrition literacy than male students. Thus, suggesting that females had better nutrition literacy than males in the study.

4.7. Association between Different Factors with Food Habit

4.7.1. Association between Socio Demographic Variables and Food Habit

Table: 21: Association between Socio-Demographic Variables and Food Habit among Respondents

n=281

Variable	Poor FH (%)	Level of practice			χ^2 value	p-value
		Below Average FH (%)	Above Average FH (%)	Best FH (%)		
Class of study of the respondents						
Class 8	11 (12.5%)	32 (36.4%)	25 (28.4%)	20 (22.7%)	14.727	0.022*
Class 9	30 (29.1%)	24 (23.3%)	22 (21.4%)	27 (26.2%)		
Class 10	31 (34.4%)	22 (24.4%)	18 (20.0%)	19 (21.1%)		
Place of residency of the respondents						
Sub-urban	43 (25.0%)	43 (25.0%)	40 (23.3%)	46 (26.7%)	3.287	0.349
Rural	29 (26.6%)	35 (32.1%)	25 (22.9%)	20 (18.3%)		
Education of the mother of the respondents						
Up to literacy	35 (27.1%)	47 (36.4%)	22 (17.1%)	25 (19.4%)	18.242	0.032*
Primary (1-8)	18 (24.0%)	11 (14.7%)	26 (34.7%)	20 (26.7%)		
Secondary (9-10)	12 (26.7%)	13 (28.9%)	10 (22.2%)	10 (22.2%)		
Higher Secondary and higher	7 (21.9%)	7 (21.9%)	7 (21.9%)	11 (34.4%)		
Education of the father of the respondent						
Up to literacy	21 (22.6%)	32 (34.4%)	24 (25.8%)	16 (17.2%)	18.263	0.032*
Primary (1-8)	27 (31.0%)	19 (21.8%)	23 (26.4%)	18 (20.7%)		
Secondary (9-10)	16 (28.6%)	19 (33.9%)	6 (10.7%)	15 (26.8%)		
Higher Secondary and higher	8 (17.8%)	8 (17.8%)	12 (26.7%)	17 (37.8%)		
Type of the family of the respondents						
Nuclear	30 (24.0%)	38 (30.4%)	25 (20.0%)	32 (25.6%)	2.18	0.536
Joint	42 (26.9%)	40 (25.6%)	40 (25.6%)	34 (21.8%)		

**Denotes significant association (Applying Pearson Chi-square test at 5% level of significance).*

Although examining the association between sociodemographic characteristics and food habits was not included in the main objective, an exploratory analysis was conducted to understand the potential associations.

The food habits of the respondents were found to be associated with their own class of study ($p = 0.022$), mother's education ($p = 0.032$) and father's education ($p = 0.032$) but were not associated with place of residency ($p = 0.349$) or type of the family ($p = 0.536$). These results suggest that individual academic level and the parental education level have a significant influence on the adolescent's food habit, meaning the higher education being linked to healthier food habit.

4.7.2. Association between Functional Nutrition Literacy and Food Habit among Respondents

Table: 22: Cross-tabulation of Functional Nutrition Literacy (FNL) and Food Habit with Chi-square Test Result

n=281

Functional Nutrition Literacy\Food habit	Poor FH (%)	Below Average FH (%)	Above Average FH (%)	Best FH (%)	χ^2 value	p-value
Low	27 (27.0%)	33 (33.0%)	24 (24.0%)	16 (16.0%)	22.501	<0.001*
Medium	26 (28.3%)	25 (27.2%)	27 (29.3%)	14 (15.2%)		
High	19 (21.3%)	20 (22.5%)	14 (15.7%)	36 (40.4%)		

**Denotes significant association (Applying Pearson Chi-square test at 5% level of significance).*

A significant association was found between Functional Nutrition Literacy (FNL) and food habits of adolescents ($p < 0.001$), meaning that individuals with higher FNL tended to exhibit healthier food habits, while those with low FNL were concentrated in poor and below average

food habit categories. This suggests that enhanced functional nutrition literacy (FNL) may play a key role in promoting healthier food habit.

4.7.3. Association between Interactive Nutrition Literacy and Food Habit among Respondents

Table: 23: Cross-tabulation of Interactive Nutrition Literacy (INL) and Food Habit with Chi-square Test Result

n=281

Interactive Nutrition Literacy\Food habit	Poor FH (%)	Below Average FH (%)	Above Average FH (%)	Best FH (%)	χ^2 value	p-value
Low	50 (35.2%)	47 (33.1%)	31 (21.8%)	14 (9.9%)	44.457	<0.001*
Medium	8 (11.1%)	20 (27.8%)	22 (30.6%)	22 (30.6%)		
High	14 (20.9%)	11 (16.4%)	12 (17.9%)	30 (44.8%)		

**Denotes significant association (Applying Pearson Chi-square test at 5% level of significance).*

A significant association was found in between Interactive Nutrition Literacy (INL) and food habits of adolescents ($p < 0.001$), meaning that individuals with higher INL tended to exhibit healthier food habits, while those with low INL were concentrated in the poor and below average food habit categories. This suggests that fostering interactive nutrition literacy encourages adolescents to actively seek, discuss and apply nutrition information, thereby improving their food habit.

4.7.4. Association between Critical Nutrition Literacy and Food Habit among Respondents

Table: 24: Cross-tabulation of Critical Nutrition Literacy (CNL) and Food Habit with Chi-square Test Result

n=281

Critical Nutrition Literacy\Food habit	Poor FH (%)	Below Average FH (%)	Above Average FH (%)	Best FH (%)	χ^2 value	p-value
Low	34 (29.8%)	33 (28.9%)	29 (25.4%)	18 (15.8%)	21.274	<0.001*
Medium	22 (22.2%)	31 (31.3%)	27 (27.3%)	19 (19.2%)		
High	16 (23.5%)	14 (20.6%)	9 (13.2%)	29 (42.6%)		

**Denotes significant association (Applying Pearson Chi-square test at 5% level of significance).*

A significant association was found between Critical Nutrition Literacy (CNL) and food habits of adolescents ($p < 0.001$), indicating that individuals with higher CNL tended to exhibit healthier food habits, while those with low CNL were concentrated in the poor 29.8% and below average 28.9% food habit categories. This suggests that improving adolescents' ability to understand and apply evidence-based nutrition information may be key strategy for promoting health food habits.

4.7.5. Association between Nutrition Literacy and Food Habit among Respondents

Table: 25: Cross-tabulation of Nutrition Literacy and Food Habit with Chi-square Test Result

n=281

Nutrition Literacy\Food habit	Poor FH (%)	Below Average FH (%)	Above Average FH (%)	Best FH (%)	χ^2 value	p-value
Low NL (n=105)	36 (12.8%)	36 (12.8%)	20 (7.1%)	13 (4.6%)	44.140	<0.001*
Medium NL (n=96)	18 (6.4%)	29 (10.3%)	33 (11.7%)	16 (5.7%)		
High NL (n=80)	18 (6.4%)	13 (4.6%)	12 (4.3%)	37 (13.2%)		

**Denotes significant association (Applying Pearson Chi-square test at 5% level of significance).*

The table 24 shows the distribution of food habits according to the level of nutrition literacy among adolescents. A statistically significant association between nutrition literacy and food habits ($p < 0.001$). Adolescents with low nutrition literacy were more likely to report poor or below average food habits (12.8% each) and were less likely to exhibit best food habits, whereas adolescents with high nutrition literacy have the highest proportion in the best eating habit category (13.2%) and were less likely to report poor or below average food habits (6.4% each). The linear-by-linear association was also significant ($p < 0.001$), indicating a positive trend: higher nutrition literacy is associated healthier food habits.

4.7.6. Correlation Analysis of Nutrition Literacy and Food Habit among Respondents

Table: 26: Spearman Correlation Between Nutrition Literacy (ANLS Score) and Food Habit (AFHC Score) Among Adolescents

n=281

Variables	ANLS Score	AFHC Score
ANLS Score	1	0.358**
AFHC Score	0.358**	1
Significance (2-tailed)	—	<0.001

***Correlation is significant at the 0.01 level (2 tailed)*

In addition to the chi-square test, which showed a significant association between nutrition literacy and food habits among adolescents, a spearman correlation analysis was conducted to assess the strength and direction of relationship. Results indicated a moderate, positive correlation that was statistically significant ($\rho = 0.358$, $p < 0.001$), suggesting that adolescents with higher nutrition literacy scores tended to have healthier food habits. This reinforces the importance of improving nutrition literacy as a potential strategy to promote healthier food habits.

4.7.7. Effect of Nutrition Literacy on Healthier Food Habit

Table: 27: Logistic Regression Predicting Healthier Food Habits from Nutrition Literacy

n=281

Predictor	B	S.E.	Wald	df	Sig.	Exp(B)	95% CI for Exp(B)
ANLS Score	0.125	0.021	35.281	1	<.001	1.133	1.087 – 1.180
Constant	-10.073	1.587	40.288	1	<.001	.000	—

Omnibus χ^2 (1) = 43.712, $p < 0.001$, Cox & Snell = 0.144, Nagelkerke $R^2 = 0.202$

A binary logistic regression analysis was conducted to examine whether adolescent nutrition literacy (ANLS Score) predicted healthier food habits. The model was statically significant

(Omnibus $\chi^2 (1) = 43.712, p < 0.001$), explaining 14.4-20.2% of the variance in food habits (Cox & Snell, Nagelkerke $R^2 = 0.202$). The ANLS score was a significant positive predictor of healthier food habits ($B = 0.125, SE = 0.021, p < 0.001$). The odds ratio ($\text{Exp}(B) = 1.133$) and 95% CI = 1.087–1.180 indicated that each 1-point increase in nutrition literacy score, the odds of an adolescent having healthier food habit increased approximately by 13.3%. These results indicate that higher nutrition literacy is associated with better food habit.

Overall, the findings indicate that enhancing adolescents' nutrition literacy could meaningfully improve their food habits, emphasizing the importance of targeted nutrition education programs.

CHAPTER V

DISCUSSION, CONCLUSION, AND RECOMMENDATION

This study evaluated the level of nutrition literacy (NL) and assessed food habits among adolescents attending community schools in Godawari Municipality, and investigated whether nutrition literacy was significantly associated with food habit. This chapter presents the discussion, conclusion and recommendation based on these findings. The discussion interprets the results in the context of existing national and international studies, highlighting similarity and differences. It focuses on the socio-demographic characteristics of the participants, their food habits and levels of nutrition literacy, providing insights into factors influencing food habits of the respondents. The recommendation aims to guide future research and improve study.

5.1. Discussion

The study deals with nutrition literacy and its association with food habit among adolescents, which were derived from a sample of 281 respondents, are presented in this chapter. Study showed the predominance of female respondents (61.9%), which mirrors patterns reported in many other studies (Koca & Arkan, 2020; Manandhar & Kakchapati, 2023). The study population comprised of adolescents aged 13 to 16 years, with median age of 15 years. This is compared to other South Asian studies where adolescents in similar age ranges were included, for instance (Moitra et al., 2021) in Mumbai, India studied adolescents aged 12 to 16 years, and in UP, India included participants aged 13-19 years (Yadav & Mogra, 2024). Parental education in this study was generally low to moderate, with about 31% fathers had primary education, 27% had non-formal education. For mothers, 30.2% had no formal education, 15.7% being illiterate. Which was similar to study carryout in Darchula, Nepal where 14 fathers had primary education, 23 had higher secondary education while only 8 mothers had primary education and 10 had higher secondary and above education. Similarly in a study conducted in Nepal, 18.9% mother and only 12 % father were illiterate, 56.7% father and 39.8% mother had secondary level education. Reflecting a setting where fathers typically have higher education than mother (Baral et al., 2025; Giri et al., 2023). Occupational distribution shows that 29.9% fathers were involved in agriculture, 20.6% in business, 16.4% in private jobs whereas mothers were mostly homemakers 33.4% or engaged in agriculture 27%. Which

shows similar to the findings of other studies which shows diverse occupation of father while majority of mothers are either unemployed or home maker (Ashoori et al., 2021; Baral et al., 2025; Giri et al., 2023). Parents engaged in agriculture (father 29.9%, mother 27%).

Although an agricultural background would ensure better access to variety of diverse vegetables and fresh food, the dietary pattern of the students was not satisfactory as majority of the children reported consuming meals only 2 to 3 times per day. Specifically, 43.4% consumed two meals per day, 37.4% three meals, 12.1% four meals and 4.6% five meals, which means 2.75 meals per day suggesting Irregular meal patterns. Similar paradox was noted in a study conducted in rural area of Bangladesh, where despite agricultural setting, over one-third preferred high consumption of rice and ready to eat foods, while majority didn't incorporate 23% and 6% fruits and vegetables in their diet (Islam et al., 2024). Such practices are consistent with findings from India and Pakistan, where meal skipping especially breakfast is highly prevalent among adolescents the breakfast skipping habit was comparatively more in urban respondents 28% than the rural respondents 18% in both rural and urban context (Zainab et al., 2022). In Mumbai, 31% of adolescents skipped breakfast daily (Moitra et al., 2021). Respondents of the similar study held in Turkey had respondents skipping meal during the day were 51.4%, 31.3% skipped breakfast and 70.9% consumed fast food as snacks (Koca and Arkan, 2020). Moreover, Majority of the respondent were non-vegetarian, 88.3% this particularly reflects the trend of rising meat consumption among the younger population (Aryal et al., 2014; Baral et al., 2025; Giri et al., 2023; Yadav & Mogra, 2024). Although the meat provides essential amino acid, protein and micronutrients, the increasing resilience on meat-based food at expense of plant-based food has raised concern globally.

Furthermore, the present study found that 25.6% respondents showed poor food habits, 27.8% were below average, while 23.1% and 23.5% demonstrated above average and best food habits, respectively, which suggests moderate variability in food habit. These align with the similar studies in Nepal where 94% of adolescents reported consuming junk or processed food, with only 67% consuming diverse food groups (Aryal et al., 2014; Baral et al., 2025). However, in a study conducted in Lebanon, 64.6% of adolescents had medium or high food habit scores (Taleb & Itani, 2021). This indicates that despite a proportion of adolescents exhibits relatively good dietary practice, unhealthy eating behavior remains prevalent. Which is evident to change

through intervention (Moitra et al., 2021). The findings of this study highlight challenge of promoting nutritious diet among school going adolescents, suggesting nutritional education or behavior change interventions.

The present study found that a substantial proportion of adolescents possesses inadequate nutrition literacy, with only moderate proportion of 28.5% respondents with high nutrition literacy. similar study conducted in Canada reported an average nutrition knowledge of 52.2% (Brown et al., 2021). Similarly, in Italy, the nutrition literacy mean score was 49.08 before intervention increased to 56.06 afterwards, highlighting the positive influence of adolescents understanding of knowledge (Mancone et al., 2024). In Iran, nutrition literacy score are considerably higher than what is observed in the study (Ashoori et al., 2021). In south Asian context, various studies have shown limited nutrition knowledge, frequent consumption of sugary drinks (Moitra et al., 2021; Yadav & Mogra, 2024), less consumption of fruits, vegetables or animal based food emphasizing gaps in nutrition knowledge (Islam et al., 2024). Similarly in Nepal, 37-69% of adolescents were familiar with basic concept of nutrition (Aryal et al., 2014). Adolescents, a life stage where the experience and changes shape the lifelong health behaviors. The study revealed that a substantial proportion of adolescents possessed low to medium nutrition literacy, reflecting that some of the respondents could understand and apply basic nutrition information, the majority lacked comprehension and critical evaluation skill. Reflecting a need for improved nutrition education. Furthermore, when segregating the nutrition literacy into domain, Functional Nutrition Literacy (FNL), Interactive Nutrition Literacy (INL) and Clinical Nutrition Literacy (CNL) were all below the ideal level, which aligns with the results from South Asia and global studies.

In the present study, 35.6% of adolescents had low Functional Nutrition Literacy (FNL) indicating that most of the respondents struggled with understanding nutrition related terminologies, which was consistent with the studies from Canada and Iran, where respondents showed relatively low nutrition knowledge scores of 52.2% in Canada, which also revealed that the adolescence who were confident in reading, understanding food labels had higher food and nutrition scores, 7.63%, 6.36% respectively (Brown et al., 2021). Similarly, studies conducted in India and Nepal also highlighted that adolescents often find it difficult to interpret nutrition information due to complex language and lack of exposure (Manandhar and

Kakchapati, 2023; Moitra et al., 2021). In contrast, intervention study in Italy demonstrated improvements in functional nutrition literacy (Mancone et al., 2024).

Minimum engagement in peer to peer or discussion with health professional or family members was observed, even though majority of respondents relied heavily on online platform to seek nutrition related information (69% reported using internet to seek nutrition information) reflecting low interactive nutrition literacy. Only 23.8% had high Interactive Nutrition Literacy (INL) and 50.5% had low nutrition literacy. The finding aligns with the findings from Italy and Turkey, where online platform was a primary source but critical evaluation of content was lacking (Koca and Arkan, 2020; Mancone et al., 2024). In Italy, mean nutrition literacy increased from 49.08 at baseline to 56.06 post intervention and self-regulation score increased from 2.35 to 2.62, highlighting the role of nutrition literacy in promoting healthy eating (Mancone et al., 2024). Such trend observed in the studies from different part of the world highlights the growing importance of digital nutrition literacy.

This study found that only 24.2% demonstrated high level of Critical Nutrition Literacy (CNL), which involves analyzing and applying scientific nutrition information. Although adolescents showed positive attitude toward health eating, many lacked the capacity to evaluate the reliable source of information. Similarly, a study conducted in Lebanon and Iran, where adolescents showed positive intentions toward healthy behaviors but lacked critical thinking in evaluating nutrition claims (Ashoori et al., 2021; Taleb and Itani, 2021).

The association between socio-demographic variables and food habit was examined using Chi-square tests, with statistical significance determined by p-value. The result indicates significant association with class of study of the adolescents ($p = 0.022$) and parental education, both mother's ($p = 0.032$) and father's ($p = 0.032$). whereas, the place of residency and family type did not have significant association with food habit. The findings suggest that the higher education, individual academic level and parental education, both are linked with healthier food habit. Which is consistent with the findings from similar international studies, which indicates that adolescents having educated parents especially mothers, tend to have higher nutrition literacy and better food habits ($p < 0.05$) (Brown et al., 2021; Manandhar & Kakchapati, 2023). While another study in turkey demonstrated that father's education

influenced food habit, respondents level of study ($p < 0.05$), while mothers education, place of residence didn't influenced food habit (Koca & Arkan, n.d.). the variation may be attributed due to socio-cultural differences in parental roles as in Nepali family mothers are often primary caregiver and are more directly involved in food preparation and nutrition decision skills, which might explain association of mothers' education with food habit in this study. Similar studies from South Asia depicts that parental education along with other socio-demographic like age and income significantly shape adolescents food choices (Islam et al., 2024; Jena et al., 2023; Moitra et al., 2021; Yadav and Mogra, 2024), which might explain why many adolescents had low to medium nutrition literacy and poor food habit. Other factors such as place of residence and family type did not show any significant association in this study ($p > 0.05$), while findings from study done in Bangladesh and Pakistan suggested that broader environment including culture, urbanization, change in lifestyle can also constraints or reinforce food habit of an individual ($p < 0.05$) (Islam et al., 2024; Sewwandi and Himali, 2023; Zainab et al., 2022). Similarly, a study conducted in India found that place of residence 6.06% influencing the food choices of an adolescent (Jena et al., 2023). Although, the influence of joint family arrangements should also be acknowledged as the adolescents living in such household have very little autonomy towards the food choices despite the nutrition literacy. The finding to the study suggests otherwise showing no significant association with the type of family of the adolescents. Which contradicts with the existing Social Cognitive Theory which highlights how environment and social structure may constraints or reinforce behaviors of an individual which was also stated in the similar study conducted in Bangladesh (Pandey et al., 2021). The absence of association in present study may indicate that dietary practices among adolescents in this setting are shaped more by the educational status of the individual themselves and their parents rather than geography differences and family context.

Furthermore, it was observed that the existence of significant association between Nutrition Literacy (NL) and Food Habit (FH) ($p < 0.001$); meaning higher the level of nutrition literacy, healthier the food habit. The study demonstrated a moderate positive correlation between nutrition literacy and food habits ($p < 0.001$), indicating higher nutrition literacy scores were significantly more likely associated with healthier food habits. Which was later confirmed using regression and chi-square analysis. This perfectly aligns with the studies conducted in high income countries like Canada, Italy where better nutrition literacy has predicted healthier

eating patterns. A similar study conducted in Rome, suggest that the nutrition and food literacy can facilitate a positive change in eating behavior, with Significant increase in mean nutrition literacy from baseline (M= 49.08) to post intervention (M= 56.06), also the self-regulation score at baseline at M= 2.35 to post intervention score M= 2.62, highlights the role of nutrition literacy in adolescence health and wellbeing post intervention revealing association in between food habit and nutrition literacy (Mancone et al., 2024). Similarly, a study in Canada also revealed that revealed adolescents having higher total food and nutrition literacy knowledge lead to healthier eating (Brown et al., 2021). While in India, suggested association in between nutrition knowledge and food habit highlighting that that adopting evidence-based learning can improve knowledge related to the nutrition and dietary choices of an individual (Manandhar and Kakchapati, 2023; Moitra et al., 2021; Yadav and Mogra, 2024). Some of the contradictory findings in the literature have suggested that not all studies have found positive association between nutrition literacy and food habit of the respondents. For instance, a Lebanese reported high scores but no significant correlation with food habit, apart from micronutrient related behaviors (Taleb and Itani, 2021). Similarly, national study in Nepal reported a weak correlation between nutrition knowledge and dietary practices among adolescents (Sigdel and Giri, 2024). This divergence in the finding of the studies might suggest that despite the importance of nutrition literacy, it may not be sufficient where moderating variables such as parental education, culture, economy, and other characters are dominant.

Each domain of nutrition literacy, functional, interactive and critical are shown to be directly associated with food choices ($p < 0.05$). It was found that adolescents with higher Functional Nutrition Literacy (FNL) are better equipped to selected balanced diets and avoid misinformation and his higher food, nutrition score ($p < 0.05$), potentially shaping adolescents long term food habit. (Brown et al., 2021). A similar study, supporting evidence from Iran found that low functional nutrition literacy was associated with higher odds of low dietary diversity (OR=2.19), highlighting that low NL can be a barrier to healthy food habit (Doustmohammadian et al., 2020). Reinforcing that insufficient nutrition literacy can act as a barrier, preventing adolescents to make healthier food choices. Similarly, looking at Interactive Nutrition Literacy (INL), adolescents who discuss food and health topics with peers or family and seek information from reliable sources were more likely to adopting positive food habit ($p < 0.05$) (Koca & Arkan, 2020). Adolescents with higher Critical Nutrition Literacy (CNL)

are more discerning of misleading media messages are more likely to align their diet with scientific recommendation (Ashoori et al., 2021). Similar evidence is also available from middle income countries like Iran, where low levels of functional NL were associated with deprived dietary diversity and inadequate consumption of nutrient dense foods (Ashoori et al., 2021; Doustmohammadian et al., 2020). Thus, the finding of the study reinforces the proposition that Nutrition Literacy (NL) functions not only as theoretical knowledge but as a practical aptitude that enables adolescents to make informed dietary choices among multiple environmental pressures. Also, suggests that the inadequate nutrition literacy is a global phenomenon transcending income level of the countries. Post intervention in India, green leafy vegetable intake increased from 3.33% to 54.78%, milk and milk products from 45.47% to 70.95% and nuts and oil from 6.19% to 70.95%, suggesting that nutrition literacy not only informs food quality but also reinforces the consistency of eating behavior. Alongside, the present study found that adolescents nutrition literacy significantly predicts good food habits, showing 1-point increase in ANLS score increased the odds of good food habits by 13.3%. Thus, establishing that the nutrition literacy could be a key strategy to enhance adolescents' food habits.

The present study, by contrast, found positive association, which may be attributed to the specific socio-demographic composition of the sample and the measurement tools employed.

5.2 Conclusion

The overall findings of the study revealed that only small proportion of adolescents had healthy food habit and high level of nutrition literacy. A moderate positive and statistically significant correlation was observed between nutrition literacy and food habit, suggesting that adolescents with higher nutrition literacy were more likely to adopt healthier food habits. Additionally, the study relieved that the education level of the respondents and their parents was significantly associated with food habit. Logistic regression further showed that each unit increased in nutrition literacy score increased odds of having healthier food habit by approximately 13.3%. these findings highlight the critical need to improve nutrition literacy among adolescents in order to promote healthier food habit. Thus, the research establishes that the nutrition literacy plays a pivotal role in shaping adolescents food habit.

5.3 Recommendation

Based on the findings of the study, several recommendations can be made to improve the nutrition knowledge and food habit of community school going adolescents in Godawari Municipality.

- Conduction of longitudinal study is recommended as it helps to assess how the improvement in nutrition literacy interpret into sustained healthy food habit.
- Comparative study is recommended to better understand the association between nutrition literacy and food habit in wide range of sociodemographic characteristics.
- It is recommended that schools should integrate structured nutrition literacy modules into the curriculum, focusing on practical skills like selection of healthy food, meal planning, label reading and many more.
- Considering the parents and caregiver highly influence the overall dietary practice at home the interventions must also be extended to families and communities.

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