NUTRITIONAL KNOWLEDGE AND EATING HABITS AMONG COLLEGE STUDENT OF ITAHARI SUB-METROPOLITIAN CITY

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A dissertation submitted to the Department of Nutrition and Dietetics, Central Campus of Technology, Tribhuvan University, in partial fulfillment of the requirements for the degree of B.sc Nutrition and Dietetics

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Approval Letter

This ***dissertation*** entitled Assessment of ***"Nutritional Knowledge and eating habits among college students of Itahari Sub-Metropolitan City"***, presented by **Kritisha Poudel** has been accepted as the partial fulfillment of the requirement for **B.Sc. degree in Nutrition and Dietetics**

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Abstract

This study aimed to assess the nutritional knowledge and eating habits of college students in Itahari Sub-Metropolitan City. A cross-sectional study was conducted among 206 college students, selected using a multistage random sampling technique. Data were collected through a structured questionnaire, face-to-face interviews, and anthropometric measurements, and analyzed using IBM SPSS Statistics version 20.

The results showed that 50% of students had good nutritional knowledge, while 51% demonstrated adequate eating habits, and 69.4% had normal nutritional status. The association between nutritional knowledge and eating habits was not statistically significant ($\chi^2 = 0.175$, $p = 0.676$). Similarly, no significant association was observed between nutritional status and eating habits ($\chi^2 = 3.992$, $p = 0.262$) or between nutritional knowledge and nutritional status ($p = 0.463$).

These findings suggest that, although a substantial proportion of students possess good nutritional knowledge and adequate eating habits, knowledge does not necessarily translate into practice. Targeted behavioral and educational interventions are recommended to help students apply nutritional knowledge in daily life and promote healthier lifestyles.

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List of Abbreviations

Abbreviations	Full Form
AMDR	Acceptable Macronutrient Distribution Range
BMI	Body Mass Index
Cm	Centimeter
CHO	Carbohydrate
DD	Dietary Diversity
FAO	Food and Agriculture Organization of United Nations
FFQ	Food Frequency Questionnaires
FFM	Fat Free Mass
FM	Fat Mass
GoN	Government of Nepal
g	Gram
ICMR	Indian Council of Medical Research
IDA	Iron Deficiency Anemia
IOM	Institute of Medicine of National Academies
Kcal	Kilocalorie
Kg	Kilogram
mg	Milligram
NCHS	National Centre for Health Statistics
NCD	Non-communicable disease

NDHS	Nepal Demographic and Health Survey
NHRC	Nepal Health Research Council
NLM	National Library of Medicine
NNMB	National Nutrition Monitoring Bureau
NIN	National Institute of Nutrition
SES	Socio-economic status

PART 1

INTRODUCTION

1.1 Background of study

Students often face many challenges when they adjust to college life, including juggling multiple responsibilities, financial concerns, social life, and academics. Before college, most students grow up in a structured environment where their parents provide meals, ensuring a balanced diet and regular eating schedules. A College Data survey indicates that students are frequently less equipped to handle social dynamics, financial concerns, academic rigor, and time management. Many college students who are staying away are reported to feel homesick occasionally during their first semester or starting period. With academic pressure, irregular routines, and limited cooking skills, many students develop unhealthy eating habits such as skipping meals, relying on fast food, or consuming processed snacks. As they struggle to balance responsibilities, nutrition often takes a backseat, impacting their overall health and well-being (Sogari *et al.*, 2018; Collegedata, 2024).

It can be difficult to adjust from the comfortable routine of home life to the hectic setting of college, particularly when it comes to forming new, healthful habits. When college students move away from home to attend school, they frequently undergo a change in their eating habits. Poor dietary decisions, such as consuming more high-fat, high-calorie foods and fewer fruits and vegetables, may result from this shift (Deshpande *et al.*, 2009; Carlson, 2024).

Using an ecological model for healthy behaviors as the framework, research identified a number of challenges and enablers influencing college students' dietary behaviors. Unfortunately, the academic life filled with a burning desire to succeed, where everyone is busy taking classes, attending their part-time jobs, and dedicating time toward extracurricular activities, has no time to prepare healthy meals, thus relying on fast, unhealthy food." Regular intake of processed snacks rich in sugars, salts, and unhealthy fats, particularly during periods of study, as well as easy availability of empty calorie high-fat foods from fast food outlets, and vending machines where easy availability of processed food, prevents healthy eating(Sogari *et al.*, 2018). There are many factors to promote healthy eating practice which includes balance

lifestyle, consistent consumption of balanced diet, physical activities and Nutritional knowledge (NHS, 2022).

While nutritional knowledge plays an important role in the determinants of dietary behavior, studies show that students may not be applying their knowledge on diet in their lives. They face myriad pressures like stress, peer influence, and limited access to healthy food options that undermine this fundamental need for sound dietary decisions. This study aims to assess the associations between nutritional knowledge and dietary behavior among college students to formulate appropriate interventions for implementing a healthy lifestyle (Spronk *et al.*, 2014; Sogari *et al.*, 2018).

1.2 Statement of problem and Justification.

Nutrition Knowledge is defined as a concept or process which is related to health and nutrition. This can include knowledge of diets, its impact to health, diet and disease, food that provides different nutrients, function and importance of the nutrients in the body, dietary guidelines, and recommendations (Axelson and Brinberg, 1992). It has been demonstrated to have a significant impact on healthy eating practices that guarantee that nutrient requirements are sufficiently satisfied throughout life as growth rate determines individual needs. An individual's nutritional status is determined by a number of interconnected factors, including their physical health and the type and quantity of food they consume (Priya and Sinha, 2020). College students' improved knowledge of dietary guidelines and recommendations is favorably correlated with their adoption of healthy eating habits. The researcher concluded that people who eat healthily are more knowledgeable about nutrition, which helps them make wise food choices that can help them maintain healthy weight (Kolodinsky *et al.*, 2007). Dietary knowledge and attitude can influence dietary practice (Fatima and Ahmad, 2018), also Another study finding has shown low consumption of fruits and vegetables among those who had poor knowledge about nutrition (Aryal *et al.*, 2016). Transitioning from adolescence to young adulthood, young adults often experience greater independence, along with several challenges surrounding healthy food choices. Its impact on one's health could be physically devastating. In recent years, there has been a significant increase in the incidence of university students with obesity, increasing the risk of chronic diseases like diabetes and heart disease (Almoraie *et al.*, 2024). NCDs are linked

by common preventable risk factors related to lifestyle such as tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol (WHO, 2013).There are different modifiable and non-modifiable risk factors like Age, sex, genetic factors, ethnicity, obesity, higher salt intake, high saturated fatty acids food intake, low dietary foods, Alcohol, Lower physical activity and sedentary life style and Others environmental factors (WHO, 2014).

Since college students are at a critical transitional phase where lifelong eating habits are often established, understanding their level of nutritional knowledge and dietary practices is essential. Such information can help develop targeted interventions and public health programs that promote better nutrition education in educational institutions in Itahari. Despite the recognized importance of nutritional knowledge in promoting healthy eating behaviors, there is limited data on the level of nutrition knowledge and eating habits among college students in Itahari Therefore, this study aims to assess the nutritional knowledge and eating habits of college students in Itahari, identify influencing factors, and evaluate their nutritional status to inform potential strategies for nutrition education and health promotion among youth.

1.3 Objectives of Study

1.3.1 General Objectives

To study level of knowledge and Eating Habits among college students in Itahari Sub-Metropolitan City.

1.3.2 Specific Objectives

i. To study the level of nutritional knowledge and eating habits among college students.
ii. To study factors associated with nutritional knowledge and eating habits.
iii. To study association between nutritional knowledge and eating habits.
iv. To study association between nutritional status and nutritional knowledge.

1.4 Research Questions

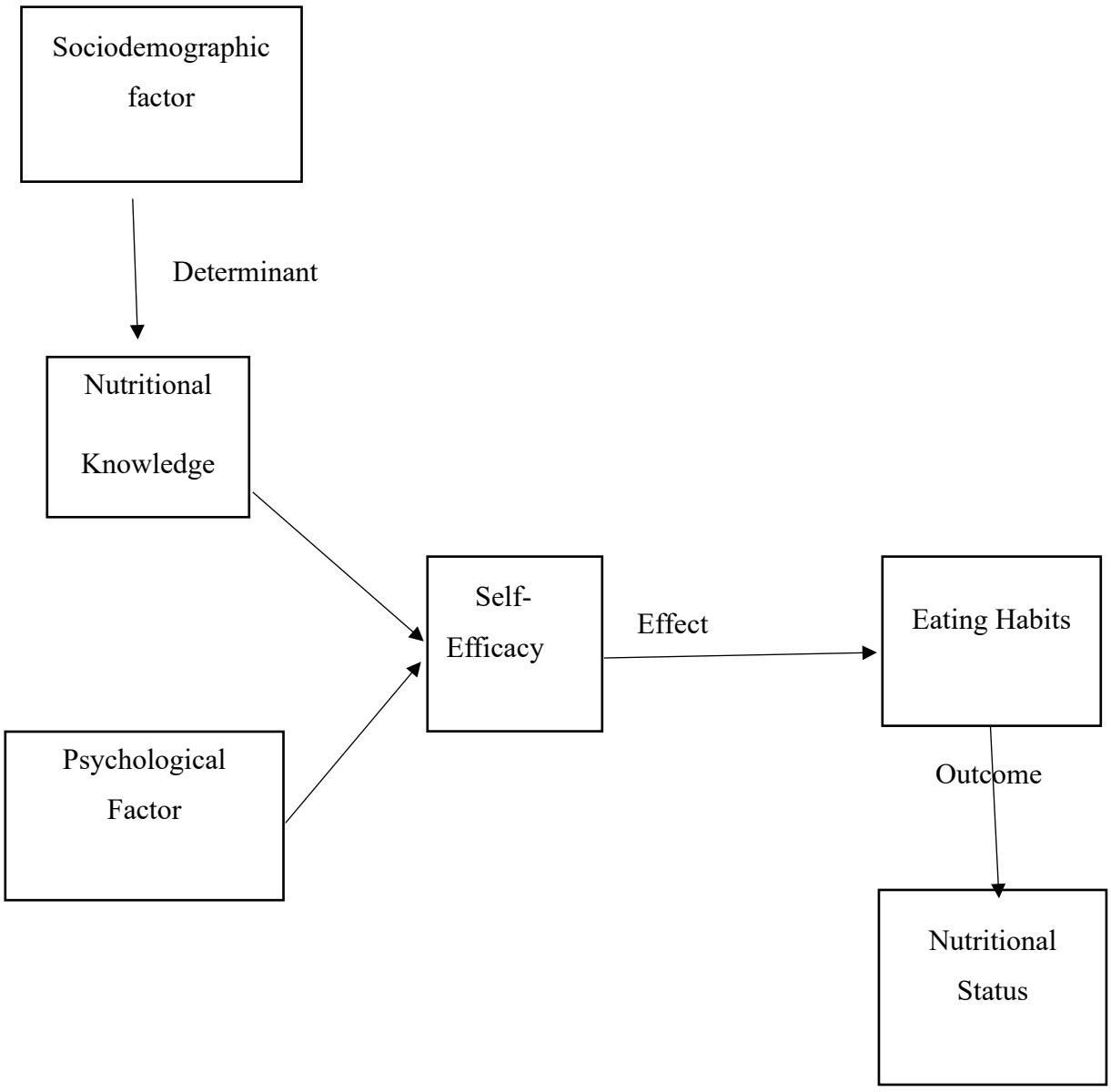
i. What is the level of Nutritional Knowledge and Eating habits among college Students in Itahari Sub-Metropolitan City?

ii. Is there an association between level of nutritional knowledge and Eating habits of college students in Itahari Sub-Metropolitan City?
iii. Is there an association between Nutritional knowledge and Nutritional status?
iv. Is there an association between eating habits and nutritional status?

1.5 Significance of Study

i. Provides information regarding the level of nutritional knowledge and eating habits among college students in Itahari sub-metropolitan city.
ii. Provide information regarding the nutritional status of college students in Itahari sub metropolitan city.
iii. It could contribute to strategies for improving dietary practices, ultimately enhancing public health in the community.
iv. The results can be used to develop targeted nutrition programs and health campaigns that specifically address the dietary needs of college students in Itahari.
v. The findings will contribute to the existing literature on nutrition education and dietary habits in Nepal, providing valuable insights into the behavior of students in a specific regional context.

1.6 Framework:



Modified from (Bandura, 1997; Spronk *et al.*, 2014; Sogari *et al.*, 2018)

1.7Limitation of study.

- The study employed a cross-sectional design, which limits the ability to establish cause-and-effect relationships.
- Biochemical and clinical assessments were not included in the study.
- Physical activity assessments were not conducted.
- Psychological assessments were not performed.

PART II

Literature review

2.1 Introduction to Nutrition and Its Importance

Nutrition can be known as the process through which organisms obtain and utilize food elements for growth, maintenance, and repair of body tissues. The World Health Organization defines nutrition as "the intake of food, considered in relation to the body's dietary needs" and emphasizes that good nutrition requires an adequate, well-balanced diet combined with regular physical activity (WHO, 2014).

The basic role of nutrition in balancing health and avoiding disease has been extensively documented. Low dietary quality has been found to be linked with increased risk of cardiovascular disease, type 2 diabetes, certain cancers, and obesity, while adherence to healthy dietary patterns has been associated with reduced disease risk (NHS, 2022). Nutritional knowledge can primarily act as a foundational component for building healthy eating habits, resulting in individuals interpreting nutrition information and make informed food choices (Spronk *et al.*, 2014).

Research demonstrates that individuals with higher levels of nutritional knowledge are more likely to consume diets that meet dietary guidelines, though the knowledge-behavior relationship remains complex.

2.2 Nutritional Knowledge

Nutritional knowledge can be seen as something that includes the understanding of food composition, dietary boundaries or guidelines, and the relationships between diet and health outcomes. It consists of both declarative knowledge (factual information regarding nutrients and dietary recommendations) and also about procedural knowledge (practical skills required to choose between and prepare appropriate foods) (Priya and Sinha, 2020).

Various factors influence nutritional knowledge acquisition and retention of the same knowledge. Age was found to be correlates with increment in nutritional knowledge, although

this relationship is also seen to be mediated by educational experiences (Jha *et al.*, 2021). The gender differences have also been consistently documented throughout the different timelines, with female individuals typically demonstrating higher nutritional knowledge compared to males (Dahal *et al.*, 2022). Educational qualifications or ability to reach to such facilities and field of study is also seen to be strongly correlated with knowledge levels, while socioeconomic status affects knowledge through access to educational resources and quality of the information reached by them (Dahal *et al.*, 2022).

The impact revealed by nutritional knowledge on dietary choices and health outcomes is found to be on considerable complexity. While retention of nutritional knowledge represents a required foundation for healthy eating, several research implies weak to moderate correlations between knowledge scores and dietary quality (Spronk *et al.*, 2014). Several studies have also indicated that knowledge alone explains only a small proportion of variance in eating behaviors, reflecting that other various factors significantly mediate this relationship.

2.3 Eating Habits and Patterns

Eating habits reflects to regular food choices of people and their consumption behaviors that individuals exhibit over time, encompassing not only what foods are consumed by them but also about when, where, how, and why such eating choices occur. Dietary patterns represent much larger concepts that include the overall composition and structure of an individual's diet and their choices (Deshpande *et al.*, 2009).

Studies have shown that common eating habits among global college students include irregular meal patterns, frequent breakfast skipping, and heavy reliance on fast foods as they are convenient to reach out and also due to other various factors. Studies have also shown that 35-60% of university students are regularly skipping their breakfast (Rivera Medina *et al.*, 2020). Several data have been resulted as fast food consumption has reached to such concerning levels, with students consuming fast food 2-3 times per week on average, basically motivated by taste preference, convenience, and accessibility to the food (Sogari *et al.*, 2018). The regional and cultural elements also significantly affect eating patterns. In South Asian contexts, traditional eating habits emphasize rice or wheat as staple foods which are also accompanied by legumes and vegetables. However, urbanization and globalization led to the introduction of new food

options, particularly in educated youth at metropolitan areas which leads to increased consumption of processed foods and Western dietary consuming patterns (Almansour *et al.*, 2020). There are a lot of elements that directly influence eating habits among college students. Peer pressure and social eating environments are among the basic things that significant their food choices (Deshpande *et al.*, 2009). Lifestyle related other factors including time constraints shows the most frequently cited barriers to healthy eating habits (Collegedata, 2024). Beside the lifestyle related factors academic stress is also found to alter eating patterns, with students often increasing consumption of high-calorie comfort foods or fast foods during stressful periods such as examinations, coursework deadlines assignment submissions etc. Food availability and accessibility within campus environments is also found to create structural influences, whereas socioeconomic factors determine access to quality food options (Ahmed *et al.*, 2019).

2.4 Nutritional Knowledge and Eating Habits among College Students

Different previous research studies on college students' nutritional knowledge shows significant population-to-population diversity. According to research at some universities and their participating students generally scored between 50-70% on standardized tests, demonstrating that their nutritional knowledge was moderate (Subedi *et al.*, 2020). Other Studies have also consistently shown that female students do 15-20% better than male students on such surveys regarding nutritional assessments in students (Jha *et al.*, 2021). When such knowledge assessments results are compared to students in academic fields unrelated to health or medical sectors, students in health-related fields consistently showed broader levels of knowledge about nutrition and eating habits. Those results of college students eating habits reveals alarming possibilities like rise in processed food intake, a larger tendency for eating out, and altered beverage consumption habits with an increase in sugar-sweetened beverages also known as cold drinks in common terms (Rivera Medina *et al.*, 2020). The other cause among influencing factors for college students was seen as social media. Social media influences eating choices through peer pressure and exposure to food-related content materials, while technology has influenced alternate habits with the increasing popularity of instant food delivery apps.

The mutual relationship between nutritional knowledge and eating habits reveals complex and broad relationships. Several studies have resulted in weak to moderate correlations, with the

coefficients in such results basically ranging from 0.2 to 0.4 (Spronk *et al.*, 2014). Other several surveys have also highly demonstrated that knowledge about fruits and vegetables shows stronger correlations with consumption compared to other food groups while in alternate way knowledge about portion sizes shows weaker relationships with actual behaviors (Priya and Sinha, 2020). For college students regarding healthy eating in college settings majorly includes time constraints as the most frequently cited obstacle, with students reporting insufficient time for meal planning and preparation due to colleges schedules and availability of food choices in campus premises (Collegedata, 2024). College students' financial limitations were also significantly constrained to food choices, with many students prioritizing cost over nutritional quality and food availability. Limited to almost no cooking facilities in campus dormitories create practical day to day barriers similarly, campus food environments may also lack healthy options within the reachable campus premise (Carlson, 2024). Social pressures and peer influences represent significant barriers, often overriding individual knowledge and preferences.

2.5 Nutritional Status and Health Outcomes in College Students

Some of the common nutritional issues in college populations are found to be both undernutrition and overnutrition scenarios in several surveys. (Sogari *et al.*, 2018). A sedentary lifestyle and a lack of moderate or vigorous physical activity have been identified as significant risk factors in college students(Muñoz-Galeano *et al.*, 2025). Recent studies have found associations between overweight/obesity among university students and certain unhealthy lifestyles such as a high preference for high-fat and high-sugar food (Telleria-Aramburu and Arroyo-Izaga, 2022). Micronutrient deficiencies are common, especially calcium, iron, folate, and vitamin D deficiencies. Usually, Iron deficiency as anemia affects a substantial proportion of female students going to college while vitamin D deficiency affects 50-80% of both gender college students in many populations. Obesity and overweight conditions are found as the recent increasing problems in about 35-40% of college students currently categorized as overweight or obesity (Ahmed *et al.*, 2019). Poor eating habits highly impact health status results across multiple sectors. Mental health results correlate strongly with dietary patterns and eating habits, with poor dietary quality resulting with increased rates of depression and anxiety among college students (Belogianni *et al.*, 2021). Physical health consequences consist of high risk of obesity,

metabolic dysfunction, and chronic disease development is also seen. Academic performance mutually correlates to dietary quality with students who had maintained better eating habits showed improved concentration and also were found to be academically sound (Rivera Medina *et al.*, 2020). Nutrition and dietary education programs play important roles in addressing nutritional and other dietary related several problems among college students. Systematic and scientific reviews demonstrate slight but significant improvements in knowledge, behaviors, and health outcomes in students following well-designed interventions for eating habits and dietary principles (Bayomy *et al.*, 2024).

Theory-based interventions and knowledge incorporating established behavior change models revealed superior effectiveness in contrast to knowledge only approaches for developing eating habits in students. Environmental interventions that modify the food availability within college premises added to the individual-focused education programs resulting in better dietary disciplines among students.

2.6 Nutritional Education and Interventions

The recent technological advancements, digital tools, and technology-based interventions represent rapidly growing areas. Latest mobile applications have started to offer features such as dietary tracking, meal planning, and personalized feedback on dietary habits (Jha *et al.*, 2021). In addition, the applications of various web-based programs are also providing interactive platforms consisting of multimedia elements and features simulating gaming experience to enhance engagement in their platforms. With such existing dedicated platforms, other social media platforms are also seen to be increasingly utilized for nutrition education, providing opportunities for peer interaction, and also for information sharing.

Different types of nutritional education programs are in existence for college students, varying from formal classroom instruction to informal peer education and also on digital interventions. Primarily the formal programs have included structured courses and institutional wellness programs focusing on comprehensive nutritional science coverage for the students (Subedi *et al.*, 2020).whereas informal way of the knowledge sharing include peer education programs and campus outreach activities with peer education models demonstrating particular effectiveness in between college students. Individual counseling for each student is also seen to

provide personalized nutrition education through meetings with registered dietitians which also shows strong effectiveness for well-motivated students but limited reach due to resource constraints in campus premises and around.

The effectiveness of nutrition education on dietary knowledge and eating habits depicts generally positive but also somewhat varying results. Most studies have shown significant improvements in nutritional knowledge scores in following program participation (Milosavljević *et al.*, 2015). Behavioral outcomes show more varying results where it has the success rates ranging from 20-60% for dietary behavior changes. Program characteristics associated with greater effectiveness consist of longer duration, multiple contact points, hands-on skill development, and social support elements.

Challenges in implementing and featuring nutrition interventions in college environments consists of competing priorities as students are exposed to multiple demands on their time and limited attention periods. Recruitment and retention present ongoing challenges where retention rates often reducing significantly over time constraints. Resource limitations constrain program scope and sustainability whereas environmental barriers within college premises can undermine individual focused efforts among those students (Mahmuda *et al.*, 2021). Cultural and social factors require programs to be culturally appropriate and sensitive to diverse student populations.

2.7 Theoretical Frameworks and Models

The knowledge of nutritional education and dietary habits among college students can be clarified using diverse theories of health behaviors that describe how nutritional knowledge, beliefs, and attitudes affect health-related behaviors. The research largely relies on the Health Belief Model (HBM) with the assistance of the ideas of the Social Cognitive Theory (SCT).

1. Health Belief Model (HBM)

The Health Belief Model provides a psychological framework that explains the motivation of people to practice health promoting behaviors. According to the HBM, people will adopt healthy eating habits when they:

- Realize risk to diet-related health problems (e.g., obesity, diabetes, or nutrient deficiencies);
- Realize the seriousness of these problems and their possible consequences;
- Recognize the benefits of adopting healthy eating habits; and
- Realize a few barriers to implementing dietary changes.

Additionally, triggers for action (nutrition education or awareness campaigns) and self-efficacy (belief in one's ability to make healthy food choices) play a significant role in influencing behavior.

The HBM can be used in this research to understand how the perception of health risks and benefits by the students can affect their eating habits and overall nutritional knowledge (Champion and Skinner, 2008; H.S. *et al.*, 2012).

2. Social Cognitive Theory (SCT)

The Social Cognitive Theory highlights the relationship between personal factors, behavior, and the environment. It suggests that learning is done by observation, imitation, and social interaction. In the context of nutrition, the diets of students are dictated by:

- Personal factors (nutrition knowledge, self-efficacy, attitudes),
- Behavioral factors (food preferences, dietary habits),
- Environmental factors (peer influence, family habits, food supply, and campus food environment).

SCT demonstrates the role modeling and social support to have an influence on the positive eating behaviors among college students (Bandura, 1997).

PART III

Materials and methods

3.1 Research Method

A cross-sectional study was conducted among the college students of Itahari sub-metropolitan City. It included semi-structures questionnaire and anthropometric measurements.

3.2 Study Location

Study was conducted in three different Colleges located at three wards of Itahari Sub-Metropolitan City.

3.3 Research Variable

3.3.1 Dependent variable

Nutritional Knowledge, Eating Habits, Nutritional Status

3.3.2 Independent Variable

Sociodemographic characteristics (age, gender, religions. ethnicity, living status, household income etc)

3.4 Target Population

The target population were college going students including both boys and girls between age group 16-25 yrs.

3.5 Sample size calculation

The sample size was calculated by using single proportional statistical formula at 95% Confidence Interval (C.I), 7% marginal error and 10% non-response rate.

$$\text{Sample size (n)} = z^2 \times p(1-p)/d^2$$

where, z =confidence interval at 95 %, P= estimated prevalence of poor nutritional knowledge, d = margin of error

We have, Confidence interval(z)= 1.96 (Standard value); Margin of error (m)= 0.07

Estimated prevalence of poor nutritional knowledge (p)= 59% (0.59) from (Pokharel and Dhungel, 2023)

Now, sample size will be calculated using formula for infinite population as:

Sample size (n) = z^2 x p x (1-p) / d^2

= 1.96^2 x 0.59 x (1-0.59)/ (0.07^2) =188

Considering, Non-Response Rate= 10%

Total sample size = 206

3.6 Sampling

A cross-sectional descriptive study was conducted in Itahari Sub-Metropolitan city. Participants were selected through a multistage random sampling method out of 20 wards. First, three wards were randomly selected from a total of 20 wards in Itahari. Then, one college was randomly chosen from each of the selected wards. Finally, students were randomly selected from each chosen college to participate in the survey using simple random method.

3.7 Criteria for sample selection

Inclusion Criteria:

- Students present on the day of survey, fall in age group 16– 25 years.

Exclusion Criteria:

- Students suffering from acute and chronic illnesses.
- Students those have physical disabilities.
- Students studying Nutrition-related courses.

3.8 Research instruments

The following instruments were used for the research work:

a) Stadiometer: A well calibrated stadiometer, measuring up to 200 cm with least count of 0.1 cm, to assess the height of participants.

b) Digital weighing balance: A digital weighing balance, measuring up to 180 kg with least count of 0.1 kg.

c) Questionnaire: A set of Questionnaire were asked to students regarding their demographic factors, Socio-Economic Factors, Nutritional knowledge, their eating habits. Questionnaires were asked to respondents to provide Quantitative data.

3.9 Data Entry and analysis

The statistical data was entered into IBM Statistical Package for Social Science (SPSS) version 20.0 and Microsoft Excel 2019. The software mentioned earlier was used to analyze the data gathered using both descriptive and inferential statistics. The Chi- square test S was used to determine the relationship between variables.

3.10 Pretesting

A selected number of college students participated in a pretest of the created questionnaire and instrument. Pre-testing was performed to ensure that the questions were clear and accurate, to make sure that the questions were interpreted consistently, and to detect any confused items. All recommended changes were implemented after the instruments were reviewed and then employed during the actual trial.

3.11 Validity and reliability of research

The study tools were validated by a group of professionals from Central Campus of Technology, Department of Nutrition and Dietetics.

Also to improve the validity and reliability of collected data following methods was applied:

- To increase the precision of the equipment, especially the weighing machine, it was monitored 3 times.
- I was regularly monitored by my guide teacher or the expert teachers and has guided me to complete this research.
- The reliability of the questionnaire, measured using Cronbach's alpha, was 0.674, indicating acceptable internal consistency.

Pretesting was done prior to data collection to ascertain content and face validity. The purpose of the study as explained to the students, and then informed consent was obtained. The collected data was checked for errors and emissions on the same day, and the same consistency of data was maintained.

3.12 Data collection techniques

Anthropometric measurements and a structured questionnaire were used for collecting primary data. The students were interviewed to collect sociodemographic data and complete the questionnaire.

Height and weight were measured by using stadiometer and digital weighing balance as below:

Height: Height was measured using stadiometer. The measuring device was checked for accuracy using standard 2-m steel tape. In order to measure the height, the participant was first instructed to stand upright, barefoot, with their heels together and their arms hanging loosely on a horizontal platform. The head was made on a Frankfurt plane with the shoulder blades and buttocks touching the stadiometer's vertical surface. The students were instructed to stand tall and take deep breaths to let his/her shoulders relax and his spine straighten. Movable headboard was lowered until it touches crown of head. To prevent parallax mistakes, the examiner's eyes were level with the headboard when the height was measured at maximum inspiration. The measurement was made to the closest 0.1 cm. A lower reading was noted for readings that were between two values.

Weight: Measurement were made after the bladder was emptied and had minimal clothing. The scale was set to zero, and the balance was set on a hard surface level. The subject was instructed to stand unsupported in the middle of the platform, looking straight ahead while remaining calm and still. Weight was measured to the closest 0.1 kg.

3.13 Ethical consideration

The research was conducted with the permission received from the department of Nutrition and Dietetics, Central Campus of technology, along with the approval obtained from Itahari Sub-metropolitan City. Ethical approval to conduct the study was obtained from Nepal health research council (NHRC). An informed consent was obtained from the parents/guardians clearly explaining the purpose and procedure before including students in the study. The privacy of the students was safeguarded.

Part IV

Result and discussion

This study was carried out to find the Nutritional Knowledge and eating habits among college students of Itahari sub-Metropolitan City. This study was carried out to find the association of Nutritional Knowledge, eating habits, Nutritional status, socio demographic characteristics. 206 students were asked well-structured questionnaire related to sociodemographic characteristics, Nutritional knowledge, their eating habits and factor associated with eating habits questions. Based on score obtained by students two category for nutritional knowledge and eating habits were defined poor nutritional knowledge (<median of total score), Adequate nutritional knowledge (≥ median of total score), Inadequate eating habits (<median of total score), Adequate eating Habits (≥ median of total score).

4.1. Socio demographic characteristics of Study Population

4.1.1 Age distribution of students.

Out of total students, 206 enrolled in the study from the age group 16 to 25 years, 29(14.1%) were in age group less than 18, 62(30.1%) were in age group 18-20 years, 81(39.3%) were in age group 20-22 years, 34(16.5%) were in age group 22 yrs and above.

Table 4. 1 Frequency and Percentage Distribution of students by age

Age	Frequency	Percentage (%)
less than 18	29	14.1
18-20	62	30.1
20-22	81	39.3
22 and above	34	16.5
Total	206	100.0

4.1.2 Distribution of study population by Gender.

Figure 4.1.2 shows that distribution of study population by gender, among 206 students 49%(n=101) were male and 51% (n=105) were female which shoes majority of students participating in study were female.

Table 4. 2 Frequency and percentage distribution of students by gender

Gender	Frequency	Percentage (%)
Male	105	51.0
Female	101	49.0
Total	206	100.0

4.1.3 Distribution of study population by Religion.

Among 206 students, majority of students were Hindu 92.7%, followed by Buddhist 3.9%, Christian 2.45%, and Muslim 1%. This finding is supported by another similar study done in Kathmandu metropolitan city (Pokharel and Dhungel, 2023).

Table 4. 3 Frequency and percentage distribution of religion of students

Religion	Frequency	Percentage (%)
Hindu	191	92.7
Buddhist	8	3.9
Muslim	2	1.0
Total	206	100.0

4.1.4 Distribution of Study population by Ethnicity.

Out of 206 studied student, highest students were from Brahmin 73(35.4%), Chhetri 56(27.2%), followed by Janajati, Dalit, Madhesi and Tharu with 55(26.7%), 2(1%), 14(6.8%), 6(2.9%) respectively.

Table 4. 4 Frequency and percentage distribution of ethnicity of students

Ethnicity	Frequency	Percentage (%)
Brahmin	73	35.4
Chettri	56	27.2
Jana Jati	55	26.7
Dalit	2	1.0
Madhesi	14	6.8
Tharu	6	2.9
Total	206	100

4.1.5 Household income of Study population.

Table 4.5 shows students' household income. Among the 206 participants, 35.4% (n = 73) reported a monthly household income between Rs. 20,000 and Rs. 50,000. About 25.3% (n = 52) had income between Rs. 50,000 and Rs. 100,000, while 24.3% (n = 50) reported income up to Rs. 20,000. A smaller proportion (15.0%, n = 31) had income exceeding Rs. 100,000 per month.

Table 4. 5 Frequency and percentage distribution of Household income of students

Household Income	Frequency	Percentage (%)
up to Rs. 20,000	50	24.3
Rs.20000- Rs 50000	73	35.4
Rs 50000 to Rs 100000	52	25.3
more than Rs. 100000	31	15.0
Total	206	100

4.1.6 Pocket Money Study Population.

The table shows the distribution of respondents according to their monthly pocket money. It was found that the majority of students (34.0%) received between Rs. 500 to Rs. 1500 as pocket money per month, followed by 33.0% who received less than Rs. 500. About 12.6% of students received between Rs. 1500 to Rs. 3000, while 11.7% received between Rs. 3000 to Rs. 5000. Only 8.7% of students reported receiving more than Rs. 5000 per month.

Table 4. 6 Frequency and percentage distribution of pocket money of students

Pocket Money	Frequency	Percentage (%)
less than 500	68	33.0
Rs.500 - Rs.1500	70	34.0
Rs.1500- Rs.3000	26	12.6
Rs.3000 - Rs.5000	24	11.7
More than 5,000	18	8.7
Total	206	100.0

4.1.7 Living Status of Study population.

Table 4.7 shows the majority of the students (89.3%, n = 184) reported living with their family. A smaller proportion lived alone (7.8%, n = 16), with friends (1.9%, n = 4), and in a hostel (1.0%, n = 2).

Table 4. 7 Frequency and percentage distribution of living status of students

Living Status	Frequency	Percentage (%)
with family	184	89.3
with friends	4	1.9
Alone	16	7.8
Hostel	2	1.0
Total	206	100.0

4.2 Nutritional Status of Study Population

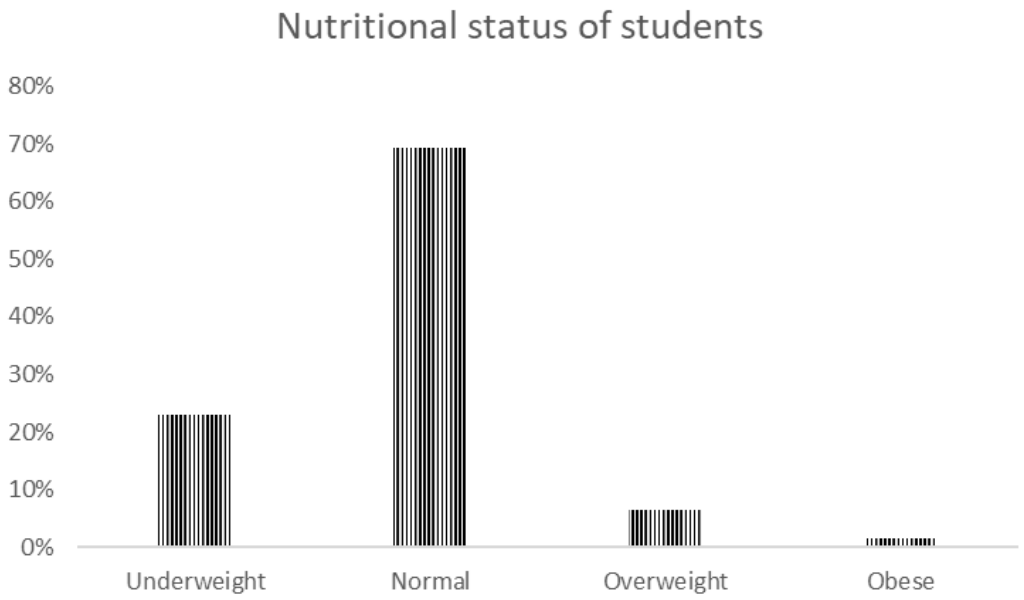


Fig 4.1: Nutritional Status of Students

Table 4.2 shows analysis of nutritional status of students according to BMI, showed that 69.4% of students had normal nutritional status, 23% of students were underweight, while 6.3% were overweight, and 1.5% were obese. This indicates that although majority of students are in healthy weight, considerable portions were underweighted, and smaller portions showed the sign of overweight and obese.

A study conducted among undergraduate BBA students also reported high prevalence of normal nutritional status especially among male (85.3%) compared to female (74.7%) (Dahal *et al.*, 2022). A study conducted at Kathmandu University of medical science showed 73% of students had normal nutritional status, 12.3% of students were underweight, and 14.6% were overweight (Jha *et al.*, 2021) . The study conducted among paramedical students of the remote and rural highland of Mid-Western Nepal showed one fifth of the students (19.8%) were under weight and a very few (8.3%) were pre obese (Pokhrel *et al.*, 2022).A study conducted in India showed that 75% of university students has normal nutritional status (Priya and Sinha, 2020). A cross-sectional study conducted in Bangladesh showed that 67.3% of students has normal nutritional

(Ahmed *et al.*, 2019) . Another cross-sectional study conducted in the UK found that the majority of students 64.2% have normal nutritional status (Belogianni *et al.*, 2021). The study from health colleges and non-health colleges at the Northern Border University in the Kingdom of Saudi Arabia found that 50% of health college students has normal nutritional status and 55.4% of non-health colleges has normal nutritional status (Bayomy *et al.*, 2024).

4.3 Knowledge and eating habits of study population

4.3.1. Knowledge score of Study population

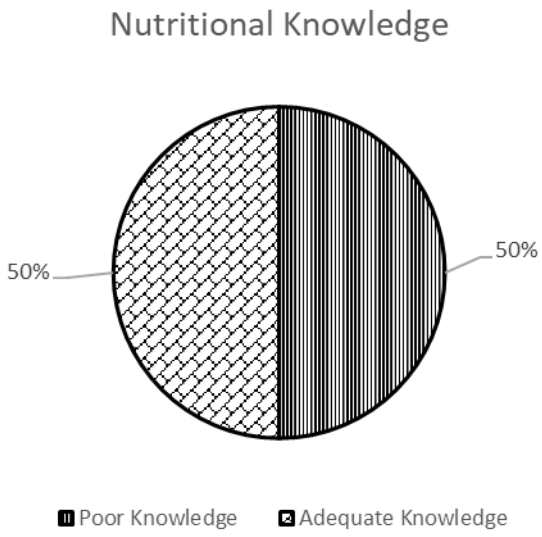


Fig: 4.2: Percentage distribution of nutritional knowledge of students

In this study, we used an actual median score as a cut-off where students classified into Poor nutritional Knowledge and Adequate Nutritional Knowledge group resulting in 50%-50% distribution. This method aligns with another similar Uk-based university study where a median cut-off was used, and 46.8%of students were classified as having Good nutritional Knowledge (Belogianni *et al.*, 2021). Although other regional studies did not apply median cut-off points, their findings have demonstrated comparable findings regarding the state of nutritional knowledge among college students. A study among IT undergraduates reported that 40.7% of students have good nutritional knowledge (Pokharel and Dhungel, 2023).Another study from Kathmandu showed that around half of the respondent 45.2% had poor level of knowledge (Subedi *et al.*, 2020). Similar research from Bangladesh found that 67.5% of non-medical

student's university student has moderate to good nutritional knowledge (Wohid *et al.*, 2024).A study conducted among university students in India showed that 50% of student had low level of nutritional knowledge (Priya and Sinha, 2020). In the Kuwait study, nutritional knowledge was assessed using tertile classification, and most undergraduate students were found to have a moderate level of knowledge (Almansour *et al.*, 2020).

Table 4. 8 Response to Knowledge related questions

Questions	**No. of Students answering correctly**		**Percentage (%)**
1. Function of food	154		74.8
2. Importance of Nutritious Food	175		85
3. Role of Iron	108		52.4
4. Essential Vitamin for Bone and Teeth	144		69.9
5. Main Source of calorie	127		61.7
6. Recommended water intake	128		62.1
7. High Fiber foods	One	114	55.3
	Two	21	10.2
8. Effect of Overcooking Vegetable	192		92.3
9. Safest method to store leftover food	177		85.9
10. Health problem awareness	169		82
11. Type of fat to be avoided or limited in the diet	93		45.1
12. Recommended sugar intake	187		90.8

13. Recommended Salt intake		92	44.7
14. Ability to read nutritional labels on packaged food		175	85
15. Belief about high-protein diet and muscle performance		140	68
16. Healthier alternative to packaged soft drinks		192	92.3
17. Best source of vitamin C	One	103	50
	Two	97	47.1
18. Primary source of carbohydrate		193	93.7
19. Primary source of Protein		183	88.8

4.3.2 Eating Habits Score of Study Populations

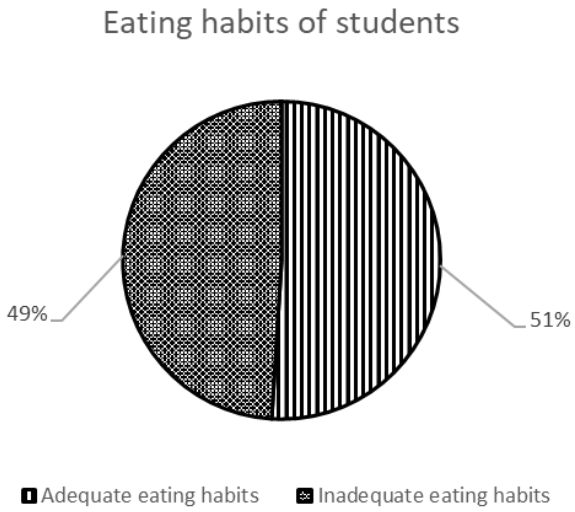


Fig 4.3: Percentage distribution of eating habits of students.

In this study we use actual median score as a cutoff where students classified into adequate eating Habits and inadequate eating habits group resulting in the 51%-49% distribution. Although other articles didn't use median score as a cut off it still provided valuable insights by categorizing eating habits using other methods like 50% splits or predefined cut-off percentages. The study conducted among University Students Enrolled in Academic Programs Related to Nutrition and Culinary Arts in Puerto Rico found that majority of the students, 82.9% had inadequate eating habits (Rivera Medina *et al.*, 2020). The study from health colleges and non-health colleges at the Northern Border University in the Kingdom of Saudi Arabia found that 55.4% of students of health college had adequate eating habits and 58.7% of students of non-health college had adequate eating habits (Bayomy *et al.*, 2024). Another study from the northeast part of Bangladesh found that majority (61%) of the students were not aware of better health status and their dietary habits were not adequate (Mahmuda *et al.*, 2021). One of the study conducted among IT undergraduates students of Kathmandu metropolitan city found that 99.6% of students from age group categorized 20 and under had poor eating habits and 99.3% of students from age group categorized 21 and above had poor eating habits (Pokharel and Dhungel, 2023).

Table 4. 9 Response to eating Habits related questions

Questions	No. of Students answering correctly	Percentage (%)
1. No. of Meals per day	155	55.8
2. Breakfast	109	52.9
3. Fastfood consumption	38	18
4. Fruits Consumption	101	49
5. Water consumption	138	67
6. Homemade food	52	25.2
7. Food preference	157	76.2
8. Sugary Beverages	137	66.5
9. Eating late at night	124	60.2
10. Meals at regular time	138	67
11. Eating watching television	77	37.4
12. Eating in hurry	125	60.7

4.3.3 Factor affecting eating habits

Table 4. 10 Response to factor affecting eating habits questionnaire

Questions	Most common response	Percentages
1. Enjoy taste of junk food	Yes	84%
2. Spent in junk food	Rs. 200	60.2%
3. Main reason for choosing junk food	Enjoy the taste	62.6
4. Challenge in maintaining healthy diet	Lack of time to cook	34
5. Main source of Nutritional Information	Social media	45.1
6. Nutritional information influence food choice	Sometimes	38.8%
7. Eating habits affect academic performance	Yes, Positively	50.5%
8. Tired dieting to change your body weight	Yes , successfully	31.1%
9. Concerned about height and weight	Yes, very concerned	47.1%

4.4 Association between Nutritional Knowledge and sociodemographic characteristics.

In Table 4.11, gender differences were observed in nutritional knowledge levels, with a slightly higher proportion of male students (55.3%) demonstrating adequate knowledge compared to female students (44.7%). Ethnic background also appeared to influence knowledge scores. A substantial (71.8%) of Brahmin/Chhetri students were found to have adequate nutritional knowledge, whereas only (28.2%) of students from other ethnic groups reached the same level. Household income showed notable variation. Students from families earning between Rs. 20,000 and 50,000 per month represented the highest proportion of those with adequate knowledge (34%), followed closely by those in the Rs. 50,000 to 100,000 income bracket (31.1%). Pocket money allocation seemed to be another influencing factor. Students receiving between Rs. 500 and 1500 monthly had the highest percentage of adequate knowledge (37.8%), while only 3.9% of those receiving Rs. 1500 to 3000 per month were in the adequate category. Living situation also played a significant role. A majority of students who lived with their families (87.4%) had adequate nutritional knowledge, whereas this was true for only 12.6% of students living away from family. Religious background was another area where differences were evident. Among the participants, 94.2% of Hindu students had adequate knowledge, compared to just 5.8% among students from other religion.

Statistical analysis showed that both ethnicity and pocket money were significantly associated with levels of nutritional knowledge. A notably higher proportion of Brahmin/Chhetri students demonstrated adequate knowledge compared to students from other ethnic backgrounds ($\chi^2 = 7.487$, $p = 0.006$). Despite the differences in sample population, the study by (Manandhar and Kakchapati, 2023) offers significant evidence supporting the influence of ethnicity on nutritional knowledge, which aligns with the result of this study . Pocket money also showed a association with knowledge levels. A linear-by-linear association test revealed a significant trend (Linear-by-Linear Association = 16.1, $p = 0.005$), where students receiving Rs. 500–1500 per month tended to have higher levels of nutritional knowledge than those in other ranges. This trend suggests that students with moderate pocket money have just enough money to make some choices about what they eat. There is limited research directly examining the relationship between pocket money and nutritional knowledge among college students. However Study done in adolescent indicate that unsupervised or

excessive pocket money can promote unhealthy eating behaviors and lower awareness of healthy dietary practices (Ma *et al.*, 2020).

In contrast, no statistically significant associations were found between nutritional knowledge and variables such as age (p = 0.35), gender (p = 0.21), religious background (p = 0.421), household income (p = 0.404), or living status (p = 0.36).

Table 4.11 Association between nutritional knowledge and sociodemographic characteristics

Variable	**Poor Knowledge**	**Adequate knowledge**	**Test value**	**P-Value**
Age				
less than 18	10(9.7%)	19(18.4%)	Linear by linear	
18-20	27(26.2%)	35(34%)	4.430	0.35
20-22	48(46.6%)	33(32%)		
22 and more	18(17.5%)	16(15.5%)		
Gender				
Male	48(46	57(55.3%)	X^2	0.21
Female	55(53.4%)	46(44.7%)	0.814	
Religion				
Hindu	94(91.3%)	97(94.2%)	X^2	0.421
Non-Hindu	9(8.7%)	6(5.8%)	0.647	
Ethnicity				
Brahmin /Chhetri	55(53.4%)	74(71.8%)	X^2	0.006*
Others	48(46.6%)	29(28.2%)	7.487	
House Hold Income				
Up to rs.20000	28(27.2%)	22(21.4%)	Linear by	
Rs.20000 – Rs.50000	38(36.9%)	35(34%)	Linear	0.404
Rs.500000-Rs.100000	20(19.4%)	32(31.1%)	0.695	

More than 100000	17(16.5%)	14(13.6%)		
Pocket money				
<500	29(28.2%)	39(37.9%)		0.005*
Rs.500-Rs.1500	31(30.1%)	39(37.8%)	Linear by	
Rs.1500-Rs.3000	22(21.4%)	4(3.9%)	Linear	
Rs.3000-Rs.5000	12(11.7%)	12(11.7%)	16.1	
>Rs.5000	9(8.7%)	9(8.7%)		
Living Status				
With Family	94(91.3%)	90(87.4%)	X2	0.36
Without Family	9(8.7%)	13(12.6%)	0.814	

*denotes p value significant at 0.05

4.5 Association between Nutritional knowledge and Nutritional status.

Based on BMI classification as shown in table 4.12, the majority of participants in both knowledge categories fell within the normal weight range. Among those with poor nutritional knowledge, 69.9% (72 students) had normal weight, 20.4% (21 students) were underweight, and 9.7% (10 students) were overweight or obese. Similarly, among students with adequate knowledge, 68.9% (71 students) had normal weight, 25.2% (26 students) were underweight, and 5.8% (6 students) were overweight or obese.

In the present study, no statistically significant association was found between nutritional knowledge and nutritional status ($p = 0.463$). This finding suggests that having adequate nutritional knowledge may not necessarily translate into maintaining an ideal nutritional status. This finding is supported by prior findings. A study conducted among nutrition students showed no association between nutritional knowledge and BMI (Herviana *et al.*, 2024).Similarly, Cross-sectional online study involving adolescent in China reported inverse association between nutrition literacy and overweight/obesity (Li *et al.*, 2022).

Table 4. 12 Association between nutritional knowledge and nutritional status

Variable	Poor Knowledge	Adequate Knowledge	Test value	P vale
Nutritional Status				
Underweight	21(20.4%)	26(25.2%)	X^2	0.463
Normal	72(69.9%)	71(68.9%)	1.539	
Overweight/Obese	10(9.75)	6(5.8%)		

4.6. Association between Nutritional Knowledge and Eating Habits:

As shown in the table 4.13, 47.6% had inadequate eating habits, and 52.4% had adequate eating habits with poor nutritional knowledge. Similarly, 50.5% of them had inadequate eating habits, and 49.5% had adequate eating habits, with adequate nutritional knowledge. The association between the nutrition knowledge and eating habits was statistically insignificant (X^2=0.175, p-value=0.676). This study is about the college students of Itahari. The data does not address the assumption that the more people know nutrition, the healthier they eat. According to the systematic review published in the British Journal of nutrition which found out that more than 65 percent of the reviewed studies found weak associations ($r < 0.5$) between nutrition knowledge and consumption of nutritious food, there may be no guarantee of reliability of the knowledge in predicting behavior (Spronk *et al.*, 2014). In the South Asian context, a quasi-experimental study conducted in Nepal demonstrated that while nutrition education improved adolescents' knowledge and attitudes, it had minimal impact on actual eating behaviors, particularly emotional and uncontrolled eating patterns (Raut *et al.*, 2024). An Italian study found that only 40% of adults translated their nutritional knowledge into congruent dietary practices (Scalvedi *et al.*, 2021) while a UK-based study found no significant relationship between nutrition knowledge and self-regulation of eating ($r = -.064$, $p = .634$) (Beaumont and

Sreelekha, 2024). Collectively, these findings support the conclusion that nutritional knowledge, while important, may not be sufficient to influence dietary behavior.

Table 4. 13 Association between nutritional knowledge and eating habits

Variable	Poor Knowledge	Adequate Knowledge	X^2	P vale
Eating Habits				
Inadequate Eating Habits	49(47.6%)	52(50.5%)	0.175	0.676
Adequate eating Habits	54(52.4%)	51(49.5%)		

4.7 Association between Nutritional Knowledge and Factor affecting Eating Habits

Among the participants having very low nutritional knowledge, a majority (86.4%) reported to enjoy the taste of junk food, whereas 13.6% showed an inverse opinion of not enjoying junk food. Likewise, 81.6% of those with adequate knowledge in comparison to others enjoyed junk food taste. Regarding their expenses on junk food, 52.4% of the students having poor knowledge were found to spend Rs. 200 or less and 47.6% of the students having adequate knowledge spent more than Rs. 200. Following the result other 68% spent Rs. 200 or less and 32% spent more than the average 200 rupees. The foremost reason among all the students for preferences over junk food across both groups was that they were found to enjoy the taste (59.2% poor knowledge and 66% adequate knowledge) followed by another major reason that is easy access. The challenges for students in maintaining a healthy diet were disbursed proportionately with lack of time to prepare healthy food being the major and most common issue which was found to be 34% among both groups. A major source for information related to nutritional knowledge was found as the social media for most participants (41.7% students with poor knowledge and 48.5% having adequate knowledge). In the survey of how much nutritional information they possess was influenced by food choices, it resulted as almost half i.e. 49.5% of those with poor knowledge said “sometimes” likewise those with adequate knowledge of nutritional knowledge resulted to say “most of the time” (26.2%) and “always” (17.5%). Nearly 50% in both groups

resulted in state that eating habits positively affect academic performance. Attempts from the students to regulate diet to change body weight were also found to be similar with about 31% successfully dieting in both groups, and around 40% never willing to try dieting. Concern regarding height and weight among both the groups was reported as "very concerned" by roughly 45-48% of participants.

Statistical analysis showed that spending on junk food was significantly associated with nutritional knowledge (Linear-by-Linear Association = 5.161, p = 0.023), indicating that higher spending was correlated with poorer knowledge. Additionally, the degree to which nutritional information influenced food choices showed a strong significant association with knowledge level ($\chi^2 = 18.48$, p = 0.001), with those having adequate knowledge more frequently influenced by nutritional information. This aligns with findings from a study among Chinese college students, where greater nutrition literacy especially practical skills like reading labels and making informed food decisions was associated with reduced take-out consumption (Qi *et al.*, 2023). Another study among adolescents in Pokhara indicates that even when knowledge exists, factors such as availability and peer influence can override it (Bohara *et al.*, 2021) .However, other factors including enjoyment of junk food taste (p = 0.342), main reason for choosing junk food (p = 0.456), challenges in maintaining a healthy diet (p = 0.808), main source of nutritional information (p = 0.634), perception of eating habits affecting academic performance (p = 0.150), dieting attempts (p = 0.402), and concern about height and weight (p = 0.067) were not significantly associated with nutritional knowledge.

Table 4. 14 Association between nutritional knowledge and factor affecting eating Habits.

Variable	Poor Knowledge	Adequate Knowledge	X^2 Value	P value
Enjoy taste of junk food				
Yes	89(86.4%)	84(81.6%)	0.902	0.342
No	14(13.6%)	19(18.4%)		
Spend in junk food				
≤Rs.200	54(52.4%)	70(68%)	5.161	0.023*
> Rs. 200	49(47.6%)	33(32%)		

Main reason for choosing junk food	6(5.8%)	4(3.9%)	2.611	0.456
Advertisement	61(59.2%)	68(66%)		
Enjoy the taste	30(29.15)	22(21.4%)		
Easy access	6(5.8%)	9(8.7%)		
Peer Influence				
Challenge in maintaining healthy diet				
Lack of Time to cook food	35(34%)	35(34%)	0.971	0.808
Limited access to healthy food	22(21.4%)	23(22.3%)		
Budget Constraints	22(21.4%)	17(16.5%0		
Preference for fast food	24(23.3%)	28(27.2%)		
Main source of Nutritional Information				
Family	28(27.2%)	22(21.4%)	1.712	0.634
Education	18(17.5%)	20(19.4%)		
Social Media	43(41.7%0	50(48.5%)		
Health Professionals	14(13.6%)	11(10.7%)		
Nutritional information influence food choice				
Not at all	17(16.5%)	9(8.7%)	18.48	0.001*
Rarely	10(9.7%)	20(19.4%)		
Sometimes	51(49.5%)	29(28.2%)		
Most of the time	18(17.55)	27(26.2%)		
Always	7(6.8%)	18(17.5%)		
Eating habits affect academic performance				
Yes, Positively	48(46.6%)	56(54.4%)	3.793	0.150
Yes, Negatively	12(11.75)	17(16.5%)		
No impact	43(41.7%)	30(29.1%)		
Tired dieting to change your body weight				
Yes, successfully	32(31.1%)	32(31.1%)	1.821	0.402
Yes. But without success	28(27.2%)	36(35%)		
No, never	43(41.7%)	35(34%)		

Concerned about height and weight				
Yes, very concerned	47(45.6%)	50(48.5%)	5.411	0.067
Somewhat concerned	27(26.2%)	37(35.9%)		
No, not concerned	29(28.250	16(15.5%)		

*Denotes p value significant at 0.05

4.8 Association between Eating Habits and Factor affecting Eating Habits:

Among participants having inadequate eating habits, the majority of 87.1% reported enjoying the taste of junk food compared to 81% of those with adequate eating habits. Spending on junk food was similar between the two groups, with 58.4% of the inadequate group and 61.9% of the adequate group spending ≤Rs. 200. The most common reason for choosing junk food in both groups was enjoyment of taste (69.3% vs. 56.2%), followed by easy access (16.8% vs. 33.3%). The common challenges in maintaining a healthy diet among the inadequate group were preference for fast food (31.7%) and lack of time to cook (29.7%), whereas in the adequate group, lack of time to cook was more frequent (38.1%). For the main source of nutritional information, inadequate eaters most often answered social media (52.5%), while students with adequate eating habits relied more on family (27.6%) and education (26.7%). In both groups adequate and inadequate eating habits "sometimes" was the most common response when asked if nutritional information influenced food choice. Eating habits were perceived to positively impact academic performance by 45.5% of those with inadequate eating habits and 55.2% of those with adequate eating habits. Patterns were similar between groups for dieting attempts to change body weight and concern about height and weight.

The statistical Chi-square analysis showed a significant association between the main source of nutritional information and eating habits ($\chi^2 = 14.79$, $p = 0.002$), with participants having adequate eating habits more likely to reported family or education, while those with inadequate eating habits more often reported social media as their main source. This aligns with prior findings although this study was conducted in a different population group, showing that reliance on lower-quality sources is linked to susceptibility to nutrition misinformation and reduced likelihood of positive dietary change, whereas trusted scientific sources are more

effective in influencing eating behavior (Ruani *et al.*, 2023).There no significant associations were observed for enjoyment of junk food taste (p = 0.227), spending on junk food (p = 0.610), main reason for choosing junk food (p = 0.053), challenges in maintaining a healthy diet (p = 0.208), influence of nutritional information on food choice (p = 0.179), influence of eating habits on academic performance (p = 0.194), dieting attempts (p = 0.413), or concern about height and weight (p = 0.371).

Table 4. 15 Association between eating habits and factor affecting eating habits.

Variable	**Inadequate Eating Habits**	**Adequate Eating Habits**	**X^2 Value**	**P value**
Enjoy taste of junk food				
Yes	88(87.1%)	85(81%)	1.460	0.227
No	13(12.9%)	20(19%)		
Spend in junk food				
≤Rs.200	59(58.4%)	65(61.9%)	0.260	0.610
> Rs. 200	42(41.6%)	40(38.1%)		
Main reason for choosing junk food				
Advertisement	5(5%)	5(4.8%)	7.69	0.053
Enjoy the taste	70(69.3%)	59(56.2%)		
Easy access	17(16.8%)	35(33.3%)		
Peer Influence	9(8.9%)	6(5.7%)		
Challenge in maintaining healthy diet				
Lack of Time to cook food	30(29.7%0	40(38.1%)	4.553	0.208
Limited access to healthy food	21(20.8%0	24(22.9%)		
Budget Constraints	18(17.8%)	21(20%)		
Preference for fast food	32(31.75%)	20(19%)		

Main source of Nutritional Information				
Family	21(20.8%)	29(27.6%)	14.79	0.002*
Education	10(9.9%)	28(26.7%)		
Social Media	53(52.5%0	40(38.1%)		
Health Professionals	17(16.85%)	8(7.6%)		
Nutritional information influence food choice				
Not at all	8(7.9%)	18(17.1%)	6.283	0.179
Rarely	16(15.8%)	14(13.3%)		
Sometimes	45(44.6%)	35(33.3%)		
Most of the time	19(18.8%)	26(24.8%)		
Always	13(12.9%)	12(11.4%)		
Eating habits affect academic performance				
Yes, Positively	46(45.5%)	58(55.2%)	3.27	0.194
Yes, Negatively	13(12.9%)	16(15.2%)		
No impact	42(41.6%)	31(29.5%)		
Tired dieting to change your body weight				
Yes, successfully	32(31.7%)	32(30.5%)	1.76	0.413
Yes. But without success	35(34.7%)	29(27.6%)		
No, never	34(33.7%)	44(41.9%)		
Concerned about height and weight				
Yes, very concerned	49(48.5%)	48(45.7%)	1.983	0.371
Somewhat concerned	34(33.7%)	30(28.6%)		
No, not concerned	18(17.8%)	27(25.7%)		

*Denotes p value significant at 0.05

Table 4. 16 Response to factor affecting eating habits questionnaire

Questions	Most common response	Percentages
1. Enjoy taste of junk food	Yes	84%
2. Spend in junk food	Rs. 200	60.2%
3. Main reason for choosing junk food	Enjoy the taste	62.6
4. Challenge in maintaining healthy diet	Lack of time to cook	34
5. Main source of Nutritional Information	Social media	45.1
6. Nutritional information influence food choice	Sometimes	38.8%
7. Eating habits affect academic performance	Yes, positively	50.5%
8. Tired dieting to change your body weight	Yes, successfully	31.1
9. Concerned about height and weight	Yes, very concerned	47.1

4.9 Association between Eating Habits and Socio demographic characteristics:

In terms of eating habits, more than one-third of students aged 20–22 years reported inadequate eating habits (37.6%), followed by those aged 18–20 years (25.7%), 22 years and above (19.8%), and less than 18 years (16.8%) while the same group also accounted for the largest proportion of adequate eating habits (41%),followed by 18-20 years(34.3%),22 and more years 13.3% and less than 18 yrs(11.4%). A nearly equal half proportion of males (49.5%) and females (50.5%) had inadequate eating habits while in the adequate category, slightly more males (52.4%) than females (47.6%) reported adequate eating habits. Regarding religion and ethnicity, the majority of both Hindu students (92.1% inadequate; 93.3% adequate) and Brahmin/Chhetri students (62.4% inadequate; 62.9% adequate) fell in both groups almost equally). Similarly, students receive pocket money between Rs. 500–1,500 also reported the highest inadequate eating habits (38.6%). Students from households with a monthly income of Rs. 20,000–50,000 represented the largest proportion in both the inadequate (43.6%) and adequate (27.6%) eating habits groups. A similar trend was observed with pocket money, where students receive Rs. 500–1500 per month comprised the highest proportion of the inadequate group (38.6%) and a significant share of the adequate group (29.5%). Among students living with their families, a majority (95.2%) had adequate eating habits, while 83,2%reported in adequate in adequate eating habits. On the other hand, among those living without family, only 4.8% had adequate eating habits compared to 16.8% with inadequate habits.

Statistical Chi square and linear by linear analysis showed that age (p=0.745), gender(p=0.660), religion (p=0.729), ethnicity (p=0.943), household income (p=0.289), pocket money (p=0.089) was not significantly associated with eating habits. However, living status was found to be significantly associated with eating habits (χ^2=7.82, p=0.005) indicating that Students living with their families were more likely to maintain adequate eating habits compared to those with living away from families. One of the studies from Kathmandu, Nepal also revealed that the respondents who were living with family were 2.062 times more likely to have good eating practice compared to respondents who were not living with family (Dahal *et al.*, 2022).

Table 4. 17 Association between Eating Habits and Socio demographic characteristics

Variable	Inadequate Eating Habits	Adequate Eating Habits	X^2 value	P-Value
Age				
less than 18	17(16.8%)	12(11.4%)	0.106	0.745
18-20	26(25.7%)	36(34.3%)		
20-22	38(37.6%)	43(41%)		
22 and more	20(19.8%)	14(13.3%)		
Gender				
Male	50(49.5%)	55(52.4%)	0.170	0.660
Female	51(50.5%)	50(47.6%)		
Religion				
Hindu	93(92.1%)	98(93.3%)	0.120	0.729
Non-Hindu	8(7.9%)	7(6.7%)		
Ethnicity				
Brahmin/Chhetri	63(62.4%)	66(62.9%)	0.005	0.943
Others	38(37.6%)	39(37.1%)		
Household Income				
Up to rs.20000	18(17.8%)	32(30.5%)	1.1	0.289
Rs.20000 – Rs.50000	44(43.6%)	29(27.6%0		
Rs.500000-Rs.100000	21(20.8%)	31(29.5%)		
More than 100000	18(17.8%)	13(12.4%)		

Pocket money				
<500	25(24.8%)	43(41%)	2.890	0.089*
Rs.500-Rs.1500	39(38.6%)	31(29.5%)		
Rs.1500-Rs.3000	13(12.95)	13(12.4%)		
Rs.3000-Rs.5000	15(14.9%)	9(8.6%)		
>Rs.5000	9(8.95%)	9(8.6%)		
Living Status				
With Family	84(83.2%)	100(95.2%)	7.82	0.005*
Without Family	17(16.8%)	5(4.8%)		

*denotes p value significant at 0.05

4.10 Association between Eating Habits and Nutritional status

The tables 4.18 show that most students with both inadequate and adequate eating habits fell within the normal nutritional status category (70.3% and 68.6% respectively). A higher proportion of underweight students (24.8%) reported inadequate eating habits compared to 21% with adequate habits, while overweight/obese students were slightly more represented among those with adequate eating habits (10.5%) than those with inadequate habits (5%).

The association between nutritional status and eating habits was not statistically significant ($\chi^2 = 3.992$, $p = 0.262$). This indicates that body weight status did not have a meaningful relationship with the adequacy of eating habits among the participants. This finding is consistent with several findings. The study from health colleges and non-health colleges at the Northern Border University in the Kingdom of Saudi Arabia also shows no association between eating habits and nutritional status ($X^{\wedge 2} = 3.31$, p-value= 0.35) (Bayomy *et al.*, 2024). This aligns with findings from university students in Puerto Rico, where unhealthy eating behaviors were prevalent, but no significant correlation with BMI was observed (Rivera Medina *et al.*, 2020). Similarly, research among Nepalese medical students showed low prevalence of obesity and diverse food habits without any significant association with nutritional status (Panta *et al.*, 2020). Among medical undergraduates in Tamil Nadu, general dietary practices showed

no significant association with overweight, except for low fruits intake (Mani, 2014). Although eating habits play a role in determining BMI, other non-dietary factors such as physical inactivity, stress, academic pressure, and psychological role also play a dominant role in determining BMI of young adults. A descriptive study among medical students in Nepal also reported that stress and sedentary behavior were key contributors to elevated BMI, even when dietary intake was moderate (Jha *et al.*, 2021).

Table 4. 18 Association between eating habits and nutritional status

Variable	**Inadequate Eating Habits**	**Adequate Eating Habits**	**X^2 value**	**P value**
Nutritional Status				
Underweight	25(24.8%)	22(21%)	3.992	0.262
Normal	71(70.3%)	72(68.6%)		
Overweight/Obese	5(5%)	11(10.5%)		

Conclusion and Recommendations

This study assessed nutritional knowledge, eating habits, and nutritional status of college students in Itahari Sub-Metropolitan City. The conclusions that can be drawn from the study are:

- About half of the students (50%) had good nutritional knowledge, and 51% demonstrated adequate eating habits.
- Most students (69.4%) had normal nutritional status.
- There was no significant association between nutritional knowledge and eating habits, nutritional knowledge and nutritional status, or eating habits and nutritional status.
- This indicates that knowing about nutrition does not always lead to healthier eating practices or better nutritional status.

Recommendations:

- Conduct nutrition education programs in colleges to help students apply knowledge in daily life.
- Encourage students to adopt healthy eating habits, including regular meals, more fruits and vegetables, and sufficient water intake.
- Provide guidance on meal planning, especially for students living away from home or in hostels.
- Colleges can offer healthy food options in cafeterias and reduce the availability of junk food.
- Further research is needed to explore factors influencing eating habits and nutritional status, and to test interventions that improve healthy practices.

Summary

This cross-sectional study entitled “Nutritional Knowledge and Eating Habits among College Students in Itahari Sub-Metropolitan City” was conducted to assess the level of nutritional knowledge, eating habits, and their association with selected sociodemographic variables and nutritional status among college students. A total of 206 students were selected through a multistage random sampling technique from three colleges representing different wards of Itahari. Data were collected using a structured, pre-tested questionnaire that included sections on sociodemographic information, nutritional knowledge, and eating habits. Anthropometric measurements such as height and weight were also taken to determine Body Mass Index (BMI).

The collected data were coded and analyzed using SPSS version 20. Descriptive statistics such as frequency, percentage, mean were used to summarize the data, while Chi-square tests were applied to determine associations between variables.

The findings revealed that approximately half of the respondents had adequate nutritional knowledge poor knowledge levels. However, a considerable proportion still demonstrated inadequate eating habits, such as irregular meal patterns and frequent consumption of junk foods. Statistical analysis showed a significant association between nutritional knowledge and certain sociodemographic variables, such as living status. However, there was no significant association between nutritional knowledge and overall eating habits or nutritional status (BMI), suggesting that knowledge alone does not necessarily translate into healthy dietary behavior.

The study concludes that while awareness of nutrition among college students in Itahari is relatively high, it does not always lead to positive eating practices. Psychological factors, including motivation, attitude, and self-efficacy, as well as environmental influences like food availability and peer behavior, may play a mediating role. It is recommended that colleges implement nutrition education and behavior-based interventions focusing not only on knowledge improvement but also on developing positive attitudes and practical behavioral skills for healthier eating.

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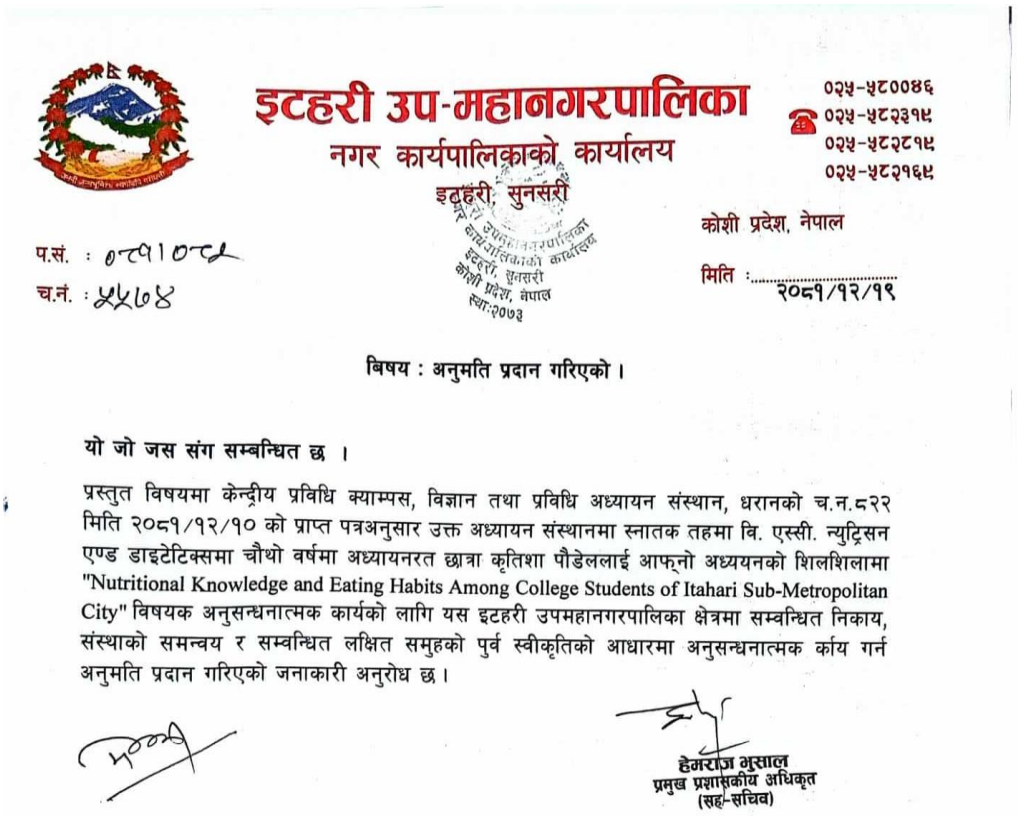
Appendices

Appendices A : Approval Letter



इटहरी उप-महानगरपालिका
नगर कार्यपालिकाको कार्यालय
इटहरी, सुनसरी

०२५-५८००४६
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कोशी प्रदेश, नेपाल

प.सं. : ०८१।०८२
च.नं. : ५५७४

मिति : २०८१/१२/१९

विषय : अनुमति प्रदान गरिएको ।

यो जो जस संग सम्बन्धित छ ।

प्रस्तुत विषयमा केन्द्रीय प्रविधि क्याम्पस, विज्ञान तथा प्रविधि अध्ययन संस्थान, धरानको च.न.८२२ मिति २०८१/१२/१० को प्राप्त पत्रअनुसार उक्त अध्ययन संस्थानमा स्नातक तहमा वि. एस्सी. न्युट्रिसन एण्ड डाइटेटिक्समा चौथो वर्षमा अध्ययनरत छात्रा कृतिशा पौडेललाई आफ्नो अध्ययनको शिलशिलामा "Nutritional Knowledge and Eating Habits Among College Students of Itahari Sub-Metropolitan City" विषयक अनुसन्धनात्मक कार्यको लागि यस इटहरी उपमहानगरपालिका क्षेत्रमा सम्बन्धित निकाय, संस्थाको समन्वय र सम्बन्धित लक्षित समुहको पुर्व स्वीकृतिको आधारमा अनुसन्धनात्मक कार्य गर्न अनुमति प्रदान गरिएको जनाकारी अनुरोध छ ।

हेमराज भुसाल
प्रमुख प्रशासकीय अधिकृत
(सह-सचिव)

Appendices B: Consent Form

Namaskar! I am Kritisha Poudel, a student of Central Campus of Technology, conducting a dissertation work for the completion of a Bachelor's degree in Nutrition and Dietetics.

Title of the Research: Nutritional Knowledge and Eating Habits among College Students in Itahari Sub-Metropolitan City.

You are invited to participate in a research study. Please read the following information carefully before deciding to take part.

The purpose of this study is to assess the nutritional knowledge and eating habits of college students in Itahari. We will collect data using a questionnaire and measure your height and weight to access your nutritional status. Participation will take approximately 20–30 minutes. You will be contacted only once for data collection. You may not directly benefit from this study, but the findings may help improve nutritional programs for college students and raise awareness about healthy eating. There are minimal risks involved in this study. Some participants might feel uncomfortable answering personal questions or being measured for height and weight. You can skip any questions or withdraw at any time. There is no payment or reimbursement for participation. No medical treatment or insurance coverage is provided. Your participation is completely voluntary. You may refuse to take part or withdraw at any time without any consequences.

Contact Details,

Researcher,

Kritisha Poudel

Contact No: 9824386626

Email :poudelkritisha10@gmail.com

Supervisor,

Suman Pokhrel

Mobile no: 9842110602

Email address: suman.pokhrel@cct.tu.edu.np

For questions regarding your rights as a participant or to report any complaints:

Nepal Health Research Council (NHRC)

Kathmandu, Nepal

Phone: 01-4254220 | Fax: 977-1-4254220

Email: ethicalreview@nhrc.gov.np

Website: www.nhrc.gov.np

Consent:

I have read or have had the information read to me. I understand the purpose and nature of this research and voluntarily agree to participate.

Participant's Name: _____

Signature : _____

Date: _____

Researcher's Name: _____

Signature: _____

Date: _____

नेपालीमा जानकारी सहमति फारम

नमस्कार! म कृतिशा पौडेल, केन्द्रीय प्रबिधि क्याम्पसकि छात्रा हुँ। म पोषण तथा आहारविज्ञान विषयमा स्नातक तहको अध्ययन सम्पन्न गर्नका लागि आफ्नो शोधकार्य (थेसिस) सञ्चालन गर्दै छु।

अनुसन्धानको शीर्षक: ईटहरीका कलेज विद्यार्थीहरूमा पोषणसम्बन्धी ज्ञान र आहार बानीहरू

तपाईंलाई एक अनुसन्धानमा सहभागी हुन अनुरोध गरिएको छ। कृपया तलको जानकारी ध्यानपूर्वक पढ्नुहोस् र आफू सहभागी हुने वा नहुने निर्णय लिनुहोस् | यस अध्ययनको उद्देश्य ईटहरीका कलेज विद्यार्थीहरूको पोषणसम्बन्धी ज्ञान र आहार बानीहरू मूल्याङ्कन गर्नु हो। हामी प्रश्नावली भरेर डाटा संकलन गर्नेछौ र तपाईंको उचाइ र तौल नाप्नेछौं। यस अध्ययनमा सहभागी हुन करिब २०-३० मिनेट लाग्नेछ। तपाईंलाई एक पटक मात्र सम्पर्क गरिनेछ। यस अध्ययनबाट तपाईंलाई प्रत्यक्ष फाइदा नहुन सक्छ, तर यसले विद्यार्थीहरूका लागि पोषणसम्बन्धी कार्यक्रमहरू सुधार गर्न सहयोग पुऱ्याउन सक्छ। यस अनुसन्धानमा न्यून जोखिमहरू छन्। व्यक्तिगत प्रश्नहरूको उत्तर दिन वा उचाइ र तौल नाप्न अप्ठ्यारो लाग्न सक्छ। तपाईं कुनै पनि प्रश्न नदिन वा कुनै पनि समयमा सहभागिता रोक्न सक्नुहुन्छ। यस अध्ययनमा सहभागी हुनेका लागि कुनै भुक्तानी वा क्षतिपूर्ति छैन। स्वास्थ्य उपचार वा बीमा सुविधा पनि दिइने छैन। यस अध्ययनमा सहभागिता पूर्ण रूपमा स्वेच्छिक छ। तपाईं सहभागी नहुने वा कुनै पनि समयमा सहभागीता रोक्न सक्नुहुन्छ।

सम्पर्क:

अनुसन्धाता,

कृतिशा पौडेल

फोन न: ९८२४३८६६२६

इमेल :poudelkritisha10@gmail.com

सुमन पोख्रेल

फोन न : ९८४२११०६०२

इमेल: suman.pokhrel@cct.tu.edu.np

यदि तपाईंलाई सहभागीको अधिकारबारे जान्न वा गुनासो गर्न चाहनुहुन्छ भने:

नेपाल स्वास्थ्य अनुसन्धान परिषद (NHRC)

रामशाहपथ, काठमाडौं, नेपाल

फोन: ०१-४२५४२२०

इमेल: ethicalreview@nhrc.gov.np

वेबसाइट: www.nhrc.gov.np

सहमति:

मैले माथिको जानकारी पढें वा अरूबाट पढाइयो। मलाई अनुसन्धानको उद्देश्य र प्रकृति थाहा भयो र म स्वयंको इच्छाले सहभागी हुन सहमति जनाउँछु।

सहभागीको नाम: _____

हस्ताक्षर: _____

मिति: _____

अनुसन्धाताको नाम: _____

हस्ताक्षर: _____

मिति: _____

Appendix C

Questionnaire on Nutritional Knowledge and Eating Habits among College Students.

Section 1: Demographic Information

What is your age?

[less than 18

[ ] 18 -20

[ ] 20-22

[ ] 22-25

2. What is your gender?

- [ ] Male
- [ ] Female
- [ ] Other

3. What is your religion?

- [ ] Hindu
- [ ] Buddhist
- [ ] Muslim
- [ ] Christian
- [ ] Others

4. What is your ethnicity?

- [ ] Brahmin

- [ ] Chettri

- [ ] Janajati

- [ ] Dalit

- [ ] Others ----------

5. What is your monthly household income?

- [ ] Up to Rs. 20,000

- [ ] Rs. 20,000 - Rs. 50,000

- [ ] Rs. 50,000 - Rs. 100,000

- [ ] More than Rs. 100,000

6. What is your monthly pocket money

-[ ] less than 500

-[ ] Rs. 500 - Rs. 1,500

- [ ] Rs. 1,500 - Rs. 3,000

- [ ] Rs. 3,000 - Rs. 5,000

- [ ] More than Rs. 5,000

7. What is your living status?

- [ ] With family

- [ ] With friends

- [ ] Alone

- [ ] Hostel

Section 2: Nutritional Status

8. What is your height (cm)? _____

9. What is your weight (kg)? _____

10. What is your Body Mass Index (BMI)? _____

Section 3: Nutritional Knowledge

11.What does food do for our body?

-[ ] Gives energy

-[ ] Helps our body grow

- [ ] Both

-[ ] Don’t know

12. Why should we eat nutritious food?

- [ ] For adequate growth and development

- [ ] For development of immunity power

- [ ] For adequate mental growth

- [ ] All of above

-[ ] Don’t know

13. what is the main role of iron in body?

-[] Helps carry oxygen in blood

-[]Helps IN DIGESTION

-[ ] Helps in bone growth

-[ ] Don’t know

14.Which vitamin is essential for strong bones and teeth?

-[ ] Vitamin A

-[ ] Vitamin C

-[ ] Vitamin D

15. What is the main source of calories in a diet?

- [ ] Fats

- [ ] Carbohydrates

- [ ] Protein

- [ ] Iron

16. How much water should be consumed daily?

- [ ] Less than 2 liters

- [ ] 2-3 liters

- [ ] More than 3 liters

- [ ] Don’t know

17. Which of the following foods are high in fiber? (Select all that apply)

- [ ] Banana

- [ ] Egg

- [ ] Broccoli

- [ ] Nuts

- [ ] Chicken

18. What Happen when Vegetables are overcooked?

-[ ] They Become more nutritious.

-[ ] They Lose vitamins and minerals

-[ ] They taste better.

19. What is the safest way to store leftover food?

-[ ] Leaving it at room temperature

-[ ] Storing in a refrigerator

-[ ] Keeping it covered on the table

20. Are you aware of health problems related to poor diet?

- [ ] Yes

- [ ] No

21. Which of the following types of fats should be avoided or limited in your diet?

-[ ] Saturated fats (e.g., fatty meats, butter)

-[ ] Trans fats (e.g., processed snacks, baked goods)

-[ ]Unsaturated fats (e.g., olive oil, avocado)

22. How many grams of sugar should the average adult consume per day, according to health guidelines?

-[ ]25-50 grams

-[ ]50-75 grams

-[ ]More than 75 grams

23. What is the World Health Organization's (WHO) recommended daily salt intake for adults per day?

-[ ] up to 2 grams (2000 mg)

-[ ] up to 5 grams (5000 mg)

-[ ] up to 10 grams (10,000 mg)

-[ ] There is no recommended limit

24. Do you know how to read and understand the nutritional information on packaged food?

-[ ]Yes, I can easily understand it

-[ ]No, I don't understand

25.Do you think that consuming a high-protein diet can help build muscle mass and improve physical performance?

-[ ] Yes

-[ ] No

- [ ] I'm not sure

26.What is a healthier alternative to packaged soft drinks?

-[ ] Fresh fruit juice or Buttermilk

- [ ] Energy drinks

-[ ] Flavored sodas

27. What are the best source of Vitamin C?(select all apply)

-[ ]Rice

-[ ] Amala

-[ ] Meat

-[ ] lemons

28.Mark whether the following foods are the primary sources of carbohydrates or not.

Food source	yes	No	Don’t know
Rice			
Chicken			
Yogurt			
Milk			

29. Mark whether the following foods are the primary sources of Protein or not.

Food source	yes	No	Don’t know
Rice			
Chicken			
Yogurt			
Broccoli			

Section 3: Eating Habits*

30. How many meals do you consume in a day?

- [ ] One

- [ ] Two

- [ ] Three -Four

-[ ] more than Four

31. Do you consume breakfast everyday?

- [ ] Yes

- [ ] No

32. How often do you consume fast food?

- [ ] Every day

- [ ] 3-4 times a week

- [ ] 1-2 times a week

- [ ] Rarely/Never

33. How often do you eat fruits?

- [ ] Every day

- [ ] Alternately

- [ ] Two-three times a week

- [ ] Rarely

- [ ] Never

34. How much water do you drink per day?

- [ ] Less than 2 liters

- [ ] 2-3 liters

35. Do you carry homemade food to college?

- [ ] Yes

- [ ] No

36. What kind of food do you prefer the most?

- [ ] Homemade food

- [ ] Fast food

37. How often do you consume fast food (e.g., momo, chowmein, pizza, burgers)?

[ ] Never/Rarely

[ ] Once a week

[ ] 2-3 times a week

[ ] Almost daily

38.How often do you drink sugary beverages (e.g., soda, energy drinks)?

[ ] Never/Rarely

[ ] 2-3 times a week

[ ] Almost daily

39.Do you eat late night after 9-10 pm?

-[ ]Yes

-[ ] NO

40. How often do you eat meals at regular times each day?

[1] yes

[0] NO

41. Do you eat while watching TV or using your phone?

-[ ] yes

-[ ] No

42.How often do you eat in a hurry or skip chewing properly?

-[ ] yes

-[ ] NO

Section 4: Factors Influencing Eating Habits

43. Do you enjoy the taste of junk food?

- [ ] Yes

- [ ] No

44. How much do you spend on junk food per week?

- [ ] Rs. 200

- [ ] Rs. 300

- [ ] Rs. 400

- [ ] More than Rs. 500

45 . What is the main reason you choose junk food?

- [ ] Advertisement

- [ ] Enjoy the taste

- [ ] Easy access

- [ ] Peer influence

46.What is your biggest challenge in maintaining a healthy diet?

- [] Lack of time to cook
- [ ] Limited access to healthy food
- [ ] Budget constraints
- [ ] Preference for fast food

47. What is your main source of nutritional information?

- [ ] Family

- [ ] Education

- [ ] Social media

- [ ] Health professionals

48. Does nutritional information influence your food choices?

- [ ] Not at all

- [ ] Rarely

- [ ] Sometimes

- [ ] Most of the time

- [ ] Always

49.Do you feel that your eating habits affect your academic performance?

[ ] Yes, positively

[ ] Yes, negatively

[ ] No impact

50.Have you ever tried dieting to change your body weight?

[ ] Yes, successfully

[ ] Yes, but without success

[ ] No, never

51. Are you concerned about your weight and diet?

[ ] Yes, very concerned

[ ] Somewhat concerned

[ ] No, not concerned

कलेजका विद्यार्थीहरू बीच पोषण ज्ञान र खाने बानीको बारेमा प्रश्नावली।

खण्ड १: जनसांख्यिक जानकारी

१. तपाईंको उमेर कति हो?

[ ] १८ वर्षभन्दा कम

[ ] १८ - २०

[ ] २० - २२

[ ] २२ र माथि

२. तपाईंको लिङ्ग के हो?

- [ ] पुरुष
- [ ] महिला
- [ ] अन्य

३. तपाईंको धर्म के हो?

- [ ] हिन्दू
- [ ] बौद्ध
- [ ] मुस्लिम
- [ ] क्रिश्चियन
- [ ] अन्य

४. तपाईंको जातीयता के हो?

- [ ] ब्राह्मण
- [ ] क्षेत्री
- [ ] जनजाति
- [ ] दलित
- [ ] अन्य ---------

५. तपाईँको मासिक घरायसी आम्दानी कति छ?

- [ ] रु. २०,००० सम्म
- [ ] रु. २०,००० - रु. ५०,०००
- [ ] रु. ५०,००० - रु. १,००,०००

- [ ] रु. १,००,००० भन्दा बढी

६. तपाईँको मासिक खल्ती खर्च कति हो

- [ ] ५०० भन्दा कम
- [ ] रु. ५०० - रु. १,५००
- [ ] रु. १,५०० - रु. ३,०००
- [ ] रु. ३,००० - रु. ५,०००
- [ ] रु. ५,००० भन्दा बढी

७. तपाईंको बसोबास अवस्था कस्तो छ?

- परिवारसँग
- साथीहरूसँग
- एक्लै
- होस्टेलमा

सेक्सन २: पोषण स्थिति

८. तपाईंको उचाइ (सेमी) कति छ? _____

९. तपाईंको तौल (के.जी.) कति छ? _____

१०. तपाईंको शरीर द्रव्यमान सूचकांक (बि.यम. आइ) कति छ? _____

११. तपाईं शारीरिक गतिविधिमा (कसरत, हिँडडुल, खेलकुद) कति पटक संलग्न हुनुहुन्छ?

- हप्तामा एक पटक
- हप्तामा दुई वा तीन पटक
- हरेक दिन

१२. खाना हाम्रो शरीरका लागि के गर्छ?

- ऊर्जा दिन्छ

- हाम्रो शरीर बढ्न मद्दत गर्छ
- दुवै
- थाहा छैन

१३. हामीले पोषिलो खाना किन खानु पर्छ?

- उचित वृद्धि र विकासका लागि
- रोगप्रतिरोधी क्षमता विकासका लागि
- मानसिक वृद्धि विकासका लागि
- माथिका सबै
- थाहा छैन

१४. शरीरमा आइरन को मुख्य भूमिका के हो?

- रगतमा अक्सिजन बोक्न मद्दत गर्छ
- पाचन प्रक्रियामा मद्दत गर्छ
- हड्डीको वृद्धि गर्न मद्दत गर्छ

१५. बलियो हड्डी र दाँतका लागि कुन भिटामिन आवश्यक हुन्छ?

- भिटामिन A
- भिटामिन C
- भिटामिन D

१६. भोजनमा क्यालोरीको मुख्य स्रोत के हो?

- बोसो (Fats)
- कार्बोहाइड्रेट्स (Carbohydrates)
- प्रोटिन (प्रोटिन)
- आइरन (Iron)

१७. दैनिक कति पानी सेवन गर्नु आवश्यक छ?

- २ लिटर भन्दा कम

- २-३ लिटर
- ३ लिटर भन्दा बढी
- थाहा छैन

१८. निम्नमध्ये कुन खाना फाइबरको राम्रो स्रोत हुन्? (सबै लागू हुने विकल्प छान्नुहोस्)

- केरा (Banana)
- अण्डा (Egg)
- ब्रोकाउली (Broccoli)
- ड्राइफ्रुट/नट्स (Nuts)
- कुखुराको मासु (Chicken)

९. तरकारीहरू धेरै पकाउँदा के हुन्छ?

- तिनीहरू अझ पोषिलो बन्छन्
- तिनीहरूले भिटामिन र खनिजहरू गुमाउँछन्
- तिनीहरूको स्वाद राम्रो हुन्छ

२०. बाँकी रहेको खाना सुरक्षित रूपमा राख्ने उत्तम उपाय के हो?

- कोठाको तापक्रममा राख्ने
- फ्रिजमा भण्डारण गर्ने
- टेबलमा छोपेर राख्ने

२१. तपाईंलाई अस्वस्थ खानपानसँग सम्बन्धित स्वास्थ्य समस्याहरूको जानकारी छ?

- छ (Yes)
- छैन (No)

२२. निम्न मध्ये कुन प्रकारका बोसोजन्य तत्वहरू खानाबाट टाढा रहनु वा सीमित गर्नु आवश्यक छ?

- स्यचुरेटेड फ्याट (जस्तै: बोसोयुक्त मासु, घिउ)
- ट्रान्स फ्याट (जस्तै: प्रशोधित खाजा, बेक गरिएका परिकार)

- अन स्यचुरेटेड फ्याट (जस्तै: अलिभ तेल, एभोकाडो)

२३. स्वास्थ्य मापदण्ड अनुसार एक व्यक्तिले दैनिक कति ग्राम चिनी सेवन गर्नु पर्छ?

- २५-५० ग्राम
- ५०-७५ ग्राम
- ७५ ग्रामभन्दा बढी

२४ .विश्व स्वास्थ्य संगठन (WHO) का अनुसार वयस्कहरूले दैनिक कति नुन सेवन गर्नु पर्छ?

- अधिकतम २ ग्राम (२००० मि.ग्रा.)
- अधिकतम ५ ग्राम (५००० मि.ग्रा.)
- अधिकतम १० ग्राम (१०,००० मि.ग्रा.)
- कुनै सिफारिस गरिएको सीमा छैन

२५. के तपाईं प्याक गरिएको खानाको पोषण सम्बन्धी जानकारी पढ्न र बुझ्न सक्नुहुन्छ?

- हो, म सजिलै बुझ्न सक्छु
- होईन, म बुझ्दिन

२६ .के तपाईंको विचारमा उच्च-प्रोटिनयुक्त आहारले मांसपेशी वृद्धि गर्न र शारीरिक कार्यसम्पादन सुधार गर्न मद्दत गर्छ?

- हो
- होईन
- थाहा छैन

२७. प्याक गरिएको सफ्ट ड्रिंक्सको स्वस्थ विकल्प कुन हो?

- ताजा फलफूलको रस वा मोही
- उर्जावर्धक पेय (Energy drinks)
- फ्लेभर्ड सोडा (Flavored sodas)

२८. भिटामिन सी को उत्तम स्रोत कुन हुन्? (सबै लागू हुने विकल्प छान्नुहोस्)

- चामल

- अमला
- मासु
- कागती

२९. निम्न खाना कार्बोहाइड्रेटको प्राथमिक स्रोत हुन् कि होइनन् भन्ने चिन्ह लगाउनुहोस्।

खाना स्रोत	हो	होईन	थाहा छैन
चामल			
कुखुराको मासु			
दहि			
दुध			

३०. निम्न खाना प्रोटिनको प्राथमिक स्रोत हुन् कि होइनन् भन्ने चिन्ह लगाउनुहोस्।

खाना स्रोत	हो	होईन	थाहा छैन
चामल			
कुखुराको मासु			
दहि			

ब्रोकाउली			

सेक्सन ३: खाने बानी

३१. तपाईं दैनिक कति पटक भोजन गर्नुहुन्छ?

- एक पटक
- दुई पटक
- तीन-चार पटक
- चारभन्दा बढी

३२. के तपाईं दैनिक बिहानको खाना (ब्रेकफास्ट) खानुहुन्छ?

- हो, खान्छु ।
- होईन, खान्न ।

३३. तपाईं कति पटक फास्ट फूड खानुहुन्छ?

- हरेक दिन
- हप्तामा ३-४ पटक
- हप्तामा १-२ पटक
- कहिल्यै खान्न

३४. तपाईं कति पटक फलफूल खानुहुन्छ?

- हरेक दिन
- एक दिन छाडेर
- हप्तामा दुई-तीन पटक
- बिरलै
- कहिल्यै खान्न

३५. तपाईं दैनिक कति पानी पिउनुहुन्छ?

- २ लिटरभन्दा कम
- २-३ लिटर

३६. के तपाईं कलेजमा घरबाट ल्याएको खाना खानुहुन्छ?

- हो, खान्छु
- होईन,खान्न

३७. तपाईंलाई कुन प्रकारको खाना बढी मन पर्छ?

- घरमै बनाएको खाना
- फास्ट फूड

३८. तपाईं कति पटक चिनीयुक्त पेय (जस्तै: सोडा, इनर्जी ड्रिंक) पिउनुहुन्छ?

- कहिल्यै होइन/बिरलै
- हप्तामा २-३ पटक
- लगभग हरेक दिन

३९. के तपाईं राति ९-१० बजेपछि खाना खानुहुन्छ?

- हो, खान्छु
- होईन, खान्न

४०. के तपाईं दैनिक तोकिएको समयमा नै खाना खानुहुन्छ?

- हो, खान्छु
- होईन, खान्न

४१. के तपाईं टिभी हेर्दै वा फोन चलाउँदै खानुहुन्छ?

- हो
- होईन

४२. के तपाईं हतारमा खानुहुन्छ वा राम्रोसँग चपाएर खानुहुन्न?

- हो
- होईन

सेक्सन ४: खाने बानीमा प्रभाव पार्ने तत्वहरू

४३. के तपाईं ज्यंक्स फूडको स्वाद मन पराउनुहुन्छ?

- हो
- होईन

४४. तपाईं हप्तामा ज्यंक्स फूडमा कति खर्च गर्दै हुनुहुन्छ?

- रु. २००
- रु. ३००
- रु. ४००
- रु. ५०० भन्दा बढी

४५. तपाईं ज्यंक्स फूड चयन गर्ने मुख्य कारण के हो?

- विज्ञापन
- स्वाद मनपर्छ
- सजिलै पहुँच
- साथीसँगको प्रभाव

४६. स्वस्थ आहार बनाइराख्नको लागि तपाईंको सबैभन्दा ठूलो चुनौती के हो?

- पकाउनको लागि समयको कमी
- स्वस्थ खानामा सीमित पहुँच
- बजेटको समस्याहरू
- फास्ट फूडको प्राथमिकता

४७. तपाईंको पोषण जानकारीको मुख्य स्रोत के हो?

- परिवार
- शिक्षा
- सामाजिक मिडिया

- स्वास्थ्य व्यवसायी

४८. के पोषण जानकारीले तपाईंको खाना चयनमा प्रभाव पार्छ?

- एकदमै छैन
- बिरलै
- कहिलेकाहीं
- प्रायः
- सधैं

४९. के तपाईंलाई लाग्छ कि तपाईंको खाने बानीले तपाईंको शैक्षिक प्रदर्शनमा असर पार्छ?

- हो, सकारात्मक रूपमा
- हो, नकारात्मक रूपमा
- कुनै प्रभाव छैन

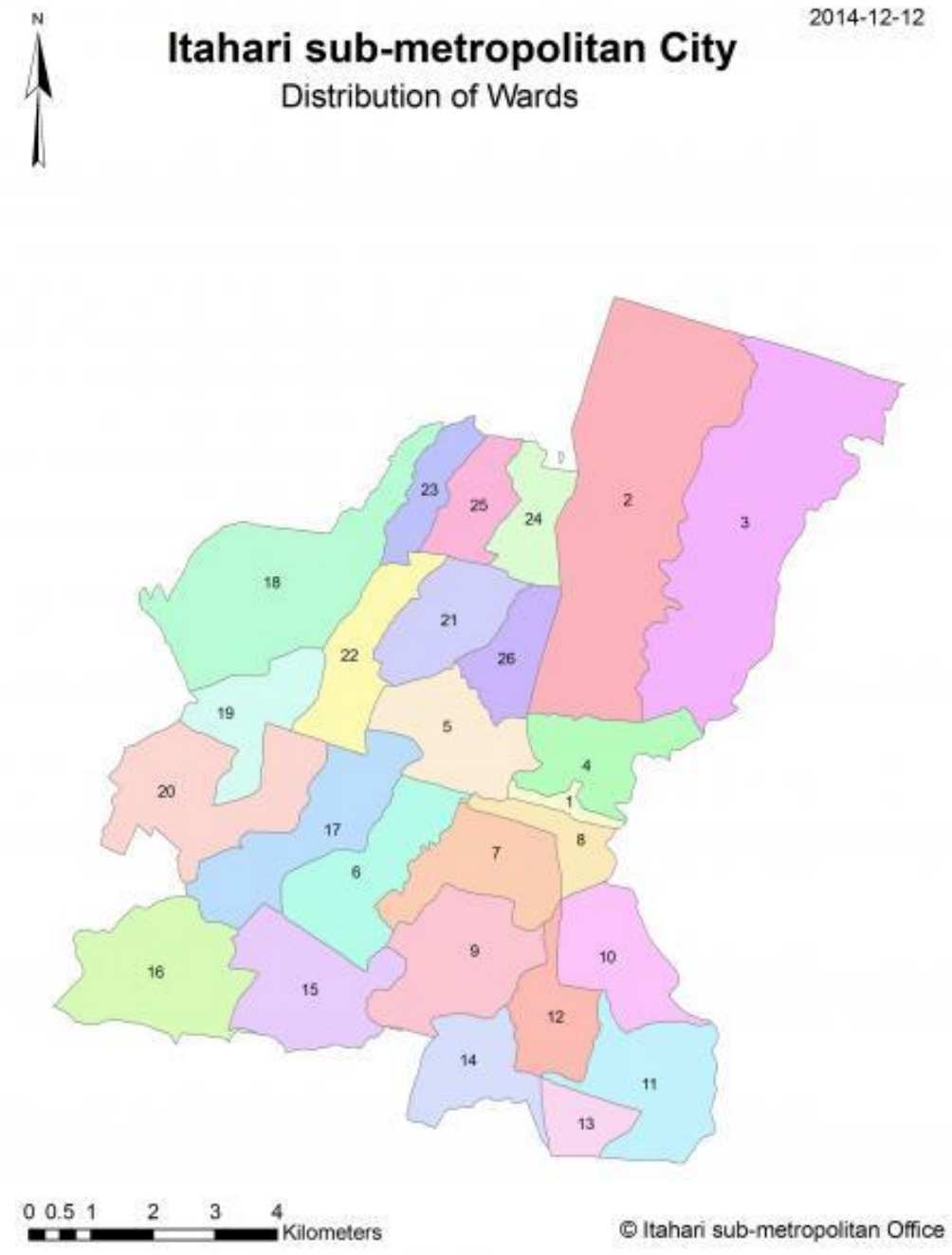
५०. के तपाईंले कहिल्यै आफ्नो शरीरको तौल परिवर्तन गर्नको लागि डाइटिंग गर्न प्रयास गर्नुभएको छ?

- हो, सफलतापूर्वक
- हो, तर सफल भएन
- होईन, कहिल्यै होइन

५१. के तपाईं आफ्नो तौल र आहारको बारेमा चिन्तित हुनुहुन्छ?

- हो, धेरै चिन्तित
- केही हदसम्म चिन्तित
- होईन, चिन्तित छैन

Appendix D: **Survey Site**



Appendix E: Photo Gallery