

**NUTRITIONAL STATUS OF 3 TO 14 YEARS SCHOOL CHILDREN IN  
ITAHARI, SUNSARI**

**Submitted by**

**Khusbu Rai**

**Exam Symbol No: - 74218052**

**T.U. Reg. No: - 9-2-218-224-2011**

**A thesis submitted to Health Education department in practical fulfilment of the  
Requirement of Master degree in Health Education**

**Submitted to**

**Tribhuvan University**

**Faculty of Education**

**Health Education Department**

**Janta Multiple Campus**

**2081/2024**



Tribhuvan University

025 – 580064  
581300

# Janta Multiple Campus

Itahari, Sunsari

Estd: 2045

(Science, Management, Humanities & Education)

Ref:

Date:

## RECOMMENDATION FOR ACCEPTANCE

This is to certify that Mrs.KhusbuRai has completed this thesis entitled on **Nutritional Status Age of 3 Years to 14 Years School Children in Itahari** under my guidance and supervision.

I recommend the thesis for acceptance and evaluation.

Internal Supervisor

Name: .....

Date: .....



Tribhuvan University

१०२५ – ५८००६४  
५८१३००

# Janta Multiple Campus

Itahari, Sunsari

Estd: २०४५

(Science, Management, Humanities & Education)

Ref:

Date:

---

## RECOMMENDATION FOR EVALUATION

The thesis on **Nutritional Status Age of 3 Years to 14 Years School Children in Itahari -5** prepared by Mrs. Khusbu Rai has been recommended for evaluation by the following Research Guidance Committee.

Internal Supervisor.....

External Supervisor.....

## **DECLARATION**

I hereby declare that to the best of my knowledge this thesis is original; no part of it was earlier submitted for the candidature of research degree to any university, college, or educational institution. The subject matter presented in this thesis report is the result of my own work.

Khusbu Rai

M.Ed. 4<sup>th</sup>Sem

## ACKNOWLEDEMENTS

My gratitude goes to many individuals who have assisted me in shaping this thesis into its present form. First of all, my gratitude goes to all the teachers and staff of Janta Multiple Campus, whose sound theoretical knowledge provided the basis for the preparation of this thesis.

I would like to express my great sense of gratitude to my research supervisor, Mr. BirendraKarki, Lecturer of the Health Education Department at Janta Multiple Campus, Itahari, Sunsari, for his invaluable supervision, advice, constructive comments, encouragement, suggestions, and friendly behavior throughout the course of this study, which gave the final shape to this thesis.

I am also thankful to Mr. Sanjib Kumar Yadav, Lecturer and Head of the Health Education Department at Janta Multiple Campus, Itahari, for his invaluable suggestions, cooperation, and genuine encouragement.

I am greatly obliged to all respondents, students, parents, and school teachers and administration for their priceless time and cooperation in providing data and valuable information.

I would also like to express my warm gratitude to Mr. DipakKhanal for helping with editing and providing inspirational support at each and every step in embarking on this new thesis research. Special thanks to my husband, BalramSardar, for helping me prepare it. Finally, I am grateful to all the seen and unseen hands that helped me carry out this study successfully.

Date:.....

.....

Khusbu Rai

## ABSTRACT

The study on the Nutritional Status of Children 3 to 14 Years in Itahari, Sunsari Nepal has been carried out using primary data obtained from 300 students of two private boarding schools and one public government school in Itahari-5, Sub Metropolitan City, Ward No. 5, Sunsari District. The main objectives of the research are to examine the social, economic, and demographic conditions and the challenges related to child nutrition in urban areas. To evaluate the current status of children's nutrition, the researcher collected data through interviews and analyzed it descriptively. Findings and conclusions were drawn, and the research recommended and suggested points for improvement. The first part deals with the introduction of the title and its theoretical background. The second part reviews the related literature of relevant work. The third part details the methodology of the study. The fourth part deals with the analysis and interpretation of data, summary, and findings. The fifth part deals with the conclusion and recommendations in this research, 210 students were from private schools, among them 115 girls and 95 boys. The age groups were as follows: 3-8 years (26.19%), 9-11 years (33.33%), and 12-14 years (40.48%). Similarly, 90 respondents were taken from one public school, including 39 girls and 51 boys.

The age groups were: 3-8 years (27.18%), 9-11 years (37.77%), and 12-14 years (34.45%). Among the 300 respondents, 97.61% of parents were literate, whereas 2.39% were illiterate. Out of 300 respondents, 43.33% of parents had a monthly income range between Rs. 20,000-50,000, nearly 19% had Rs. 10,000-20,000, 29% had more than Rs. 50,000, and 8.33% had below Rs. 10,000. Among the 300 children, 3.15% suffered from mild obesity. Immunization coverage for the six

killer diseases in children under one year of age was 100%. All children were involved in vitamin A supplementation and deworming medication programs. Among the 210 children in private schools, 19% exhibited mild to moderate malnutrition. Among the 90 children in public schools, 32.23% were in the range of mild to moderate malnutrition, while the rest exhibited satisfactory nutritional status. Finally, it is better to educate the mothers and guardians about nutritional knowledge for their children.

## TABLE OF CONTENTS

Page No.	
Declaration	II
Recommendations letter	III
Approval sheet	IV
Acknowledgement	V
Abstract	VI
Table of content	VII
List of table	XI
List of figures	XII
Abbreviations	XIII
<b>CHAPTER I: INTRODUCTION</b>	
Background of the study	1
Statement of the problem	4
Objectives of the study	4
Research question	5
Significance of the study	5
Delimitations of the study	6
Definitions of the terms used	7
<b>CHAPTER II: REVIEW OF RELOTED LITERATURE AND CONCEPTUAL FRAMEWORK</b>	
Theoretical literature	9
Empirical literature	12
Implications of the review for the study	15
Conceptual Framework	16

### **CHAPTER III: METHODOLOGY AND PROCEDURE OF THE STUDY**

Research design	19
Source of data	19
Population of study	19
Sampling procedure	19
Data collection tools	20
Data collection procedure	20
Methods of data analysis and interpretation	20

### **CHAPTER IV: ANALYSIS AND INTERPRETATION OF RESULT**

Socio demographic characteristics	21
Age and sex wise population of students	21
Status of religion	24
Educational status of parents	25
Occupational status of parents	27
Family size	29
Monthly income of house hold	30
Family type	32
Intake of meat in a week	32
Intake of dairy products	33
Intake of water in school time	34
Status of knowledge regarding energy requirements	34
Recommended daily intake of energy	35
Recommended daily intake of water	36
Nutritional disorders	36
Practice and knowledge about vaccine	36

Participation on the programme of vitamin a capsule and worm-medicine	37
Yearly weight - taking condition and related practices	37
Yearly height taking condition and related practices	37
Head circumference	38
Status of mid upper arm circumference	38
Weight for height	39
Summary and finding	41
Summary	41
Major findings	42
<b>CHAPTER-V CONCLUSION &amp; RECOMMENDATIONS</b>	
Conclusion	44
Summary	44
Recommendations	45
Policy related	45
Further research related	45
Practice level	46
<b>REFERENCES</b>	
<b>APPENDIX -1</b>	
<b>APPENDIX II</b>	
<b>APPENDIX III</b>	
<b>APPENDIX IV</b>	
<b>APPENDIX V</b>	
<b>APPENDIX VI</b>	
<b>APPENDIX VII</b>	
<b>APPENDIX VIII</b>	

## LIST OF TABLE

Table 1	Age and sex wise population of private school children	22
Table 2	Age and sex wise population of public school Children	23
Table 3	Educational statuses of parents	26
Table 4	occupation status of the parents	28
Table 5	Family Sizes	30
Table 6	Monthly Incomes	31
Table 7	Percentage Distributions of Respondents By The Intake Of Meat In A Week	33
Table 8	Percentage Distributions of Respondents According to Intake of Dairy Products	33
Table 9	Percentage Distribution of Respondents According to Intake of Water during School Time	34
Table 10	Statuses of MUAC of private School Student	38
Table 11	Status of MUAC of public School Student	39
Table12	Nutritional status on the Basis of Weight for Height for private School	40
Table 13	Nutrition Status on the basis of weight for Height of public school	41

## **LIST OF FIGURE**

Figure 1:	Age composition of respondents	24
Figure 2:	Distribution of the parents by religion	25
Figure3:	Percentage Distribution of Respondents by Family Type	32

## ABBREVIATIONS

AIIMS	-	All India Institute of Medical Sciences
BMI	-	Body Mass Index
C.I	-	Corpulence Index
CMR	-	Child Mortality Rate
CBS	-	Central Bureau of Statistics
EFC	-	Education for all
FRESH	-	Focus Resources on Effective School Health
HW	-	Height and Weight
HOR	-	House of Representative
HCGV	-	Head circumference Growth Velocity
IU	-	International Unit
JICA	-	Japan International Cooperation Agency
IW	-	Ideal Weight
INGO	-	International Non-Governmental Organization
MUACT	-	Mid Upper Arm Circumference Test
NCHS	-	National Center for Health Statistics
NBS	-	National Bureau Statistics
NPC	-	Nepal public commission
NDHS	-	Nepal Demography Health Survey
NMSS	-	Nepal Micronutrient Status Survey
ORS	-	Oral Rehydration Solution
PCD	-	Partnership of child Development
PEM	-	Potential Energy Malnutrition
PER	-	Potential Energy Ratio
USA	-	United State of America

WFP - World food Program

## CHAPTER – I

### INTERODUCTION

#### **Background of the study**

Health is important aspect of human life every work is not success without health. This study is related to 3years to 14 years school children nutritional position of Itahari, Sunsari Nepal .Eating food is a part of our daily life it is basic requirement of all living being, we need food to get energy, to grow, to do work, to protect from different disease eating little or too much food make us unhealthy and sick. Nepal demographic health survey reported that 41Percent of children fewer than five years were stunned, 11Percent wasted and 20Percent underweight. Several factors were noted too contributed to wards malnutrition for example, socio-economic factors, mother literacy, acute illness, age of child, food habit of family etc. School age is one of the important ages of human life. Healthy lunches and snakes are important for school level children, often student prefer sweet testing fluid, soft drinks, are not necessary and may cause health problem.

Many parents of school-aged children express anxiety about their children's eating patterns: fussy eating, appetite, and growth. Around one-third of youngsters consume little or no fruit or vegetables, approximately 40 percent do not eat dairy products for breakfast, and milk and fruit consumption decreases overall from the ages of two to eleven. Healthy eating messages alone are insufficient to motivate children. boys are more likely to adopt healthy eating is the messages is liked to physical attribute such as physical strength, sporting powers and better performance, girls are more likely to motivated by their physical appearance. Children are particularly strongly motivated by appealing food packaging, perceived "filling quality, flavor, and ready to eat. Teach children about nutrition, foods, beverages, and good eating and drinking from a young age; youth is an essential time to create healthy habits for

life and avoid weight problems.

Healthy lunches and snacks are important for school level students and help with concentration and learning. Healthy eating changes are not always easy to make. There are limited times especially at school they prefer to play with friends instead of eating. Encouraged school level students to eat before heading out to play.

Six items for lunch boxes Murdoch Children's Research Institute and Royal Children's Hospital, Melbourne, Centre of Physical Activity across the Lifespan, and Australian Catholic University.

Vegetables

Fresh fruit

Dairy food – cheese or yoghurt (milky food)

Protein food – slice of lean meat hard-boiled eggs or beans.

Starchy food – Bread, roll, pita or flat bread, fruit bread or crackers.

Water.

Foods best left out in lunch box (Australian Catholic University)

Chocolate bars.

Potato crisps and oven baked savory biscuits.

Sweet drinks.

Donuts and cakes.

Honey and jams.

Fatty Meats.

Often school level children prefer sweet tasting fluids, highly salty junk food like coca cola, Chatpate, Panipuri, Mo:Mo, ChauChau are not necessary and may cause health problems if drunk and eat in long time may result in:

Excess weight gain in early age.

Tooth decay.

Growth problems.

Picky eating.

Loose bowel actions.

Lack of knowledge of the facts of food and nutrition causes of various nutritional disorders, such as night blindness due to vitamin-A deficiency, goiter formation due to iodine deficiency, marasmus in children due to protein deficiency and rickets in children due to calcium or vitamin-D deficiency, anemia due to iron deficiency, obesity and coronary heart disease due to excess fat in the diet, and diabetes mellitus due to excessive carbohydrate or sugar intake, Government of Nepal started several programmers to improve the nutritional status as:

Applied nutrition programmed

Supplementary feeding programmed

Food for education

Nutrition is one of the basic needs of human .Nutrition can be considered as a fundamental right of every human being .who fail to receive the adequate nutrition both in quality and quantity will suffer from the hunger and elongated hunger or insufficiency of nutrient intake loads to malnutrition the study survey will be focused on nutritional status of children 3 years to 14 years of Itahari- 5 Sunsari.

Nepal is landlocked country situated southern part of Asia. Geographically Nepal is divided in to three region, Himali, mountain and Tarai region, whoever the country Nepal is divided administratively in to seven provisions, 77 districts. According to this division Sunsari is one district of provision 1 situated in eastern region. it is located at latitude of 26

degree, 25-26 degree 30" north and longitude 87° 16" east.

### **Statement of the problem**

It is seen that people in Itahari-5 is urban area and most of the people from different places for propose of getting job opportunities and good education for their children so they have different economic and education status they are mostly aware about nutrition but most of the children like to eat fast food, junk food that bad food habits is getting challenge for their parents and children also suffering from nutritional problem eg, night blindness, early age obesity, dental problem etc .Their nutritional status directly affects the health status of country.

Major types of nutritional problem in developing country are under nutrition and nutritional disorder which is resulting from inadequate food intake both in quality and quantity particularly of calories, proteins, vitamins and minerals, and parasitic infection and disease.

The study is aimed to 3 years to 14 years school children's nutritional status of Itahari-5 in terms of health status, concept of nutrition and new challenges of Itahari -5 children.

### **Objectives of the study**

The main purpose of the study is to find out nutritional status of 3 years to 14 years school children of Itahari -5 the specific objectives of the study were as follows :-

- i. To identify the educational and economical factor that determines the status of children nutrition.
- ii. To identify the problems on the nutrition of 3 years to 14 years school children in Itahari – 5.
- iii. To identify related factor and challenges to improve nutritional status in urban area children.

## **Research Questions**

This study has related to its types of research questions,

- i. What are the present positions of nutritional status of respective student?
- ii. What are the problems and issues on nutrition in respective students?
- iii. What are the factors that affect the nutrition practice in school level students?

## **Significance of the study**

This study is dependent on the educational and economic conditions of the people in this community because those factors are directly related to children's nutrition status. However, this study is indirectly very important in identifying the realities of 3 to 14-year-old schoolchildren's nutritional situation and ideas for improving nutritional status.

Nutrition is a fundamental right and necessity of every child for general growth and development. In comparison to other Asian countries, our country has a low economic GDP and per capita income. So there are numerous programmes being conducted to better people's economic position and the government's education. Nepal likewise invests a significant portion of its budget in improving people's literacy rates. This study will help to concerned in the flowing ways:

- i. This study will inform government, commercial sector, and healthcare professionals on the need for a strong physical nutrition facility.
- ii. This study aims to provide accurate information on the nutritional status of 3-14 year old schoolchildren in the study area.
- iii. This study serves as a baseline for further research on nutrient status.
- iv. Encourage agencies to develop plans and policies for nutritional health education programmes in specific areas.

## **Delimitation of the study**

- i. Every study has its own limits, and this study is no exception. The primary restriction of the study might be expressed as follows:
- ii. The study was limited to Itahari Sub-metro municipality ward no-5 Sunsari, province no. 1 Nepal, and only included schoolchildren aged 3-14.
- iii. The sample was limited to 300 children were taken by the help of parents and school administration of concerned schools.
- iv. There was simple random sampling method.
- v. Nutritional disorders macronutrient and micronutrient Obesity (over weight)
- vi. Screening test of Nutritional Status

Mid upper arm circumference test

PEM or Gomez's classification test

Measurement of height and weight

Ideal weight (Broca's index)

Protein Energy Ratio (PER)

Waist Hip Ratio (WHR)

Weight velocity

Height velocity

Head circumference growth velocity

### **Definition of important term used**

**Anemia:** A disorder characterized by a reduction in the number of red blood cells or hemoglobin in the circulating blood, resulting in a diminished oxygen carrying capacity of the blood.

**Antibody:** A protein material found in blood serum and created in response to a reaction with a specific antigen, or a substance formed in the blood to fight disease.

**Allergy:** Wheat, milk, some fruit juices, eggs, fish, and meat are common allergens among children.

**Body mass index:** It is an index for assessing obesity calculated by dividing the body weight in Kilogrammes by the body height in square Metres.

**Broca's index (Ideal weight):** It is the difference between height of the body in centimeters to 100.

**Ideal weight:** Height of the body (cms) - 100

**Corpulence index:** It is the ratio between Actual body weight and Desirable body weight.

**Health:** A state of total physical, mental, and social well-being, not only the absence of disease or disability.

**Health problem:** A health problem is a condition that has a negative impact on someone's health and well-being.

**Kwashiorkor:** It is distinguished by symptoms such as lethargy, retraction growth, a lack of appropriate muscle development, an absence of muscle tone, and the existence of edoema on the legs, arms, and face.

**Nutrient:** A substance that is needed to keep living things alive and to help it to grow.

**Nutrition:** The process by which living things receive the food necessary for to grow and healthy.

**Malnutrition:** It is a pathological disease caused by a relative or absolute deficit or excess of one or more important nutrients in the diet. It covers both under nutrition and over nutrition.

**Macronutrients:**They include proteins, fats and carbohydrates, which are taken in large quantities and from the main bulk of food.

**Micronutrients:**They include vitamins and minerals and are required in minute quantities.

**Marasmus:**It is characterized by subcutaneous fat and muscle atrophy, as well as growth retardation and weight loss.

**Obesity (Overweight):** Obesity means excessive accumulation of fat in the adipose tissue located especially in the waist, hips and breasts with increased body weight by 10Percent or more over the standard reference weight for the age, sex and height.

**Underweight:**Underweight is defined as a body weight that is 10 percent or less of the standard reference weight for the age, gender, and height.

**Waist hip ratio:** It is the ratio obtained by dividing the circumference in centimeters of waist by the circumference in centimeters of the hip.

## **CHAPTER – II**

### **REVIEW OF RELATED LITERATURE**

#### **Theoretical literature**

Good nutrition is essential for children's survival, health, and development. Children who are well-nourished can grow and learn more effectively, as well as engage in and contribute to their country. Malnutrition is a global issue that stifles development and has horrible human effects. However, the possibility to eliminate starvation has never been stronger. The UN Decade of Action on Nutrition 2016-2025, as well as the Sustainable Development Goals

(SDGS), provide global and national impetus to address malnutrition and accelerate progress. According to the Global Nutrition Report (2018), 150.8 million children under the age of five are stunted, 50.5 million are wasted, and 38.3 million are overweight. Meanwhile, 20 million kids are born with low birth weight every year. South Asia is home to 38.9 percent of the world's stunted children; with the highest burden of any area.

Nutrition is the science of food and how it affects health. Nutrition is crucial in the development and maintenance of health, as well as the avoidance of human diseases, particularly those caused by dietary deficiencies. The most serious international health issues today are malnutrition and nutritional disorders. Malnutrition produces specific nutritional deficiency diseases such as Kwashiorkor, Marasmus, blindness owing to vitamin 'A' deficiency, anemia, and so on. Malnutrition predisposes to infections such as TB. Obesity, diabetes mellitus, hypertension, cardiovascular and renal illnesses, and liver and gallbladder disorders are all caused by over nutrition, a type of malnutrition. Under nutrition is characterized by weight loss, muscle weakness, and edema.

The combined acute malnutrition rate using WHZ, Edema and MUAC criteria being at 17.2Percent is higher than the acute mal nutrition rate estimated by separated indicators {15.1Percent by WHZ and 7.3Percent by MUAC). Nov 21, 2022.

Current evidence shows that Nepal is facing a double burden of malnutrition for example. The Nepal demographic and Health survey Report 2016 stated that the prevalence of stunting, wasting, underweight and overweight among children younger than 5 years was 35.8Percent, 11Percent, 27Percent and 1Percent respectively. March 21, 2023.

Under nutrition is one of the major causes of disability, morbidity and mortality in the country. The problem under nutrition has many social and cultural lineages. Nepal has

21Percent prevalence of low birth weight. According to a survey, protein energy malnutrition in Nepal is 43Percent Anemia.

Save the children's school Health and Nutrition (February 2011) core interventions aim to Increase health and nutrition services at school including deworming (neglected tropical diseases), micronutrient supplementation and control of Malaria as well vision and hearing screening.

- i. Increase access to safe water, sanitation and hygiene (wash) in schools.
- ii. Promote lifelong health behaviors through skill based health education. school health

According to the save the children, School Health and Nutrition programs are cost-effective and complementary to save the children's Early childhood Development and Basic Education efforts, helping children, especially girls, be healthy to learn and learn to healthy.

Children with poor health and malnutrition are unable to attend school or learn while there. Every year, more than 200 million school years are lost in low-income countries due to illness, with the impact on learning and cognition equivalent to a deficit of more than 630 million IQ points. School Health and Nutrition programmes contribute to health outcomes while also being cost-effective for school access and completion. UNESCO, UNICEF, WHO, and the World Bank announced the FRESH school health and nutrition framework at the World Education Forum in Dakar, Senegal, in 2000, as part of a global initiative to integrate school health and nutrition into education sector programmes.(The World Bank, School Health and Nutrition, Education Resources Guide and Advisory Service, 2011).

The emphasis of school health and nutrition programmes in low-income countries has shifted significantly over the last two decades away from a medical approach that favored elite schools in urban centers and towards an approach that improves health and nutrition for all children, particularly the poor and disadvantaged. School health and nutrition

programmers have a significant role in promoting health outcomes. They are also very cost-effective in terms of improving educational access and completion.

The main goal of the school health and nutrition program is to develop physical, mental, emotional and education status of the school children. This goal is supported by four strategic objectives Health and nutrition status of school aged children is improved in Nepal. School Health and Nutrition project –JICA

Midday meal program in Nepal it had been operating the program since the last three years targeting the children studying from pre- primary to class three. From this fiscal year the program has been expanded to cover children up to class six the student are given midday meal at the rate of Rs. 15 per student per day. Apr 18, 2023.

### **Empirical Literature**

A UNICEF report dated March 19, 2019, discusses nutrition policies in Nepal. The Nepalese government produced its first nutrition policy in 1978, followed by the second, known as the Pokhara Declaration, in 1986. These previous sectoral policies and strategies were heavily sector-focused.

The Joint Nutrition Support Programme (JNSP) was the first attempt at multi-sectorial nutrition programming, running from 1989 to 1992. Despite its efforts to be multi-sectorial, the JNSP was ineffectual due to a lack of engagement from multiple sectors at its commencement.

The health sector produced the National Nutrition Policy in 2004, resulting in another single-sector reaction. In 2011, the Nutrition Assessment and Gap Analysis (NAGA) was completed and approved. Stunting has steadily decreased over the previous 17 years: 57 percent in 2001, 49 percent in 2006, 41 percent in 2011, 37 percent in 2014, and 36 percent in 2016/17, according to the Nepal Demographic and Health Survey (NDHS) 2016.

According to MOH, New ERA, and ICF (2017), malnutrition in childhood has numerous negative repercussions for child survival. It also has long-term implications for human capital, well-being, economic productivity, and overall national development. Malnutrition is a major concern for the Nepalese government (GON), as an estimated 36 percent of children under the age of five are stunted (have a low height-for-age ratio) and 10 percent are acutely malnourished or wasted.

Nepal, a landlocked country between India and China, is one of the world's poorest. 36 percent of the population lives below the national poverty threshold of \$0.50 per day (WFP 2020). Nepal is ranked 147th out of 189 nations on the United Nations Development Programme's (UNDP) 2019 Human Development Index (HDI), and when adjusted for inequality, Nepal's Inequality-adjusted Human Development Index (IHDI) is 25.8 percent lower. The country is in the midst of a long transition to peace and stability following 20 years of political uncertainty and ten years of brutal fighting, which culminated in a peace deal in 2006.

The country has moved towards a federal democratic administration, with an elected parliament in December 2017 and a new prime minister in February 2018 (World Bank 2019). Nepal faces numerous nutrition and food security concerns, including addressing the impact of COVID-19 on women's and children's nutrition status. COVID-19 and its subsequent effects are expected to result in an additional 60,000 children requiring acute malnutrition services.

Bottlenecks in public and private investment, insufficient infrastructure, a tough regulatory environment, limited access to power, low road density, and a high susceptibility to climate change (particularly flooding) all impede economic growth and development. Weak governance and human development also provide important concerns (USAID 2020, World Bank 2019).

Complex ties based on gender, caste, and ethnicity exacerbates the dilemma. These are vital in food security because the majority of women and many marginalized groups that engage in agriculture do not have access to land, cash, or other productive assets (USAID 2020).

The World Health Assembly (WHA) targets for 2025 and the Sustainable Development Goals (SDG) targets for 2030 have provided Nepal with new and renewed momentum in nutrition. Nepal has set a WHA target for 2025 of 26.4 percent stunting and 15 percent wasting. Nepal is on track to reach one of the SDG targets for nutrition (MIYCN): the exclusive breastfeeding target, with 62.1 percent of infants aged 0-5 months exclusively breastfed.

Progress has been made towards the goal of lowering anaemia among women of reproductive age, with 35.7 percent of women aged 15 to 49 affected. There has also been some progress towards meeting the low birth weight objective, with 21.8 percent of infants having a low birth weight.

Nepal is on track to meet its stunting target, although 31.5 percent of children under the age of five are still affected, which is more than the Asia region average (21.8 percent). Nepal has made little progress towards meeting the wasting objective, with 12 percent of children under the age of five affected, which is higher than the Asia region's average (8.9 percent) and among the highest globally. The prevalence of overweight children under the age of five is 2.6 percent, and Nepal is 'off course' to keep this proportion from rising.

Nepal has made minimal progress towards meeting the diet-related non-communicable disease (NCD) targets. Obesity affects 6.7 percent of adult women (18 and older) and 3.4 percent of adult men. Nepal has a lower obesity prevalence than the regional average of 10.3

percent for women and 7.5 percent for men. At the same time, diabetes is thought to affect 11.2 percent of adult women and 13.8 percent of adult men.

According to UNICEF Nepal, the country has undergone tremendous changes during the last two decades. Child malnutrition rates have significantly decreased. The frequency of stunting (short height for age) among children under five fell from 57 percent in 1996 to 32 percent in 2019. During the same era, the prevalence of underweight (low weight for age) fell from 15 percent to 12 percent. Ninety-five percent of children in Nepal live in households that utilize iodized salt, and vitamin A prophylaxis coverage for children aged six to 59 months is consistently at or above 85 percent. Nepal has been recognized as an exemplary country for its success in eliminating stunting.

However, more development remains to be achieved. The present stunting rate is still unacceptable, with 12 percent of children under the age of five being wasted (low weight for height). The rate of exclusive breastfeeding for children aged 0 to 5 months fell from 66 percent in 2016 to 62 percent in 2019. Only 40 percent of children aged 6-23 months obtain diverse foods, whereas 30 percent receive a minimum tolerable diet. Furthermore, 53 percent of toddlers under five and 69 percent of children between 6-23 months had anemia. Similarly, 44 percent of adolescent girls, 46 percent of pregnant women, and 41 percent of reproductive-aged women have anemia.

In the current country programme (2018-2022), the nutrition component is led by the Multi-Sectorial Nutrition Plan-II (MSNP 2018-2022), which was launched in December 2017 to improve the population's nutritional status. Efforts are being made to improve the feeding habits of adolescents, pregnant women, breastfeeding mums, and small infants. UNICEF, with financial help from the European Union, is assisting the Nepalese government in implementing the Multi-Sector Nutrition Plan (MSNP

## **Implications of the review for the study**

After analyzing various studies, I discovered that nutritional status is influenced by a variety of connected factors. Parents' economic status, education, governmental policies, and political stability are the main problems in Nepal that need to be addressed to solve the related problems.

The literature review was helpful in selecting the study topic.

Identify the relevant field for the study.

To learn more about research methods

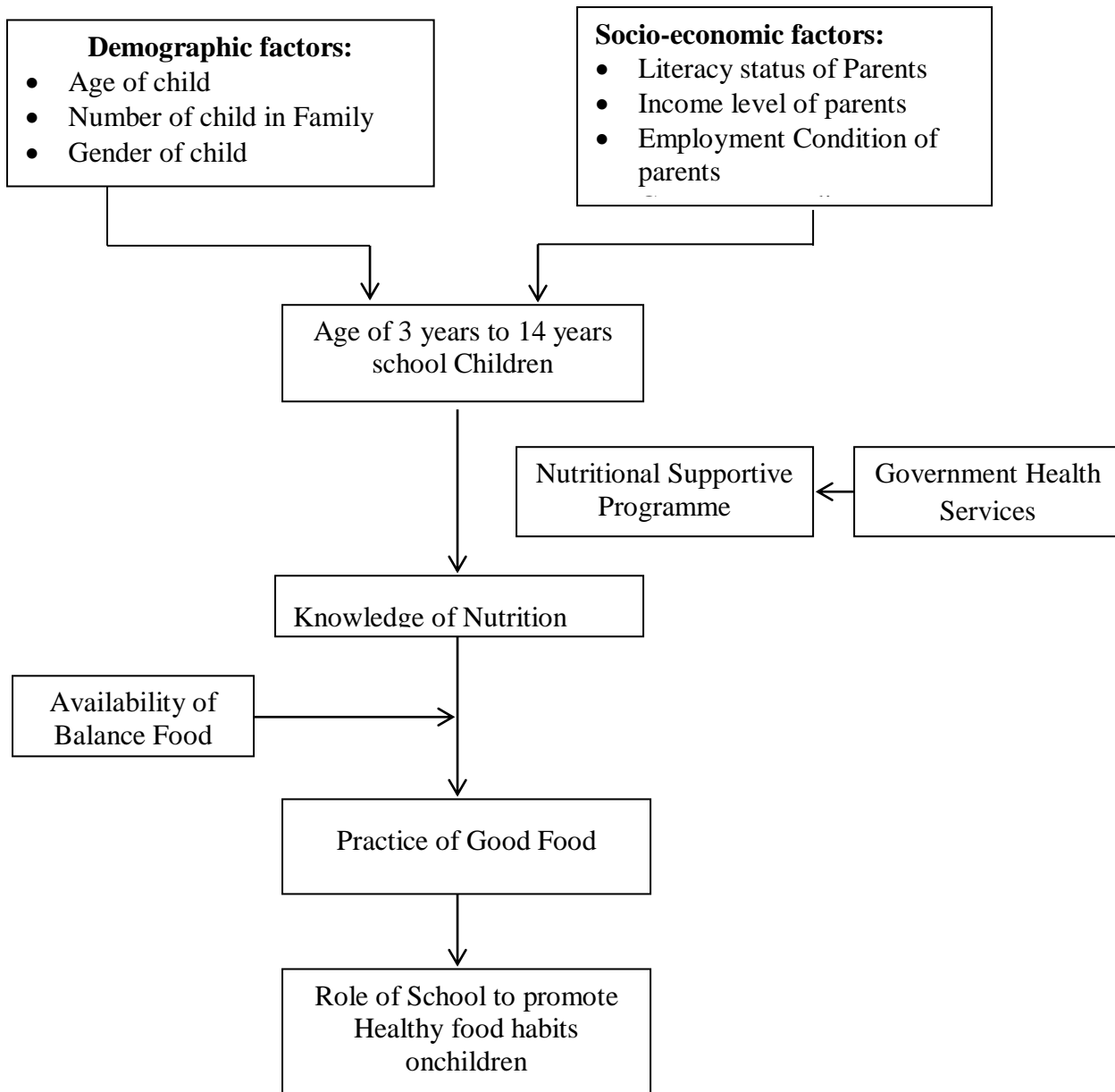
Compare previous findings with current ones.

Provide references for future study on the issue.

## **Conceptual frameworks**

Nutritional status is determined by various factors, such as demographic and socio-economic factors. Demographic factors include the age of the child and the number of children in the family. Similarly, socio-economic factors include the status of the mother, literacy status of the father, level of income, religion, availability of health services, etc.

**Figure 1: Conceptual framework for nutrition status**



The nutritional status of children is determined by various factors, including demographic factors such as the age and number of children in a family, and the gender of the child. Socio-economic factors also play a significant role, such as the literacy status, income

level, and employment conditions of the parents. Government and community knowledge of child nutrition is essential and has a positive impact on children's nutritional status. Policies also play a crucial role in the nutritional status of children aged 3 to 14 years, particularly school children. The nutritional knowledge of parents and the practice of healthy eating habits within the family are important. The availability of balanced food, as well as nutritional support programs from NGOs, INGOs, and government sectors, can improve the nutritional status of children. Government health services for children, such as immunization, mid-day meal programs, free school education, and preventive and treatment services, all contribute to better nutritional outcomes.

Schools play a vital role in promoting healthy food habits among children by banning junk food and encouraging the consumption of healthy, home-made foods, fruits, and vegetables.

## **CHAPTER-III**

### **RESEARCH METHODOLOGY**

#### **Research design**

The descriptive research approach was used for this study on the nutritional status of schoolchildren aged 3 to 14 in Itahari-5 Sunsari District, Nepal. The following methodology was used to conduct the study methodically and successfully.

#### **Source of data**

The data was collected through school administration, parents, primary and lower secondary students. Only primary data was used for this purpose. The study also included secondary data as required.

#### **Population of study**

In Itahari Sub metro Municipality Wada nofive, One Government School and two private Boarding Schools were selected for this study only 300 students age of 3 years to 14 years were targeted population of this study. Data were acquired through study using interviews and observations from school to school.

#### **3Sampling procedure**

After selecting the study area and deciding on the respondents, the data is collected through face-to-face interviews using a structured questionnaire (Appendix I). The prepared questions are asked to the selected respondents and filled in by the researcher based on the answers received from the respondents. A simple random sampling procedure was applied for this study, and the sample was taken through a lottery method for the selection of

respondents. Simple random sampling procedure had applied for this study were sample had taken through lottery method.

### **Data collection tools**

The data came from a primary source. The researcher used primary data; hence data collecting was quite important. The researcher collected data from primary sources using a weight machine, a height scale meter, and an interview and observation schedule. As a result, a structured interview schedule was utilized as data gathering methods. The tool was provided in Appendix I.

### **Data collection procedure**

First, the researcher obtained the requisite letter from the Department of Health and Population at Janta Multiple Campus in Itahari. The letter was designed to be easily dealt with by the chosen school. The researcher contacted the resource person and obtained permission to conduct interviews with selected private and public school kids. The researcher facilitated the respondents.

### **Methods of data analysis and interpretation**

During data processing, the completed interview schedules were carefully reviewed to remove any potential inaccuracies and corrected as needed. After collecting raw data, it was manually tabulated under several categories and subheadings. Numerical and percentage methods were employed for analysis and interpretation. The data was presented as table bar diagrams and pie charts. Finally, the summary and conclusion were drawn, and the necessary recommendations were made.

## **CHAPTER-IV**

### **ANALYSIS AND INTERPRETATION OF DATA**

This study is concerned with analysis and interpretation after collecting the data. It was tabulated and kept in sequential order according to the requirement of the study. Collected data was analyzed and interpreted in table, graph and chart etc. There are some simple statistics rules; number and percentage are more follows to make presentation more.

#### **Socio Demographic Characteristics**

Socio demographic characteristics have a direct bearing on the incidence, course and outcomes of a wide variety of diseases as well as on many other health problem besetting the word today they also have an important effect on the provision of health care to all aspects of society, poverty, malnutrition, poor sanitation, lack of education, inadequate housing, unemployment, poor working conditions, cultural and behavioral factors all predispose to health. Among them some socio demographic variables of parents such as religion, Educational status occupational status and residential address of respondents are shown in following section.

#### **Age and sex wise population of students.**

Malnutrition affects growing children; generally it affects under-five years children. The range of age of children was found from 3years to 14 years. it was divided in to three group for data analysis presented on table I and table II.

**Table 1: Age and sex wise population of private school children**

Variable	Sex				Total	
	Girls		Boys			
Age Group	Number	Percent	Number	Percent	Number	Percent
3-8 Years	30	26.09	25	26.31	55	26.19
9-11 Years	40	34.78	30	31.58	70	33.33
12-14 Years	45	39.13	40	42.11	85	40.48
Total	115	100	95	100	210	100

Table 1 shows that among the total of 210 students, 26.19 percent were in the age group of 3 to 8 years, similarly 33.33 percent were in the age group of 9 to 11 years, and 40.48 percent were in the age group of 12 to 14 years. The majority of students were in the 12 to 14 years age group, which was 40.48 percent of the total.

Sex-wise analysis was done, revealing that boys constituted the highest percentage, at 54.76 percent of the total children, while girls accounted for 45.24 percent. The ratio of boys to girls was 23:19.

**Table 2: Age and sex wise population of public school Children**

Variable	Sex				Total	
	Girls		Boys			
Age Group	Number	Percent	Number	Percent	Number	Percent
3-8 Years	10	25.65	15	29.42	25	27.78
9-11 Years	14	35.89	20	39.22	24	32.75
12-14 Years	15	38.47	16	31.38	31	34.45
Total	39	100	51	100	80	100

Table 2 shows that among the 90 children 27.78 percent 30 were in 3-8 years group, 37.78 percent were 9-11 Years group and 34.45 percent were 12-14 years on School Children. The majority of children were 9-11 year age group, which were 37.78 percent.

Sex wise analysis was done which shows those girls were at highest rank which was 55.34 nearly of total student, Boys were 44.66 percent.

**Figure 1: Age composition of respondents**

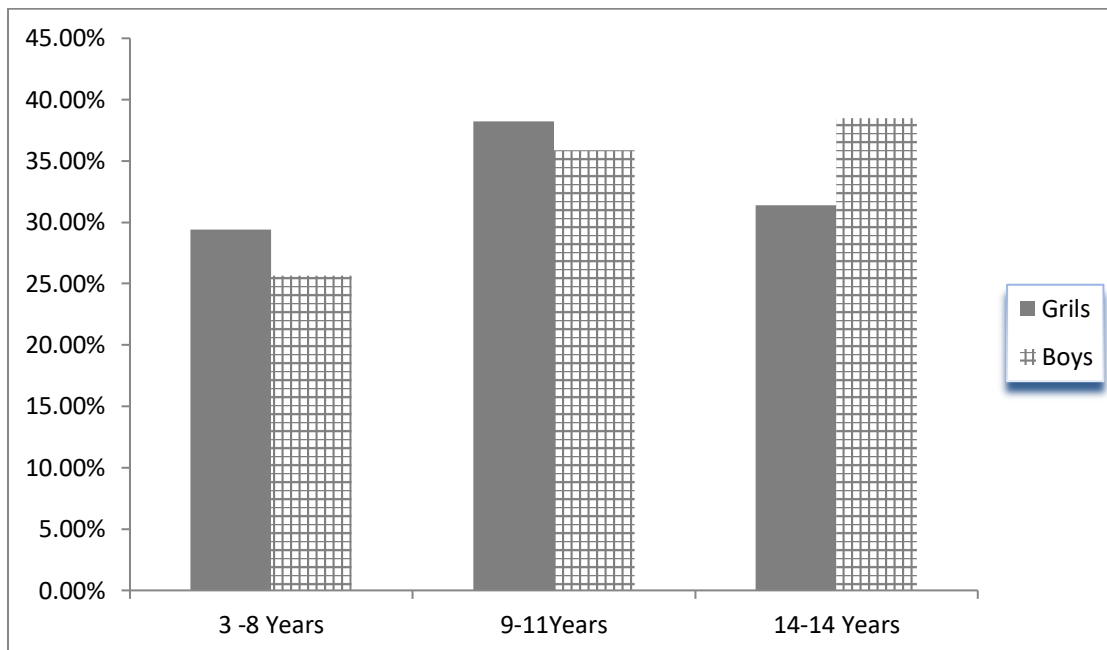


Figure 1 shows that among 90 children, 25.83Percent are boys aged 3-8 years, 35.83Percent are boys aged 9-11 years, and 38.47Percent are boys aged 12-14 years. Additionally, 29.42Percent are girls aged 3-8 years, 38.22Percent are girls aged 9-11 years, and 31.38Percent are girls aged 12-14 years. A sex-wise analysis was conducted; revealing that the highest rank of respondent age group for boys is 12-14 years and for girls is 9-11 years.

### **Status of Religion**

Nepal was the only Hindu country in the world before the popular People's Movement II in April 2006. After the controversial proclamation of the reinstated House of Representatives (HOR) of Nepal as a secular state, people with different religious beliefs are residing cordially. The religious status of parents is shown in the figure.

**Figure 2: Distribution of the parents by religion**

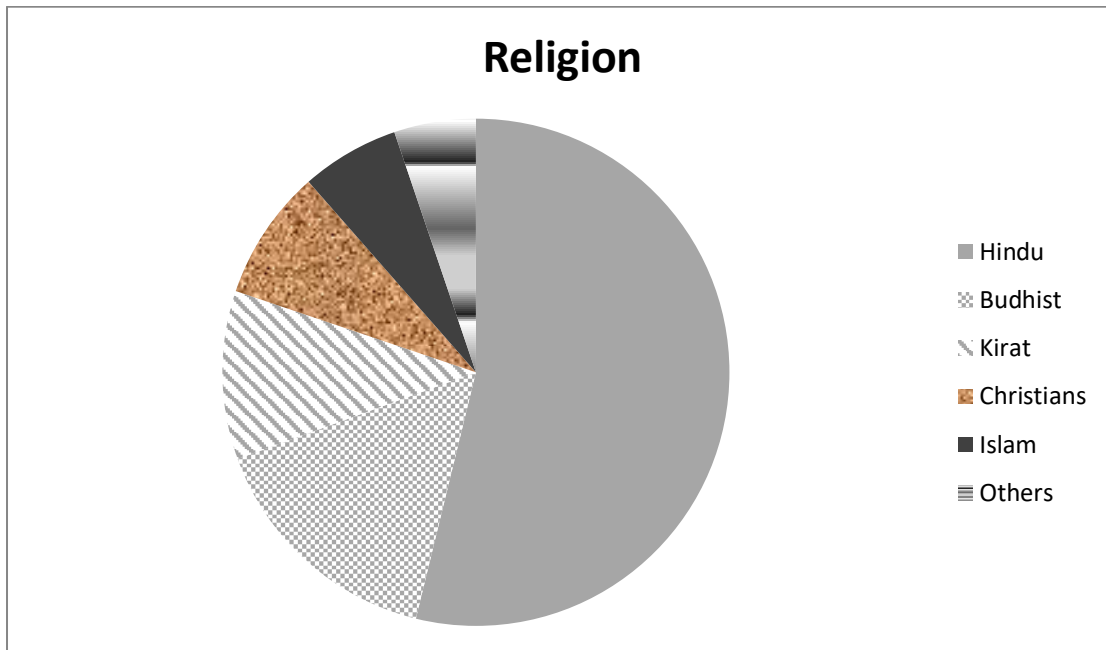


Figure-2 shows that Hindus are the main majority religious group in this study area, while Buddhists, Kiratis and Christians have been growing in the research area. It indicates that the area was multi-religious.

### **Educational Status of parents**

Education always plays a crucial role in the sound development of a nation. It is an important indicator of civilization for society. Literacy is perhaps the most important single means of attaining social and economic development and of opening the door of innovative ideas and actions for individuals.

Similarly, education has been one of the most powerful determining factors of the occurrence of disease, its acceptance, and treatment because it enhances the physical, mental, social, and emotional status of individuals. Education enables an individual to make proper adjustments, which signifies a healthy status for both the individual and the family. A family with a high quality of life usually places a high priority on managing nutritious food. The literacy and educational attainment of parents are shown in Table 3.

**Table 3: Educational statuses of parents**

Educational attainment	Privet		Public		Total	
	Number	Percent	Number	Percent	Number	Percent
Illiterate	5	2.39	10	11.12	15	5
Literate	10	4.72	15	16.67	25	8.34
Primary	15	7.15	15	16.67	30	10
Secondary an SLC	39	18.58	20	22.23	59	19
Lower Secondary	50	23.81	17	18.89	67	22.34
Intermediates(+2)	52	24.77	10	11.12	62	20.67
Bachelor	39	18.58	3	3.34	42	14
Total	210	100	90	100	300	100

Table 3 shows that out of 210 parents of boarding school students, the majority (97.61Percent) wasliterate and 2.39Percent of parents were illiterate. Among them, 4.77Percent were literate without schooling, 7.15Percent completed primary education, 18.85Percent completed lower secondary level, 23.81Percent completed secondary education and SLC, 24.77Percent completed intermediate (+2) level, and 18.58Percent had attained a bachelor's degree or above.

Similarly, as shown in Table 3, out of 90 parents of public school students, the majorities (88.88Percent) of parents were literate, and 11.12Percent were illiterate. Among

them, 16.67Percent were literate without schooling, 16.67Percent completed primary education, 22.23Percent completed lower secondary level, 18.89Percent completed secondary level, 11.12Percent completed intermediate (+2) level, and the rest 3.34Percent had attained a bachelor's degree or above.

### **Occupational status of parents**

Nepal is an agricultural country where the majority of the population is engaged in agro-based occupations. Occupational status has a direct link to individual health status; therefore, occupational health is now a major concern. While communicable diseases and the diagnosis of non-communicable diseases have received empirical studies, it has been shown that people with higher educational attainment are mainly involved in services and various business endeavors.

People whose occupation is crucial fulfill basic needs related to human life, in various fields that contribute to a successful life. Without occupation, people cannot meet the increasing requirements of their families, themselves, and society. Occupation also significantly impacts human health protection, influencing social, mental, physical, and spiritual health conditions

### **Table 4: occupation status of the parents**

Occupation status	Privet		Public		Total	
	Number	Percent	Number	Percent	Number	Percent
Agriculture	10	4.77	10	11.12	20	6.67
Service	59	28.09	13	14.4	72	24.00
Business	45	21.43	12	13.34	57	19.00
Industrial labor	21	10.0	18	20.00	39	13.00
Foreign employment	25	11.9	9	10.00	34	11.34
Agro Based Labor	20	9.60	5	5.56	25	8.34
Cottage industries	17	8.09	8	8.89	25	8.34
House Hold Worker	13	6.19	15	16.67	28	9.34
Total	210	100	90	100	300	100

Table 4 shows that the majority, 28.09Percent, of the parents of private school students were engaged in service. The second and third major occupations of parents were business 21.43Percent and foreign employment 11.9Percent, respectively. Industrial labor accounted for 10Percent, agro-based labor for 9.6Percent, cottage industries for 8.09Percent, household workers for 6.19Percent, and agriculture for 4.77Percent. The above information indicates that most parents were medium-paid employees, which directly affects their children's health.

However, the majority 20.00Percent of parents of public school students were engaged in industrial labor, followed by household work 16.67Percent and service

14.4Percent. Furthermore, 13.34Percent were in business, 11.12Percent in agriculture, 10Percent in foreign employment, and 8.89Percent in cottage industry, with 5.56Percent in agro-based labor. This information indicates that most parents were low-paid employees, directly affecting their children's health. They are deprived of basic needs such as proper nutritional diet, rest, and adequate emotional support during the diagnosis and treatment of nutritional disorders.

### **Family Size**

Family size indeed plays a significant role in determining these factors. Larger families often face greater economic challenges as they need to allocate resources among more members. This can affect their access to education, healthcare, and other essentials.

In terms of health and nutrition, larger families may struggle to provide adequate food and healthcare for each member, leading to issues like malnutrition and higher susceptibility to diseases. Additionally, the size and composition of the family can also influence social dynamics and gender roles within the household.

Studying these dynamics can provide valuable insights into how family size impacts individual well-being and overall household functioning. Researchers often examine factors such as income levels, access to healthcare, education levels, and cultural norms to understand the complexities involved. Understanding these factors can inform policies and interventions aimed at promoting the well-being of families of different sizes.

**Table 5: Family sizes**

<b>Family Size</b>	<b>Privet</b>	<b>Public</b>	<b>Total</b>
--------------------	---------------	---------------	--------------

	Number	Percent	Number	Percent	Number	Percent
2-5	95	45	30	33.33	125	41.66
5	70	33.33	25	27.77	95	31.67
6	30	14.28	15	16.67	45	15.00
7+	15	7.14	20	22.22	35	11.67
Total	210	100	90	100	300	100

Table 5 shows that out of 300 respondents, 41.66Percent had 1 member in their family in 2005, 31.67Percent had 5 members, 15Percent were Graar members, and 11.67Percent had 7 or more members. This study reveals that the majority of family sizes ranged from 2 to 5 members."

### Monthly income of house hold

The monthly income of a household is an important indicator of the economic status of people. Therefore, this study collected information about the monthly income of respondents.

**Table 6: Monthly Incomes**

Monthly incomes	Privet	Public	Total
-----------------	--------	--------	-------

	Number	Percent	Number	Percent	Number	Percent
Less than 10000	15	7.14	10	11.11	25	8.33
10000-20000	38	18.09	20	22.22	58	19.33
20000-50000	95	45.23	35	38.88	130	43.33
More than 50000	62	29.52	25	27.77	87	29.00
Total	210	100	90	100	300	100

Table No. 6 shows that out of 300 respondents, the majority 43.33Percent reported a monthly income ranging from twenty thousand to fifty thousand. The second largest group, comprising 29.00Percent of respondents, reported an income of more than fifty thousand per month. Those with a monthly income between ten thousand and twenty thousand accounted for 19.33Percent of respondents, while 8.33Percent fell into an income.

#### 4.1.7 Family Type

Now are days nuclear family type is increasing.

Figure3: Percentage Distribution of Respondents by Family Type

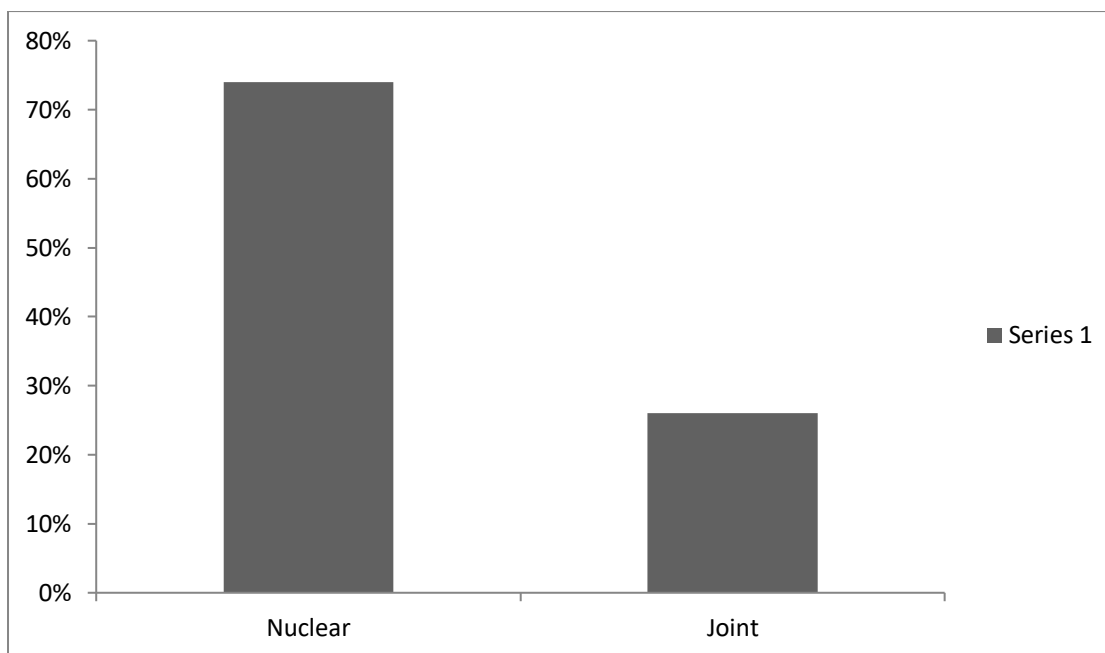


Figure No 3 show 74Percent respondents have nuclear family and 26Percent have joint family type.

### **Intake of meat in a week**

Meat is a significant source of protein. However, excessive intake of meat can be harmful to the human body. Consuming the right amount of meat provides energy and nutrition.

**Table7:Percentagedistributions of respondents by the intake of meat in a week**

<b>Intake meat in a week</b>	<b>Number</b>	<b>Percent</b>
Once a week	110	36.66

Twice a week	95	31.66
Three times a week	60	20
Daily	20	6.66
Never	15	5
Total	300	100

Table 7 shows that among 300 student respondents, the majority consume meat once a week (36.66 percent), followed by those who consume meat twice a week (31.66 percent). Additionally, 5 percent of the respondents never consume meat as they are vegetarians.

### **Intake of Dairy Products**

Milk, ghee, butter, and other dairy products are important nutritional elements for boosting our health.

**Table 8: Percentage Distributions of Respondents According to Intake of Dairy Products**

<b>.Intake Dairy Products</b>	<b>Number</b>	<b>Percent</b>
Daily	190	63.33
Weekly	60	20.00
Sometime	50	16.66
Total	300	100

Table 8 shows that among 300 respondents, 63.33 percent consume dairy products daily, 20 percent consume them weekly, and 16.66 percent consume them occasionally.

### **Intake of water in School Time**

Water is also the most important nutritional element, with 70 percent of the human body covered by water. Therefore, we should encourage school children to take a sufficient amount of water.

**Table 9: Percentage Distribution of Respondents According to Intake of Water during School Time**

<b>.Amount of Water</b>	<b>Number</b>	<b>Percent</b>
0.5 Litter	50	16.66
1 Litter	100	33.33
1.5 Litter	95	31.66
2.0 Litter	55	18.33
Total	300	100

Table 9 shows that among the 300 respondents, 33.33 percent consume 1 liter of water during school. The second largest group, 31.66 percent, consumes 1.5 liters. Additionally, 18.33 percent of students consume 2 liters, and 16.66 percent consume 0.5 liters.

**Status of knowledge regarding Energy Requirements**

Energy is the capacity for doing work, which is the primary requirement for body functions and growth for all daily activities. Some amount of energy is required for every activity. The type of energy needed for various activities varies from the type of work being done. In the body, various voluntary and involuntary activities take place, which require energy. In order to fulfill these demands, we consume food.

The total energy requirement of an individual is made up of two main components: (a) resting state (when the body is in complete bed rest) - energy required for vital functions such as sleeping, respiration, and circulation, etc., and (b) the energy required for actual physical activity. It is the latter component that varies depending upon age, sex, occupation, and climatic conditions in the surroundings. The energy required for both components is obtained from food, with protein supplying about 10-12Percent, carbohydrates about 60 to 70Percent,

and fats about 30Percent of the energy. The quantitative food requirements are usually estimated in terms of energy, i.e., calories.

### **Recommended Daily Intake of Energy**

An individual's energy intake and expenditure should be balanced because any extra energy consumption will be stored as fat, and continued excess intake will result in obesity.

The FAO/WHO Committee suggests that an infant needs 100 cal/kg/day, a child aged 1 to 3 years needs 80 kcal/kg/day, a child aged 1 to 6 years needs 70 kcal/kg/day, a child aged 6 to 12 years needs 60 to 65 kcal/kg/day, and a child aged 9 years and older needs 35 to 45 kcal/kg/day.

The parents of children attending private and public schools have witnessed that children aged 4-6 years need a recommended daily intake of 29g protein, 25g fat, and 200-250g carbohydrates each day. However, providing these in proper ratios has not been popular. Reduced-fat milk and dairy products can be administered to children aged two to five years old, while skim milk and dairy products are appropriate. However, fresh fruit and green vegetables were not taken in appropriate amounts according to weight and age, and milk was not provided as recommended.

### **Recommended Daily Intake of water**

According to the US National Academies of Sciences, Engineering, and Medicine, an adequate daily fluid intake for infants aged 6-12 months is 0.7 liters. For girls and boys aged 1-3 years, it is 1 liter (about 4 cups). For girls and boys aged 4-8 years, it is 1.2 liters (about 5 cups). For girls and boys aged 9-13 years, it is 1.6 liters (about 6 cups) each day. For boys aged 14-18 years and girls and boys aged 14-18 years, it is 1.9 liters (about 7-8 cups) per day, but this may not always be observed

### **Nutritional Disorders**

Children's main distinguishing characteristics from adults are their growth and maturation. The anatomical traits and functional development of organs at various ages influence the occurrence and presentations of diseases in children. Childhood diseases can have a significant negative impact on children's growth and development. Protein-energy malnutrition is a major health issue in children, leaving them prone to a range of infectious infections and prolonging debility.

### **Practice and knowledge about Vaccine**

The infant may be at risk of infection if the mother is not immunized during pregnancy. Additionally, immunization helps to safeguard the child from various cross-infections. Babies should be immunized against six types of killer diseases within the first 12 months from birth.

According to the National Immunization Program 2022, immunization coverage of children under one year of age includes polio, DPT, BCG, measles, Japanese encephalitis vaccine, and vaccinoagarw rubella. Polio drops have a coverage rate of 95.7Percent, BCG 96Percent, and DTP 95Percent.

A study conducted by the White Studying Guardians revealed that all pre-primary level students in private and public schools have been vaccinated against the six types of killer diseases.

### **Participation on the programme of vitamin A Capsule and worm-medicine**

The government of Nepal has been distributing vitamin A capsules and worm medicine for children under the age of five consistently. According to the USAID report dated February 17, 2023, Nepal has maintained coverage of vitamin A supplementation at over 90Percent among children aged 6 to 59 months.

### **Yearly weight - Taking condition and related practices**

In comparison to a single weight on a specific occasion, a recurring weight record provides vital information on the child's growth rate. The weight chart's trend or slope is particularly relevant in early infancy. Weight depends on gestational age, birth weight, the mother's health and well-being, and the effectiveness of breastfeeding.

The parents of private and public school students haven't shown interest in annually recording the weight according to age. Such a factor has not been popular.

### **Yearly Height Taking condition and Related practices**

If the growth velocity is less than 4 centimeters per year after the age of 4 years, it indicates growth failure or poor linear growth during a minimum of 6 months of monitoring. The parents of boarding school and public government school children have not shown interest in recording height annually according to age.

### **Head Circumference**

Marasmus children have relatively large heads for their physical size as a result of brain malnutrition. Weight (subcutaneous fat and muscles), linear growth (height), and brain development are all minimally impaired with varied degrees of malnutrition. Children's head circumference should be monitored based on their age.

### **Status of mid upper Arm Circumference**

To measure the circumference of the child after the age of one year to check for malnutrition, the arm circumference of private school students shown in Table 5.

**Table -10 Statues of MUAC of private School Student**

---

<b>Variable</b>	<b>Sex</b>	<b>Total</b>
-----------------	------------	--------------

---

	Girls		Boys			
	Number	Percent	Number	Percent	Number	Percent
12.5-13.5cm	25	26.31	30	26.08	55	26.19
14-15.5cm	27	28.42	35	30.43	62	39.52
16-16.5cm	40	42.10	45	39.13	85	40.47
17-19cm	3	3.15	5	4.34	8	3.8
Total	95	100	115	100	210	100

Table 10 shows that among the 115 participants, 26.08Percent indicated mild to moderate malnutrition. The remaining percentage exhibited mild stunting, with age-wise distribution showing 4.34Percent children in mild obesity. Similarly, among 95 girls, 26.31Percent showed signs of mild to moderate malnutrition. The rest showed satisfactory weight for girls aged 3-15, with a small percentage exhibiting mild obesity.'

### **The mid-upper arm circumference status of public school students**

**Table 11: Status of MUAC of public school student**

Variable	Sex				Total	
	Girls		Boys		Number	Percent
	Number	Percent	Number	Percent	Number	Percent

12.5-13.5cm	18	35.29	11	28.20	29	32.23
14-15.5cm	16	31.37	15	38.46	31	34.44
16-16.5cm	17	33.33	13	33.33	30	33.33
Total	51	100	39	100	90	100

The table 11 shows that among 90 students, 32.3Percent indicated mild to moderate malnutrition, while the rest showed satisfactory nutritional status.

### **Weight for Height**

Weight-for-height is express as a percentage of the reference median expected on the basis of Nutritional States on the weight height of the students. Basis of weight-for- height of private School is show in fable No 7

**Table12: Nutritional status on the basis of weight-for- height for private school**

Variable	Sex				Total	
	Girls		Boys		Number	Percent
	Number	Percent	Number	Percent		
Weight for height						

More than 90>90Percent	43	45.26	50	43.47	93	44.28
85-90Percent	27	28.42	30	26.08	57	27.14
75-85Percent	25	26.31	35	30.43	60	28.57
Total	95	100	115	100	210	100

The table 12 shows that 44.28 percent of private school students had a normal nutritional status, 27.14 percent were borderline malnourished, and 28.57 percent were moderately malnourished. Similarly, the nutritional status was assessed based on weight-for-height.

**Table-13: Nutrition Status on the basis of weight -for- height of public school**

Variable	Sex		Total
	Girls	Boys	
Weight for height			

	Number	Percent	Number	Percent	Number	Percent
More than 90>90Percent	17	33.33	13	33.33	30	33.33
85-90Percent	16	31.37	15	38.46	31	34.44
75-85Percent	18	35.29	11	28.20	29	32.22
Total	51	100	39	100	90	100

Table 13 shows that 33.33 percent of public school students had normal nutritional status, 34.49 percent were borderline malnourished, and 32.22 percent were moderately malnourished.

## **Summary and finding**

### **Summary**

This research study is related to a field-based study about the nutritional status of 3-14-year-old school-age group students in Itahari-5, Sunsari. The study was based on primary data collected through parents, and this data was gathered by observing school administrators, along with interviews and observation methods.

The study describes the research design and sampling procedure. Simple random sampling was applied for this study. The tools and instruments were semi-structured. After piloting the tools, they were revised and finalized based on the prevalence of malnutrition. Children in public schools under 5 years old are more affected by malnutrition than those in private schools. This has been attributed to poverty, lack of education, and rampant infectious diseases

### **Major findings**

The study was divided into different categories and characteristics. The first category was socio-demographic characteristics, which were used to describe parents' economic status, age, sex, religious beliefs, literacy, and occupational status. The second category was knowledge about nutritional disorders, which included understanding the grading of malnutrition, height, and arm circumference for different weight categories

The Major findings of the study are as Follows:

### **Relation between socio-demographic and characteristic**

(a) Among the total 300 students, 210 attended private schools, and 90 were public school students.

(b) Among the total 210 children in private schools, 115 were girls and 95 were boys. Among these 210 children, 26.19Percent were aged 3-8 years, 33.81Percent were aged 9-11 years, and 40.48Percent were aged 12-14 years.

(c) Among the 90 children in public schools, 39 were boys and 51 were girls. Among these children, 27.78Percent were aged 3-8 years, 34.45Percent were aged 9-11 years, and 37.73Percent were aged 12-14 years.

(d) Regarding the educational status of the parents, it is divided into seven categories: illiterate, literate, primary, lower secondary, secondary, intermediate (+2), bachelor's degree, and above.

(e) The analysis of the educational status of parents of private school students shows that 5Percent were illiterate, 8Percent were literate, 10Percent had primary education, 19Percent had lower secondary education, 22.34Percent had secondary education, 20.37Percent had intermediate (+2) level education, and the remaining 17Percent had a bachelor's degree or above. The nutritional status of children was regarded with respect to the education level of their parents.

(f) Regarding occupation status, among the 300 parents, 6.67Percent were involved in agriculture, 24Percent were in service, 19Percent were service holders, 19Percent were in business, 13Percent were industrial workers, 11.34Percent were engaged in agro-based cottage industry, and 8.34Percent were foreign employees. Additionally, 8.34Percent were laborers, and 9.34Percent were household workers.

(g) Among the 300 parents, 51.6Percent were Hindu, 15Percent were Buddhist, 10.30Percent were Kirati, 8Percent were Christian, 6Percent were Muslim, and 5Percent followed other faiths.

### **Nutritional disorder**

(a) Among the 300 children, 3.15Percent were observed.

(b) Immunization coverage for the six killer diseases in children under one year of age was 100Percent.

(c) All children were involved in vitamin A supplementation and deworming medication programs.

(d) Among the 210 children in private schools, 26.19Percent exhibited mild to moderate malnutrition, while the rest showed signs of satisfactory nutritional status.

(e) Among the 90 children in public schools, 32.23Percent were in the range of mild to moderate malnutrition, while the rest exhibited satisfactory nutritional status.

## **CHAPTER-V**

### **CONCLUSION & RECOMMENDATIONS**

#### **Conclusion**

This study on the nutritional status of private school-age students aged 3-14 in Itahari-5 aimed to identify problems and issues related to nutrition among school-level students. The study included 300 children, 210 from private schools and 90 from public schools.

In the general study area of Itahari-5, there was a mix of economic and educational statuses. It was observed that urban area children had a habit of consuming junk food, leading to unhealthy weight gain. All children, both from public and private schools, were involved in vitamin A supplementation and deworming medication programs.

The nutritional status of children in private schools was found to be better than that of children in public schools. However, public schools were also improving, especially due to the provision of mid-day meals, provided free of cost under government and JICA programs. Children in public schools were more affected by malnutrition compared to those in private schools. This has been attributed to the poverty of parents, lack of education, and the prevalence of infectious diseases."

## **Recommendations**

### **Policy related**

- i. The government must provide knowledge about nutrition.
- ii. The government should implement awareness programs to provide quality services at the local level.
- iii. Political leaders, local youths, and workers should be recruited for nutritional programs.
- iv. Creating policies for better employment opportunities.
- v. Policies to promote and support self-employment and entrepreneurship.
- vi. To prevent the use and sale of non-edible items.

**Practice level**

- i. Make good nutritious food available at home.
- ii. Do not cook food in such a way that reduces its nutritional value.
- iii. Educate children about the health problems that can arise from consuming unhealthy food.
- iv. Develop good nutritious food habits in children.
- v. Prepare and send school lunch bags from home.

**Further research related**

The nutritional status of 3 to 14-year-old school-aged children poses emerging challenges. Addressing various issues related to the nutritional status of school-aged children is necessary for further research, including:

- i. Nutritional status of children and maternal education.
- ii. Children in poverty: Nutritional status of children and gender equity.
- iii. Maternal and child nutrition

## REFERENCES

- Adhikari, R.K. (2063). *Nutrition and Health*, Kathmandu: Education House
- Bansal, S, (2010). *Food and Nutrition*, New Delhi .A.I.T.B.S. Publishers.
- Best, J. W. &khan J.V. (1999). *Research. in Education, (7th edition)*, New Delhi: prentice Hall.
- Bhattarai, N.(2009). *A Study on prevalence and management of tuberculosis in ItahariDots center in Sunsari District Unpublished Master's Thesis, CDE, T.U.(Kathmandu)*
- Comprehensive Nutrition and food.Security Assessment Udayapur DistrictMeasure to assess nutritional Status (MUAC).NOV 21-2022
- Nepal demographic and Health Survey Report 2016.
- Pokharel. T. (2066)., *Educational General Knowledge:PinakalPublication Kathmandu.*
- Rai, SK, (2000). *Effect of Intestinal Helminthes Infection on Retinol and Carotene status Among Rural Nepalese Nutrition*20:15-23.
- Royal Children Hospital,(2008).Schorl Child NutritionMelburne, Asustralia. Sharma, P.(2002). *A Hand Book of pediatric problems*, Kathmadu; Health, Learning Material Centre; IOM.
- Save the Children. (2011). *School Health and Nutrition in Developing Countries*
- Singh, M. (2005), *pediatricClinical methods*, New Delhi: Sagar Publication.
- The world Bank Group (2011). *School Health and Nutrition.*
- UN Decade of action on nutrition 2016-2025 Global nutrition report (2018).

## APPENDIX -1

I'm KhusbuRai, a student of EducationTribhuvan University. I'm doing research on "Nutritional status of 3years to 14years school children "as a partial fulfillment of master's in health Education. I would like to request you to please feel to disclose the needed information for study purpose. I assured that nothing will be used from this data except for study purpose.

**Section 1: Socio Demographics [General Information]**

Name:.....Gender.....Age.....Religion.....

Address.....

Height of child..... Weight of child .....

Q.N.1. How many members are there in your family?

[i]Total.....[ii]male.....[iii]female.....

Q.N.2. Which is your Religion?.....

Q.N.3. Are you literate?

[i]Yes..... [ii]No.....

Q.N.4. What is your qualification?

[i]Illiterate [ii] primary [iii] secondary [iv] +2 [v]above

Q.N.5. what is your family's current occupation?

[i]Agriculture [ii] Service [iii] Business [iv] other....

Q.N.6. How much money do you earn in month?

[i] Less than 10000 [ii] 10000-20000

[iii] 20000-50000 [iv] more than 50000

Q.N.7. what is your family type?

[i] Joint [ii] Nuclear

Q.N.8. How many children are in your family?

[i] One [ii] Two [iii] other.....

**SECTION-2: KNOWLEDGE OF NUTRITION**

Q.N.9. Do you know about nutrition?

[i] Yes [ii] No

Q.N.10. what is Nutrition in your view.....

Q.N.11. from where did you get information about nutrition?

[i] Radio [ii] Television [iii] Health worker

Q.N.12. what is balance diet in your view?

.....

Q.N.13. You has any fast food habit?

[i] Yes [ii] No

Q.N.14. did you ready tiffin every day from home?

[i] Yes [ii] No [iii] Sometime

Q.N.15. Have you ever check canteen of your children?

[i] yes [ii] No [iii] Sometime

Q.N.16. Your school banded junk food?

[i] Yes [ii] No

Q.N.17. How often meat take your family in weak?

[i] one [ii] Two [iii] Three [iv] Daily

Q.N.18.How often use dairy product?

[i]Daily [ii] weakly [iii] some time

Q.N.19. Do you give all immunization to your child?

[i]Yes [ii] No

Q.N.20.How many times you give 'JukakoAusadhi' in a year?

[i]one [ii] Two

Q.N.21. Are you satisfied about your child growth?

[i]Yes [ii] No

Q.N.22. How was your child in daily life physically?

[i]Active [ii] Moderate [iii] Inactive [iv] lazy

Q.N.23. Did You checks expired date of food when you buy it?

[i] Yes [ii] No

Q.N.24. what your opinion about this new generation children must be attracted to junk food?

Cause of...

[i] Advertisement [ii] test

[iii] Less knowledge of nutrition [iv] Laziness of parents.

Q.N.25.How Much water does she/he drink in a School time?

[i] About 1/2 liter [ii] About 1 liter

[iii] More than 1½ litter [iv] less than 1 litter

Q.N. 26.How to provide clean water to your students?

[i] By filtering [ii] They bring from home

[iii] Using water purifiers

Q.N. 27 Have you ever vaccinated your Student?

[i] Yes

[ii] No

Q.N 28 Do you give vitamin A Capsule and medicine for worm regularly?

[i] Yes

[ii] No

Q.N29How many time, dose she/he take meal in a day?

[i] 3 times

[ii] 4 times

[iii] 5 times

[iv] more than 5 times

Q.N 30 Which electronic devices are used the most?

[i] Mobile

[ii] T.V

[iii] Radio

Q.N. 31Does your child watch mobile regularly?

[i] Yes

[ii] No

Q.N. 32 what type of disease has she/he suffered till now?

[i] Toothache

[ii] Pneumonia

[iii] Malaria

[iv]Typhoid

Q.N.33 which of the following food does Your Child eats?

[i] Pulse

[ii] Milk and milk products

[iii] Meat, fish and egg

[iv]& Fruits and vegetable

## APPENDIX II

### Weight Velocity

A. 0-4 months	1.0kg/months (30g/day)
5-8 months	0.75kg/month (20g/day)
9-12 months	0.50kg/months (10g/day)
1-2 yrs	3.0kg/year
3-12 yrs	2.0kg/year
12-18 years	5.0-6.0 kg/yr (0.5kg/month)
B. Weight at 4-5 months	2 x birth weight
Weight at 1 year	3 x birth weight
Weight at 2 years	4 x birth weight
Weight at 7 years	7 x birth weight
Weight in kg =	
(Age in yrs + 3) x 2	

Source: Singh, Meharban, (2005)

### APPENDIX III

#### Grading of Malnutrition as suggested by Indian Academy of

#### Pediatrics (Weight in kg)

<b>Age</b>	<b>50th Percentile of NCHS* data</b>	<b>Grade I (71- 80Percent)</b>	<b>Grade II (61- 70Percent)</b>	<b>Grade III (51- 60Percent)</b>	<b>Grade IV (50Percent or less)</b>
Birth	3.4	2.4-2.7	2.1-2.3	1.7-2.0	1.6 or less
3 Months	5.7	4.0-4.5	3.5-3.9	2.9-3.4	2.8 or less
6 Months	7.6	5.4-6.1	4.6-5.5	3.9-4.5	3.8 or less
9 Months	9.1	6.5-7.3	5.5-6.4	4.6-5.4	4.5 or less
12 Months	10.1	7.2-8.1	6.2-7.1	5.5-6.1	5.0 or less
1.5 Years	11.4	8.1-9.1	6.9-8.0	5.8-6.8	5.7 or less
2 Years	13.4	9.5-10.7	8.2-9.4	6.8-8.1	6.7 or less
2.5 Years	14.6	10.4-11.7	8.9-10.3	7.4-8.8	7.30 or less
3 Years	15.6	11.1-12.5	9.5-11.0	7.9-9.4	7.8 or less
3.5 Years	16.6	11.8-13.3	10.1-11.7	8.5-10.0	8.4 or less
4 Years	17.7	12.6-14.2	10.8-12.5	9.0-10.7	8.9 or less

4.5 Years	18.8	13.3-15.0	11.5-13.2	9.6-11.4	9.5 or less
5 Years	20.0	14.2-16.0	12.2-14.2	10.2-12.1	10.1 or less
5.5 Years	20.7	14.7-16.6	12.6-14.6	10.5-12.5	10.4 or less
6 Years	21.9	15.5-17.5	13.3-15.4	11.2-13.3	11.1 or less
6.5 Years	23.2	16.5-18.5	14.1-16.4	11.8-14.0	11.7 or less
7 Years	24.5	17.4-19.6	14.9-17.4	12.5-14.8	12.4 or less
7.5 Years	25.9	18.4-20.7	15.8-18.3	13.2-15.7	13.1 or less
8 Years	27.3	19.4-21.8	16.6-19.3	13.9-16.6	13.8 or less
8.5 Years	28.6	20.3-22.9	17.4-20.2	14.6-17.3	14.5 or less
9 Years	29.9	21.2-23.9	18.2-21.1	15.2-18.1	15.1 or less
9.5 Years	31.3	22.2-25.0	19.1-22.1	16.0-19.0	15.9 or less
10 Years	32.6	23.1-26.1	19.9-23.0	16.6-19.8	16.5 or less
10.5 Years	33.9	24.1-27.1	20.7-24.0	17.3-20.6	17.2 or less
11 Years	35.2	25.0-28.4	21.5-24.9	17.9-21.4	17.8 or less
12 Years	38.3	27.2-30.6	23.4-27.1	19.5-23.2	19.4 or less
13 Years	42.2	30.0-33.8	25.7-29.9	21.5-25.6	21.4 or less
14 Years	48.4	34.6-39.0	29.5-34.5	24.9-29.7	24.8 or less

## **APPENDIX IV**

### **GROWTH VELOCITY**

**The Gomez Classification of Malnutrition based on weight for age is given below:**

#### **Gomez Classification of Malnutrition**

Weight for age Grade of malnutrition

>80Percent	Normal
71-80Percent	Grade I
61-70Percent	Grade II
51-60Percent	Grade III
<50Percent	Grade IV

Source: Singh, Meharban, (2005)

## APPENDIX V

### HIGHT VELOCITY

<b>A. At birth</b>	<b>20 inches (50cm)</b>
Gain during	1st year 10 inches (25cm)
Gain during	2nd year 5 inches (12.5cm)
Gain during	3rd year 3-4 inches (7.5-10cm)
Gain during	3-12 yrs 2-3 inches per year (5-7.5cm)
Adolescence	8cm/year for girls 10cm/year for boys

Source: Singh, Meharban, (2005)

## APPENDIX VI

### HEAD CIRCUMFERENCE GROWTH VELOCITY

Till 3 months	2cm/month
3 month- 1 year	2cm/3months
1-3 yrs	1cm/6 months
3.5 yrs	1cm/year

Source: Singh, Meharban, (2005)

## APPENDIX VII

### Head circumference(cm) in under-five children (10th-90th percentile)

<b>Birth</b>	<b>30.0-35.5</b>
1 month	34.0-37.5
2 months	36.0-39.5
3 months	38.0-41.5
6 months	40.0-43.5
9 months	42.0-45.0
1 year	43.5-46.5
1 years	44.5-48.0
2 years	45.5-49.9
2 years	46.5-50.0
3 years	46.8-50.3
3 years	47.1-50.6
4 years	47.5-50.9
4 years	47.8-51.2
5 years	48.1-51.1

Source: Singh, Meharban, (2005)

## APPENDIX VIII

### Arm circumference for different heights

Mid- upper arm circumference (cm)	Height (cm)
16.50	133.00
16.00	129.00
15.50	125.00
14.75	118.00
14.50	116.00
14.25	113.50
14.00	110.00
13.75	106.50
13.50	103.50
13.25	97.50
13.00	90.00
12.75	80.00
12.50	70.00