"INCIDENCE OF UNDERWEIGHT AMONG SCHOOL GOING CHILDREN AND KNOWLEDGE, ATTITUDE AND PRACTICE ASSESSMENT OF THEIR PARENTS"

DISSERTATION SUBMITTED

In Partial Fulfillment of the Requirement for the Award of the Degree of

MASTER'S PROGRAMME IN

CLINICAL NUTRITION AND DIETETICS

BY

ANJANA N S

(Register No: SM19MCN003)

DEPARTMENT OF CLINICAL NUTRITION AND DIETETICS

WOMEN'S STUDY CENTRE

ST. TERESA'S COLLEGE (AUTONOMOUS)

ERNAKULAM

MARCH 2021

CERTIFIED AS BONAFIDE RESERCH WORK

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Signature of Internal **Signature of External**

DECLARATION

I hereby declare that the thesis entitled "**INCIDENCE OF UNDERWEIGHT AMONG SCHOOL GOING CHILDREN AND KNOWLEDGE, ATTITUDE AND PRACTICE ASSESSMENT OF THEIR PARENTS"** submitted in partial fulfillment of the requirement for the award of the Degree of **Master's Programme in Clinical Nutrition and Dietetics** is a record of original research work done by me under the supervision and guidance of **Ms . Surya M Kottaram**, Assistant Professor Department of Clinical Nutrition and Dietetics, Women's Study Centre, St. Teresa's College (Autonomous), Ernakulam and that the thesis has not previously formed on the basis for the award of any degree work has not been submitted in part or full or any other degree/diploma/ fellowship or the similar titles to any candidate of any other University.

Place: ANJANA N S

Date :

CERTIFICATE

I hereby certify that the dissertation entitled **"INCIDENCE OF UNDERWEIGHT AMONG SCHOOL GOING CHILDREN AND KNOWLEDGE, ATTITUDE AND PRACTICE ASSESSMENT OF THEIR PARENTS"** submitted in partial fulfillment of the requirement for the award of the Degree of **Master's Programme in Clinical Nutrition and Dietetics** is a record of original research work done by Ms. ANJANA N S during the period of her study under my guidance and supervision.

Signature of the HOD

Signature of the Research Guide

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ABSTRACT

A child is underweight if he/she is in the bottom 5th percentile for weight compared to their height. Underweight is not only classified compared to other children their age, but to their height as we clinically look for a child to be proportionate. After age 2, use the Centers for Disease Control growth charts to look at weight, height and BMI (body mass index) for age. BMI for this age range compares a child's weight to their height. A BMI for age less than the 5th percentile indicates a child is underweight. Researches show that India is struggling to address child malnutrition which has three major indicators — underweight children, stunted and wasted children. The prevalence of child underweight in India was 32.7 per cent in 2017; child stunting was 39.3 per cent and child-wasting (low weight for height) 15.7 per cent. This means nearly one in three children were underweight and two in five were stunted. According to the India State Hunger Index: 9% of children in Kerala are underweight and 5.6% of the total population are undernourished. (Purnima et al; 2009)

Hence the study was proposed to detect the incidence of underweight among school children and to understand the knowledge, attitude and practice of their parents. The objectives of the current study were to assess the incidence of underweight among school going children using BMI age percentile within the age group (7-10 years) and also to assess knowledge, attitude and practices of the parents of selected subjects. The study was focused to help parents to understand the importance of child health and the importance to maintain good nourishment during childhood

Self-structured questionnaire was prepared to collect information regarding knowledge of child health, attitude towards child health and also practises followed by parents on

daily basis to meet the food requirements for children. Questionnaire was validated through conducting pilot study. The study was conducted in 3 schools in Perumbavoor , Kolenchery, Muvattupuzha province. Data was collected and marked using 5 point likert scale and tabulated using MS-Excel and analysed IBM SPSS software and data was interpreted.

Analysed data showed that parents had high knowledge regarding child health but their attitudes and practises were moderate. From the present study it is understood that majority of the subjects can overcome underweight by doing more healthy practices. To ensure the practices investigator developed low cost recipes with less preparation time which yields good nutrition.

Hence the study concluded that healthy practices are also equally important while having knowledge. The subjects who would follow and incorporate more healthy practices can overcome the health concerns of their child.

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INTRODUCTION

1. INTRODUCTION

Early childhood encompasses infancy and the toddler years, from birth through age three. The remaining part of childhood is the period from ages four through eight and is the time when children enter school. A number of critical physiological and emotional changes take place during this life stage. By age ten, the skull and the brain have grown to near-adult size says Beverly McMillan. (McMillan,2006)

There is increasing recognition in policy, research, and clinical practice communities that early and middle childhood provide the physical, cognitive, and social-emotional foundation for lifelong health, learning, and well-being. Early childhood, middle childhood, and adolescence represent the 3 stages of child development. Each stage is organized around the primary tasks of development for that period.

- Early childhood (usually defined as birth to year 8) is a time of tremendous physical, cognitive, socio-emotional, and language development.

- Middle childhood (usually defined as ages 6 to 12) is a time when children develop foundational skills for building healthy social relationships and learn roles that will prepare them for adolescence and adulthood.

Research on a number of adult health and medical conditions points to pre-disease pathways that have their beginnings in early and middle childhood. During early childhood, the human brain grows to 90 percent of its adult size by age. Early childhood represents the period when young children reach developmental milestones that include Emotional regulation and attachment, Language development, Cognitive development, Motor skills. (Jennifer Paris, 2021)

Children between the ages of 6 and 12 are in the age period commonly referred to as middle childhood. These years universally mark a distinctive period between major developmental transition points. Evidence shows that experiences in early and middle childhood are extremely important for a child's healthy development and lifelong learning. How a child develops during this time affects future cognitive, social, emotional, language, and physical development, which in turn influences school readiness and later success in life.

During this time in which children's personalities, behavioural patterns, and basic competencies become increasingly crystallized into forms that are likely to persist into adolescence and adulthood. It is critically important to understand both the nature and the sources of the consolidations that occur in middle childhood and the implications of crystallizing behavioural patterns. Middle childhood is considered to be a very critical point during the stage of childhood it impacts not only mental and cognitive development but also healthy growth of upcoming stages of life.

Growth failure and micronutrient inadequacy during middle childhood can delay growth and create high risk of chronic diseases in adulthood. Puberty is accompanied by a growth spurt that increases the requirements for both macronutrients and micronutrients. These higher requirements are balanced by a more efficient use of protein for development rather than energy. For females, pubertal timing is affected by childhood body mass index (BMI) and percentage of body fat; data for males are inconclusive. Pubertal timing depends on nutrition during childhood.

Children's attitudes and opinions about food deepen. They not only begin taking their cues about food preferences from family members, but also from peers and the larger

culture. All of these factors should impact the nutritional choices parents make for their children. This time in a child's life provides an opportunity for parents and other caregivers to reinforce good eating habits and to introduce new foods into the diet while remaining mindful of a child's preferences. Parents should also serve as role models for their children, who will often mimic their behaviour and eating habits. All of these milestones can be significantly delayed when young children experience inadequate caregiving, environmental stressors, and other negative risk factors. These stressors and factors can affect the brain and may seriously compromise a child's physical, social-emotional, and cognitive growth and development. (Weldon Owen, 2006)

One of the major health concerns during childhood is facing undernourishment which leads to underweight.

A child is underweight if they're in the bottom 5th percentile for weight compared to their height. Underweight is not only classified compared to other children their age, but to their height as clinically look for a child to be proportionate. After age 2, the Centers for Disease Control growth charts to look at weight, height and BMI (body mass index) for age. BMI for this age range compares a child's weight to their height. A BMI for age less than the 5th percentile indicates a child is underweight says CDC. (CDC, 2006)

Undernutrition, which includes wasting (low weight-for-height), stunting (low height-for-age) and underweight (low weight-for-age) defined by WHO. Being undernourished or being underweight can be due to various reasons.

Prevalence of underweight among globally and in India is comparatively lower when compared to last decades even though , a new research published in The Lancet Child

and Adolescent Health today on disease burden attributable to child and maternal malnutrition in India reveals that malnutrition was also the leading risk factor for health loss for all ages. The disease and disability burden from malnutrition was the highest in Uttar Pradesh, Bihar, Assam and Rajasthan. The paper authored by ICMR and Public Health Foundation of India experts shows India struggling to address child malnutrition which has three major indicators — underweight children, stunted and wasted children. The prevalence of child underweight in India was 32.7 per cent in 2017; child stunting was 39.3 per cent and child-wasting (low weight for height) 15.7 per cent. This means nearly one in three children were underweight and two in five were stunted.(ICMR , 2019)

India has good public distribution system when compared to other nations but also, the most recent Global Hunger Index (GHI) ranks India at the high end of the 'serious' category, as India continues to perform poorly in addressing hunger and malnutrition; currently one in three Indian children is stunted representing one third of the world's stunted population, and one in five is wasted. Many in India also experiences hidden hunger. Hidden hunger refers to a situation of chronic micronutrient deficiency, where a person might have access to sufficient calories, but lacks adequate micronutrients. Hidden hunger can have lasting effects on health and wellbeing, and is especially problematic for children.(Down to Earth, 2020)

Even though the literacy rates and primary health care services are high in Kerala but also according to the India State Hunger Index, 9% of children in Kerala are underweight and 5.6% of the total population are undernourished.(The Economist, 2015)

From all together, the significance of the study emphasizes to detect the reasons behind underweight among school going children. This study focuses on knowledge, attitude and practices of parents regarding underweight and nourishment among underweight identified school going children. Study was done in 3 local schools in Perumbavoor, Kolenchery, Muvattupuzha province.

OBJECTIVES

The presented study entitled "INCIDENCE OF UNDERWEIGHT AMONG SCHOOL GOING CHILDREN AND KNOWLEDGE, ATTITUDE AND PRACTICE ASSESSMENT OF THEIR PARENTS" has the following objectives:

- To assess the incidence of underweight among school going children using BMI age percentile within the age group of 7-10 years
- To assess knowledge, attitude and practices of parents of selected under weighed subjects.
- To prepare low cost recipe booklet to help to improve nutritional status of children

REVIEW OF LITERATURE

2. REVIEW OF LITERATURE

The review of literature pertaining the study entitled "INCIDENCE OF UNDERWEIGHT AMONG SCHOOL GOING CHILDREN AND KNOWLEDGE, ATTITUDE AND PRACTICE ASSESSMENT OF THEIR PARENTS" is discussed under following headings:

2.1 UNDERNUTRITION –DEFINITIONS

2.2 PREVALENCE OF UNDERWEIGHT

2.3 CAUSES OF UNDERNUTRITION

2.4 CONSEQUENCES OF UNDERNUTRTION

2.5 PREVENTIVE MEASURES

2.1 UNDERNUTRITION - DEFINITIONS

Malnutrition refers to deficiencies, excesses, or imbalances in a person's intake of energy and/or nutrients. The term defined by WHO is, under nutrition which includes wasting (low weight-for-height), stunting (low height-for-age) and underweight (low weight-for-age).

(WHO, 2020)

According to National Center for Biotechnology Information (NCBI) defines Undernutrition denotes insufficient intake of energy and nutrients to meet an individual's needs to maintain good health. In most literature, undernutrition is used synonymously with malnutrition. In the strictest sense, malnutrition denotes both undernutrition and overnutrition. (NCBI, 2006)

According to ASPEN malnutrition is defined as, an acute, subacute or chronic state of nutrition, in which a combination of varying degrees of overnutrition or undernutrition with or without inflammatory activity have led to a change in body composition and diminished function. (ASPEN, 2015)

According to ESPEN, Malnutrition can be defined as "a state resulting from lack of intake or uptake of nutrition that leads to altered body composition (decreased fat free mass) and body cell mass leading to diminished physical and mental function and impaired clinical outcome from disease" . Malnutrition can result from starvation, disease or advanced ageing (e.g. >80 years), alone or in combination. The ESPEN criteria could be summarized that prior to the diagnosis of malnutrition the criteria for being "at nutritional risk" according to any validated nutritional risk screening tool must be fulfilled. Any of two alternative sets of diagnostic criteria will confirm the diagnosis; i.e. either reduced body mass index (BMI). (ESPEN, 2016)

2.2 PREVALENCE OF UNDERNUTRITION

According to study conducted by Karina Elaine de Souza Silva et al; observed that the prevalence of malnutrition, overweight, and obesity among boys were 6.1%, 9.8% and 11.1%, respectively and girls were 15.9% more likely to be malnourished than boys in public and local schools of Brazil. (Karina Elaine de Souza Silva,2016)

A cross sectional study was conducted by E. Mwaniki and AN Makokha at Kenya based on Children who attended the primary schools in the selected area under age group 4–11 years old. Among the children surveyed, 24.5% were stunted, 14.9% underweight and 9.7% were wasted. There were more boys than girls who were stunted and also incidence of diarrhoea, colds/coughs increased the risk of stunting and underweight among them.(E. Mwaniki and AN Makokha, 2013)

A school based cross-sectional survey was conducted on children (6–17 years) in Manshit El Gamal village in Tamia district of Fayoum Governorate by Wafaa Y. Abdel Wahed et al stated that prevalence of stunting, underweight, and wasting was 34.2%, 3.4%, and 0.9%. Increasing age, reduced poultry consumption, and escaping breakfast were associated factors for stunting. (Wafaa Y. Abdel Wahed,2017)

One in three Indian kids underweight says that malnutrition was the predominant cause of death in children younger than five years in all India states in 2017 and accounted for 68.2 per cent of all under-five deaths. (ICMR,2019)

A new research published in The Lancet Child and Adolescent Health today on disease burden attributable to child and maternal malnutrition in India reveals that malnutrition was also the leading risk factor for health loss for all ages. The disease and disability burden from malnutrition was the highest in Uttar Pradesh, Bihar, Assam and Rajasthan.(ICMR, 2019)

The paper authored by ICMR and Public Health Foundation of India experts shows India struggling to address child malnutrition which has three major indicators — underweight children, stunted and wasted children. The prevalence of child underweight in India was 32.7 per cent in 2017; child stunting was 39.3 per cent and child-wasting (low weight for height) 15.7 per cent. This means nearly one in three children were underweight and two in five were stunted.(ICMR, 2020)

A cross sectional study by Shashank KJ et. al assessed the nutritional status of 284 school going children within the age group of 6-12 years at Bijapur district . According to the results Out of 284 children in their study 97 (34.15%) were underweight and 25% were stunted. (Shashank KJ et. Al, 2013)

A study conducted in 484 children at Karnataka by N C Shivaprakash (2014) observed overall prevalence of underweight was 30.3% (147) and stunting was 27.9%.

Rajesh gautham et al (2014) , studied by selecting total of 300 boys of age group of 5–18 . Height-for-age, weight-for-age and body mass index for age were used to evaluate their nutritional status. It was found that 6.3% of boys were stunted, 4.3% were underweight and 3% were undernourished, whereas as per composite index of anthropometric failure a total of 10% boys were undernourished.

P. Sasikala et al, (2016) showed that under age of 15 years, out of total 613 school going children 49.43% had overall normal nutritional status, 24.14 % Grade-I, 16.48% Grade-II and 9.95% had overall Grade-III. 23.59% (92) had Grade-I, Grade-II 16.15% (63) and Grade-III malnutrition 11.80% (46) respectively in boys of study area in the Government Schools in Anddhrapradesh, where as in girls over all 51.12 % (114), 25.11% (56), 17.04% (38) and 6.73% (15) respectively had the malnutrition in the study area.

A study conducted by Ajit Kumar Dey (2017) indicated that the mean height of boys and girls of the study group was lower than WHO 2007 standards in all age groups. Of the 216 school children, 53, 31 and 111 were stunted/severely stunted, underweight/severely underweight, and thin/very thin, respectively at Assam.

Ruchika et al. (2008), found that mean height and weight in these children were significantly less than the National standards in 150 students of school going age says that 65.33% had haemoglobin level below the normal values, indicating anaemia, out of which 53.33% were mild anaemic and 12% were moderately anaemic in Allahabad

Vandana et al (2012) studied 200 rural school going children of 7-9 years in Hisar district, Haryana, found that 55.5% were underweight and 54.11% of the children were stunted**.**

2.3 CAUSES OF UNDERNUTRITION

Undernutrition can result from inadequate ingestion of nutrients, malabsorption, impaired metabolism, loss of nutrients due to diarrhoea, or increased nutritional requirements (as occurs in cancer or infection). Undernutrition progresses in stages; it may develop slowly when it is due to anorexia or very rapidly, as sometimes occurs when it is due to rapidly progressive cancer-related cachexia. First, nutrient levels in blood and tissues change, followed by intracellular changes in biochemical functions and structure. Ultimately, symptoms and signs appear. Diagnosis is by history, physical examination, body composition analysis (see Body composition analysis), and sometimes laboratory tests (e.g. albumin).(Smritikana Ghosh, 2020)

According to Ayurveda , the indulgence in the etiological factors results in the vitiation of Vata Dosha by virtue of its Ruksha Guna. Vata, Agni and Rasa are interrelated. Vitiation of Vata leads to Agni Dushti and this leads to Vata Prakopa. At this juncture either of them depreciates the quantity and unctuousness of the nourishing Rasa Dhatu which in turn adversely affects the circulation of Rasa Dhatu in the body. This hampers the proper nourishment of the remaining Dhatus, which leads to Dhatu Kshaya and ultimately manifests as Karshya. Here, first Kshaya of circulating Rasa Dhatus occurs which leads to the less nutritional supply to the other Dhatus leading to the depletion and ultimately resulting is Krishata. According to Acharya Sushruta, due to Nidana Sevana, the Rasa Dhatu which gets formed will be less in quantity and Ruksha in nature which does not provide adequate nourishment to the other Dhatus, thus leading to the manifestation of Karshya. (Deepthi Viswaroopan,2017)

According to UNICEF causes for malnutrition and child becomes malnourished because of illness in combination with inadequate food intake. Insufficient access to food, poor health services, the lack of safe water and sanitation, and inadequate child and maternal care are underlying causes. (UNICEF, 2019).

Discrimination against women and girls is an important basic cause of malnutrition. The very high rates of child malnutrition and low birth weight throughout much of South Asia are linked to such factors as women's poor access to education and their low levels of participation in paid employment, compared with other regions. Breastfeeding is the foundation of good nutrition for infants, and inadequate breastfeeding can jeopardize infants' health and nutrition, particularly in areas where sanitation and hygiene are poor.(UNICEF , 2019)

There is controversy concerning the relationship between a mother's employment and her child's nutrition level in several studies. The employment of mothers is beneficial as it provides a feeling of empowerment, while others say employment is detrimental as it results in a less time for the mothers to take care of their children. Increasing a mother's health awareness and education have a positive impact on her child's nutrition. (Poduval. J, 2009)

In short, socio-economic determinants such as income, ethnicity, geographical location, and intra-household parental and child level factors play a crucial role in the nutritional status of children.

2.4. CONSEQUENCES OF UNDERNUTRITION

By a journal published by Hindu newspaper (2019) says that a report by the Ministry of Statistics and Programme Implementation and The World Food Programme lists Maharashtra as one of the six States with high levels of stunting and underweight. The

State also has a prevalence of stunting and wasting .Over the last 20 years, total food grain production in India increased from 198 million tonnes to 269 million tonnes. Despite increase in food production, the rate of malnutrition in India remains very high.

The consumption of unhealthy energy and protein sources is much higher in urban areas. The highest levels of stunting and underweight are found in Jharkhand, Bihar, Uttar Pradesh, Madhya Pradesh, Gujarat and Maharashtra.

At the national level**,** among social groups, the prevalence of stunting is highest amongst children from the Scheduled Tribes (43.6 percent), followed by Scheduled Castes (42.5 percent) and Other Backwards Castes (38.6 percent).

The prevalence of stunting in children from ST in Rajasthan, Odisha and Meghalaya is high while stunting in children from both ST and SC is high in Maharashtra, Chhattisgarh and Karnataka.(India Spend,2019)

Prevalence of wasting is highest in Jharkhand (29.0%) and above the national average in eight more States (Haryana, Goa, Rajasthan, Chhattisgarh, Maharashtra, Madhya Pradesh, Karnataka and Gujarat) and three UTs (Puducherry, Daman and Diu and Dadra and Nagar Haveli).Prevalence of underweight is also highest in Jharkhand (47.8%) above the National average and in seven more States (Maharashtra, Rajasthan, Chhattisgarh, Gujarat, Uttar Pradesh, Madhya Pradesh and Bihar) and one UT (Dadra and Nagar Haveli).(ICMR, 2019)

According to WHO ,Malnutrition refers to deficiencies, excesses, or imbalances in a person's intake of energy and/or nutrients. Children with low weight-for-age are known as underweight. A child who is underweight may be stunted, wasted, or both. There are 4 broad sub-forms of undernutrition: wasting, stunting, underweight, and

deficiencies in vitamins and minerals. Undernutrition makes children in particular much more vulnerable to disease and death.(WHO, 2020)

Low weight-for-height is known as wasting. It usually indicates recent and severe weight loss, because a person has not had enough food to eat and/or they have had an infectious disease, such as diarrhoea, which has caused them to lose weight. A young child who is moderately or severely wasted has an increased risk of death, but treatment is possible.(WHO, 2020)

Low height-for-age is known as stunting. It is the result of chronic or recurrent undernutrition, usually associated with poor socioeconomic conditions, poor maternal health and nutrition, frequent illness, and/or inappropriate infant and young child feeding and care in early life. Stunting holds children back from reaching their physical and cognitive potential.(WHO,2020)

According to UNICEF (2019) , the effects of early malnutrition have long-term consequences. The impacts of nutrient deficiencies in utero or in early childhood affect school performance: for example, stunting serves as a predictor of poor educational outcomes throughout childhood. Reflecting the link between diet and school performance, some school feeding programmes emphasize a diverse diet in foods that provide a range of nutrients.

The Lancet Child and Adolescent Health, (ICMR,2019) analysed the disease burden due to child and maternal malnutrition, and the trends in malnutrition indicators from 1990 to 2017 in every Indian state. This study was part of India State-Level Disease Burden Initiative Malnutrition jointly conducted by the Indian Council of Medical Research**,** Public Health Foundation of India, and Institute for Health Metrics and

Evaluation in collaboration with the Ministry of Health and Family Welfare, along with experts from over 100 Indian institutions.

Anurag Srivastava et al (2012) conducted a study in urban slums in India indicated that health problems due to miserable nutritional status in primary school-age children are among the most common causes of low school enrolment, high absenteeism, early dropout and unsatisfactory classroom performance.

The national family health survey (NFHS) data (2019) show that 53% of children in rural areas are underweight, and this varies across states. Regarding nutritional status, prevalence of stunting and underweight was highest in age group 11 years to 13 years whereas prevalence of wasting was highest in age group 5 years to 7 years. The risk of malnutrition was significantly higher among children living in joint families, children whose mother's education was [less than or equal to] 6th standard and children with working mothers.

A study published by scientists of India State-Level Disease Burden Initiative of Indian Council of Medical Research (ICMR) in Lancet (2019), showed that among the malnutrition indicators, low birth weight is the biggest contributor to disease burden followed by child growth failure which includes stunting, underweight and wasting. The DALY rate attributable to malnutrition in children varies 7-fold between the states and is highest in Rajasthan, Uttar Pradesh, Bihar and Assam, followed by Madhya Pradesh, Chhattisgarh, Odisha, Nagaland, and Tripura

2.5 PREVENTIVE MEASURES

National Nutrition Policy of India has developed many policies and plans to prevent malnutrition in India. (Indian Express,2015) They are:

Direct Policy Measures	Plans, Programmes and Missions
• Expand the safety net through ICDS to cover all vulnerable groups (children, adolescent girls, mothers, expectant women) • Fortify essential foods with appropriate nutrients (e.g., salt with iodine and/or iron) • Popularise low cost nutritious food • Control micro-nutrient deficiencies amongst vulnerable groups **Indirect Policy Measures** • Ensure food security through increased production of food grains • Improve dietary pattern by promoting production and increasing per capita availability of nutritionally rich food • Effecting income transfers (improve purchasing power of landless, rural and urban poor; expand and improve public distribution system)	• Mid-day Meal Programme, 1962-63 • Goitre Control Programme, 1962 (now known as National Iodine Deficiency Disorders Control Programme) • Special Nutrition Programme, 1970-71 • Balwadi Nutrition Programme, 1970-71 • Nutritional Anaemia Prophylaxis Programme, 1970 • Prophylaxis Programme against Blindness due to Vitamin A Deficiency, 1970 • Integrated Child Development Services (ICDS), 1975

• Other: Implement land reforms (tenure, ceiling laws) to reduce vulnerability of poor; increase health and immunisation facilities, and nutrition knowledge; prevent food adulteration; monitor nutrition programmes and strengthen nutrition surveillance; community participation	• National Diarrhoeal Diseases Control Programme, 1981 • Wheat-based Supplementary Nutrition Programme, 1986 • National Plan of Action on Nutrition, 1995 • Public Distribution System, 1997 • National Nutrition Mission, 2003 • National Health Mission, 2013 (subsumes former Rural & Urban Health Missions) • National Iron+ Initiative, 2013 • Promotion of Infant & Young Child Feeding Practices Guidelines, 2013 • Weekly Iron & Folic Acid Supplementation, 2015 • National Deworming Day, 2015

	• Establishment of: Nutritional Rehabilitation Centres; Village Health Sanitation & Nutrition Committee • Bi-annual Vitamin-A Supplementation • Village Health & Nutrition Days (at Anganwadi centers)

Save the Children is India's leading independent child rights' NGO (2018), which works in 18 states of the country., Beginning its journey in 2008 in India, and registered as 'Bal Raksha Bharat' suggests 2 ways to decrease malnutrition in India are by educating about nutrition and enhancing mid day meal programmes. They also recommend to have good hygiene practices and support fortification practises.

Ministry of women and child development government of India initiates that over past few years, several programmes and schemes with the potential to improve the current nutritional situation of the country have been launched and expanded. Several of these schemes namely National Rural Health mission , National Horticulture Mission, Normal Bharath Abhiyan , Integrated Child Development Service etc provides supplements, nutritional care , growth monitoring , immunisation , deworming, follow up check-ups, manages childhood illness and undernutrition, health education and counselling to caregivers to maintain nutritional status among mothers and children. (Government of India, 2012)

METHODOLOGY

3 METHODOLOGY

The methodology followed during the study entitled **"INCIDENCE OF UNDERWEIGHT AMONG SCHOOL GOING CHILDREN AND KNOWLEDGE, ATTITUDE AND PRACTICE ASSESSMENT OF THEIR PARENTS"** is explained under following headings

3.1 SELECTION OF AREA

3.2 SELECTION OF SUBJECT

3.3 SELECTION OF TOOL

3.4 COLLECTION OF DATA

3.5 ANALYSIS AND INTERPRETATION OF DATA

3.1 SELECTION OF AREA

Three private schools were selected for the study which were located in Perumbavoor, Kolenchery and Muvattupuzha respectively.

3.2 SELECTION OF SUBJECTS

Totally 132 students within the age group of 7-10 were selected for the study. From these 132 students, underweight subjects were selected using anthropometric measurements for further study. By using BMI –Age percentile tool , 60 students were diagnosed as underweight. Knowledge, attitude and practice of the parents of these 60 underweight subjects were assessed using self-structured questionnaire.

A sample is a group of people, objects, or items that are taken from a larger population for measurement. The sample should be representative of the population to ensure that we can generalise the findings from the research sample to the population as a whole.(Jon Zamboni,2018)

Sampling is a process used in statistical analysis in which a predetermined number of observations are taken from a larger population. The methodology used to sample from a larger population depends on the type of analysis being performed, but it may include simple random sampling or systematic sampling. (Alicia Tuovila, 2020)

3.3 SELECTION OF TOOL

A self-structured questionnaire was developed to assess the knowledge, attitude and practices of the parents of 60 underweight subjects. The questions were included to assess the knowledge, attitude and practices about underweight. Knowledge assessing questionnaire included the questions about basic knowledge on BMI, hydration, physical activity, healthy lifestyles and attitude questionnaire included questions to know their attitude towards healthy intentions. Practise questionnaire contained the questions about good practises they are following in food intake, lifestyle modifications and all.

Scale used to give scores for questionnaire was five point likert scale. There was 12 questions were asked to evaluate knowledge of parents and total of 48 scores were awarded overall. 8 questions were there for analysing their attitude and overall scores awarded was 32. To understanding the practices of parents, 21 questions were asked and total marks awarded was 84. A type of psychometric response scale was used for this study, to which the responders specify their level of agreement to a statement typically in five points: (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree.

A Knowledge, Attitude and Practices (KAP) survey is a quantitative method (predefined questions formatted in standardized questionnaires) that provides access to quantitative and qualitative information (USAID,2011)

A questionnaire is simply a list of mimeographed or printed questions that is completed by or for a respondent to give his opinion (Roopa et al., 2012).

In addition to measuring statements of agreement, Likert scales can measure other variations such as frequency, quality, importance, and likelihood, etc. (Preedy V.R., Watson R.R,2010)

3.4 COLLECTION OF DATA

For the current study data was collected through self-structured online questionnaire. Online questionnaires were circulated among parents as Google forms. Information like education of parents, food pattern of children, food frequencies, dietary recalls were also included in the questionnaire. The details regarding dietary assessment and eating pattern were also collected.

4.1 Anthropometric measurement

Height

Height was measured in children using a stadiometer. The stadiometer is mounted on the wall for this purpose, and the child is asked to remove any footwear and/or head ornaments before noting the measurement. With the buttocks, the shoulder blades, and the back of the head against the board, the head is oriented in the Frankfurt horizontal plane (FH plane), and the headpiece gets firmly placed on the head. The reading is noted to the nearest tenth of a centimeter.

Weight

Subject was asked to remove any 'heavy' items from their pockets and remove any heavy items of clothing or apparel. Zero the scales before the subject to steps onto them.

Before measuring weight subject was asked to look straight ahead and stay still on the scales. Measurements were read from digital screen .

BMI AGE PERCENTILE

BMI, formerly called the Quenelles Index, is a measure for indicating nutritional status of an individual .BMI of each respondent was calculated by dividing weight (in kg) with height (in meter^2). The ratio of weight in Kg/Height (m^2) is referred to as Body Mass Index (BMI). (WHO., 2004)

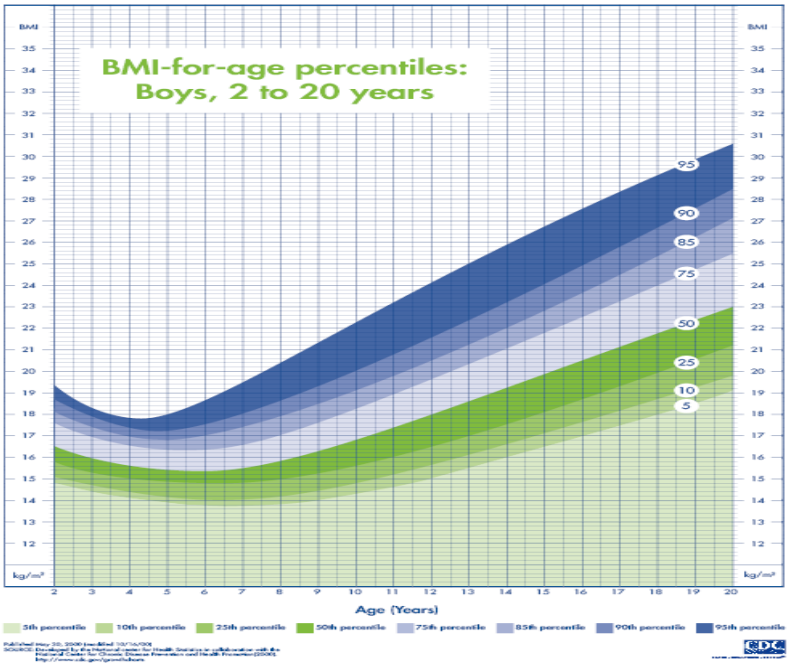
BMI= Weight (kg) /Height (m^2)

For children and teens, BMI is age- and sex-specific and is often referred to as BMI-for-age. A child's weight status is determined using an age- and sex-specific percentile for BMI rather than the BMI categories used for adults. This is because children's body composition varies as their age and varies between boys and girls. Therefore, BMI levels among children and teens need to be expressed relative to other children of the same age and sex.

Determine BMI-for-age percentile (%ile) by plotting BMI value on the CDC/NCHS "BMI-for-age percentiles" boys or girls growth chart. Record BMI percentile on the PM 160 by estimating a whole number between 1 and 99 that best represents the percentile point (intersection of BMI value and age) plotted on the growth chart.

PERCENTILE	BODYWEIGHT
< 5th %ile	Underweight
5th – 84th %ile	Healthy weight
85- 94th %ile	Overweight
95-98th%ile	Obese
≥ 99th %ile	Severe obese

BMI Age PERCENTILE



Weight Status category	Percentile range
Underweight	Less than 5th percentile
Healthy Weight	5th - 85th percentile
Overweight	85th - 95th percentile
Obesity	95th percentile and greater

PLATE 1. BMI AGE PERCENTILE, BOYS

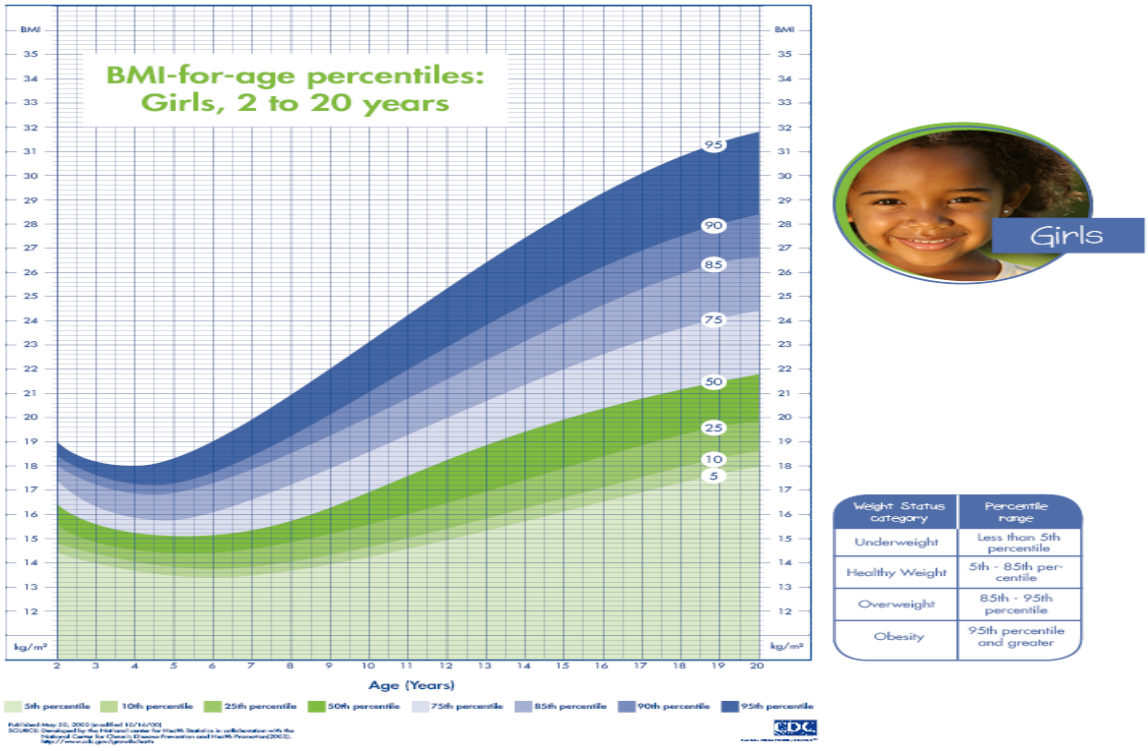


PLATE 2. BMI AGE PERCENTILE GIRLS

3.5 ANALYSIS AND INTERPRETATION OF DATA

Question answers were marked using five point likert scale. Points were awarded for each answer on questionnaire and scores were calculated for parental knowledge, attitude and practices. In order to interpret the data statistical methods such as Mean, Mode, 2 tailed test, Pearson correlation and Standard deviation were used. Scores were calculated as continuous numerical variables and converted into categorical variables as low, moderate and high. 2 Tailed test was done to check the significance of hypothesis. Pearson correlation was done to check whether there is any relation between selected variables. IBM-SPSS 21 was used to do the statistical works for accurate results.

RESULT AND DISCUSSION

4. RESULT AND DISCUSSION

The result and discussion of the study entitled "**INCIDENCE OF UNDERWEIGHT AMONG SCHOOL GOING CHILDREN AND KNOWLEDGE, ATTITUDE AND PRACTICE ASSESSMENT OF THEIR PARENTS"** is explained under following headings.

4.1 ANTHROPOMETRIC ASSSESSMENT OF SCHOOL GOING CHILDREN

4.1.1 ANTHROPOMETRIC ASSESSMENT OF SUBJECTS

4.1.2 ASSESSMENT OF UNDERWEIGHT AMONG SUBJECTS

4.2 PERSONAL INFORMATION

4.2.1 AGE OF CHILDREN

4.2.2 EDUCATIONAL QUALIFICATION OF PARENTS

4.3 KNOWLEDGE OF PARENTS

4.4 ATTITUDE OF PARENTS

4.5 PRACTICES OF PARENTS

4.6 DEVELOPMENT OF RECIPIE OUTLET

4.7 TESTING HYPOTHESIS

4.1 ANTHROPOMETRIC ASSSESSMENT OF SCHOOL GOING CHILDREN

4.1.1 ANTHROPOMETRIC ASSESSMENT OF SUBJECTS

CATEGORY	NUMBER OF STUDENTS	%
UNDERWEIGHT	60	46%
NORMAL	62	47%
OVERWEIGHT	10	7%

TABLE 1 : ANTHROPOMETRIC ASSESSMENT

132 subjects were selected for the study where 46% of the subjects were underweight and they were selected for the further study. It also showed that 47% of the subjects were normal and 7% were overweight.

4.1.2 ASSESSMENT OF UNDERWEIGHT

PERCENTILE $<5^{TH}$ PERCENTILE	NUMBER OF STUDENTS	%	BOYS	GIRLS
12	9	16%	4	5
13	21	36%	7	14
14	22	38%	10	12
15	6	10%	2	4

TABLE 2: ASSESSMENT OF UNDERWEIGHT

By using BMI Age percentile tool for 60 underweight students 38% showed BMI of 14, 36% showed BMI of 13, 16% showed BMI of 12 and 10% showed BMI of 15.

Results shows that 4 boys and 5 girls were coming under BMI as 12, 7 boys and 14 girls were under BMI as 13, 10 boys and 12 girls expresses BMI as 14 and 2 boys and 4 girls were under BMI of 15. Therefore the results is concluded that the girls had more prevalent under weight when compared to boys.

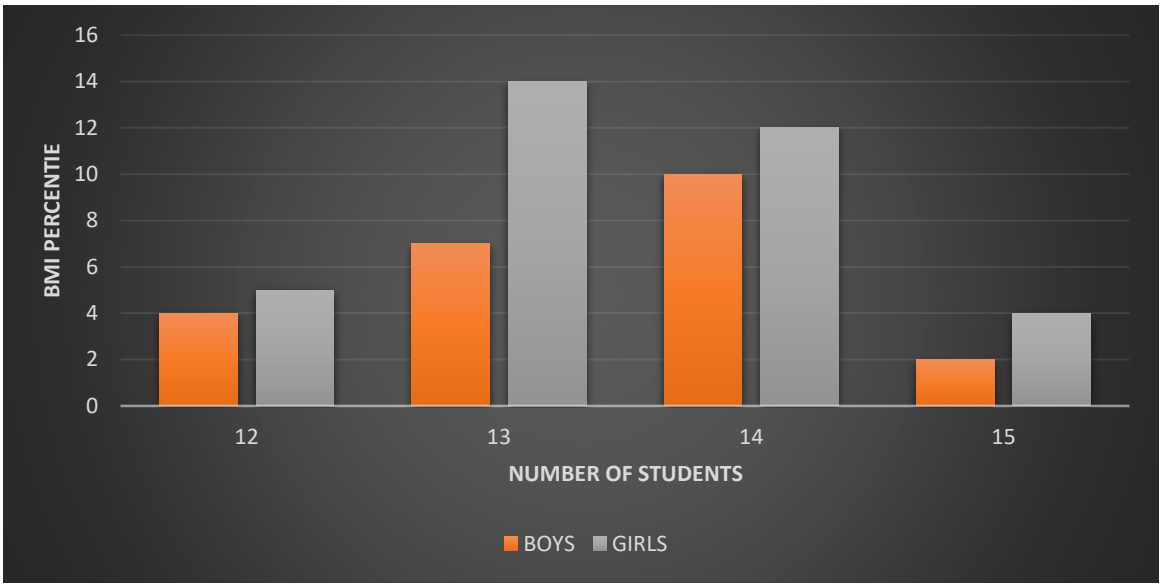


FIGURE 1: NUMBER OF STUDENTS

Results shows that combining all the results among 60 subjects 23 boys and 37 girls were underweight with different BMI.

4.2 PERSONAL INFORMATION

4. 2.1 AGE

Age	Number of students
7 years	25
8 years	32
9years	43
10years	32

TABLE 3 : AGE

Out of 132 students 25 were 7 years old, 32 were 8 years old, 43 were 9 years old and 32 were 10 years old

4. 2.2 EDUCATIONAL QUALIFICATION OF PARENTS

EDUCATIONAL QUALIFICATION	NUMBER	%
POST GRADUATE	6	10%
DEGREE	25	42%
DIPLOMA	7	11%
PLUS TWO	12	20%
SSLC	10	17%

TABLE 4: EDUCATIONAL QUALIFICATION

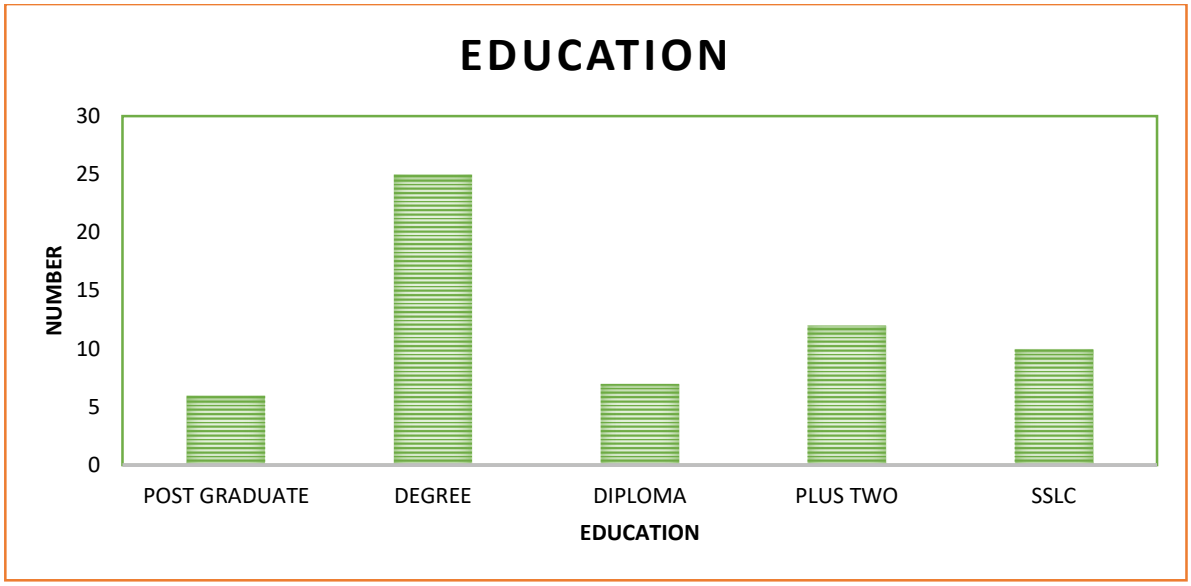


FIGURE 2 : EDUCATIONAL QUALIFICATION

Results showed that 42 % of total subjects were graduated, 10 % were post graduated, 11% completed diploma and 20% and 17% completed higher secondary and high school education.

4.3 KNOWLEDGE OF PARENTS

4. 3.1 KNOWLEDGE ABOUT BMI

SCALE	NUMBER OF PEOPLE	%
DEFINITELY	26	43.3%
PROBABLY	13	21.7%
PROBABLY NOT	4	6.7%
DEFINITELY NOT	3	5%
DON'T KNOW	14	23.3%

TABLE 5 : KNOWLEDGE ABOUT BMI

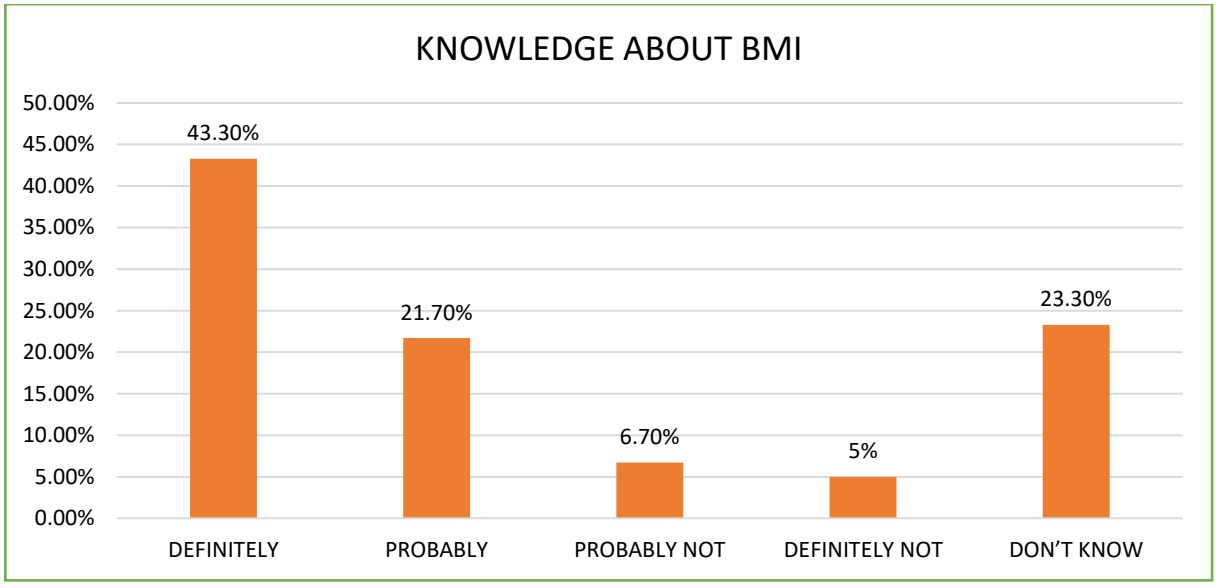


FIGURE 3 : KNOWLEDGE ABOUT BMI

Results shows that 43.3 % of parents stated that they had knowledge about BMI entity, 21.7% stated that they probably knew what is BMI and 23.3 % didn't knew what was BMI.

4. 3.2 FASTING AND SKIPPING MEALS

SCALE	NUMBER OF PEOPLE	%
DEFINITELY	36	60%
PROBABLY	16	26.7%
PROBABLY NOT	5	8.3%
DEFINITELY NOT	0	0
DON'T KNOW	3	5%

TABLE 6 : FASTING AND SKIPPING MEALS

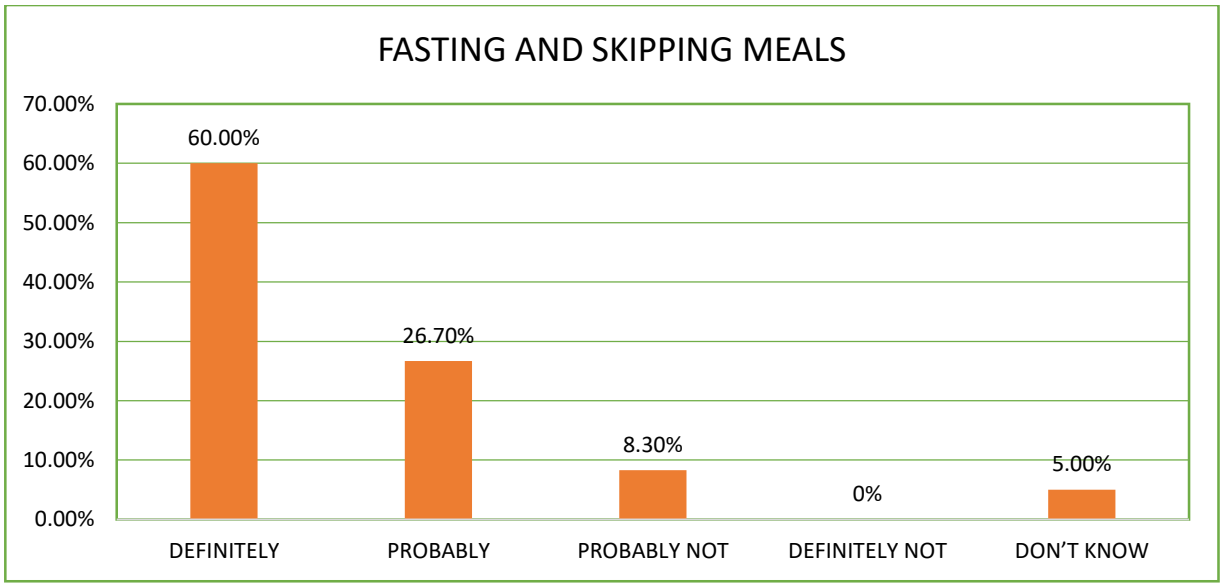


FIGURE 4 : FASTING AND SKIPPING MEALS

Results show that out of 60 parents of the subjects taken 60% knew that fasting and skipping meals leads to weight loss and 26.7% probably knew the fact, 8.30% probably didn't, 5% didn't knew

4.3.3 PHYSICAL ACTIVITY AND HEALTH

SCALE	NUMBER OF PEOPLE	%
DEFINITELY	51	85%
PROBABLY	4	6.7%
PROBABLY NOT	2	3.3%
DEFINITELY NOT	1	1.7%
DON'T KNOW	2	3.3%

TABLE 7: PHYSICAL ACTIVITY

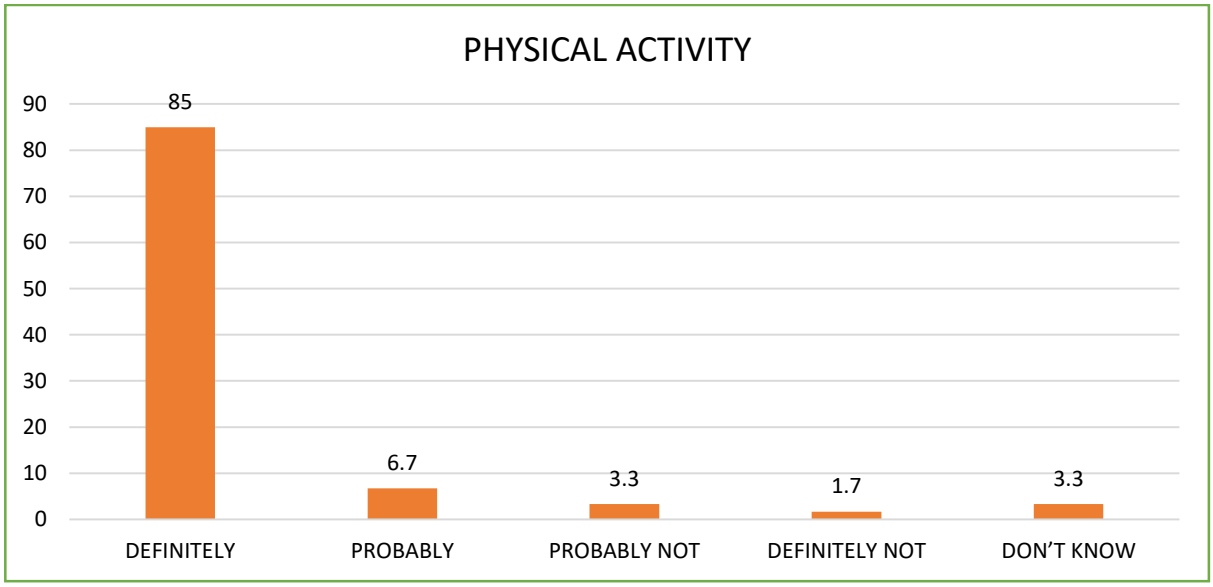


FIGURE 5: PHYSICAL ACTIVITY

Results shows 85% knew there is a relationship between physical activity and health status, 6.7% probably knew, 3.3% probably didn't k knew ,1.7% definitely didn't knew and3.3% do not know

4.3.4 IMPORTANCE OF BREAK FAST

SCALE	NUMBER OF PEOPLE	%
DEFINITELY	54	90%
PROBABLY	3	5%
PROBABLY NOT	2	3.7%
DEFINITELY NOT	1	1.3%
DON'T KNOW	0	0%

TABLE 8 : IMPORTANCE OF BREAKFAST

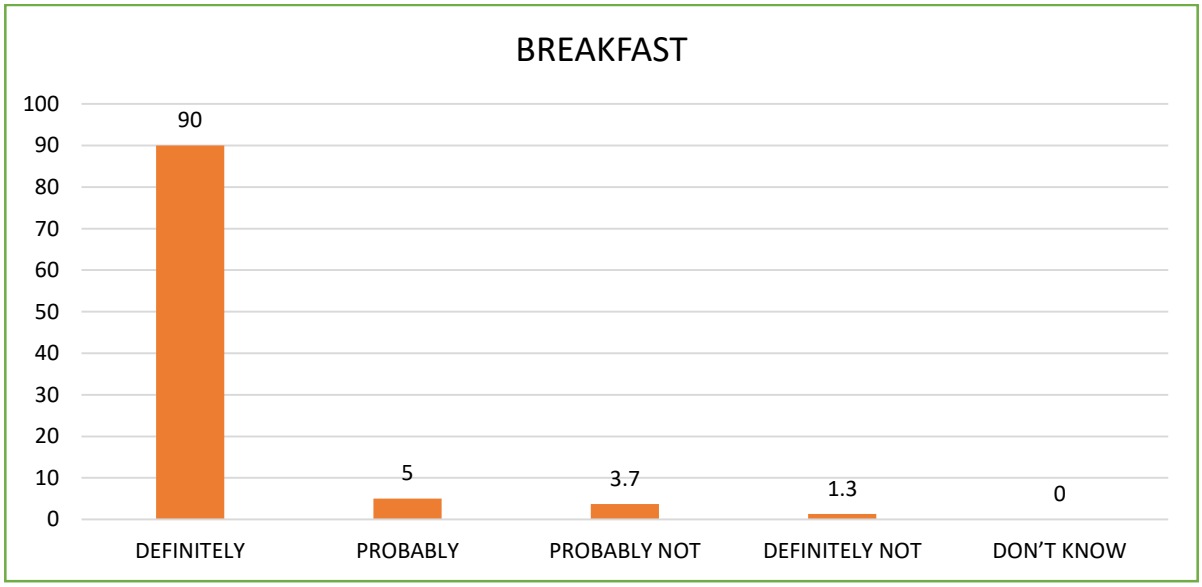


FIGURE 6 : IMPORTANCE OF BREAKFAST

Results shows that 90% of the subject population stated that breakfast is essential for optimum health, 5% probably knew, 3.7% probably didn't knew, 1.3% definitely not knew.

4.3.5 IMPORTANCE OF HYDRATION

SCALE	NUMBER OF PEOPLE	%
DEFINITELY	49	81.7%
PROBABLY	8	13.3%
PROBABLY NOT	2	3.3%
DEFINITELY NOT	0	0%
DON'T KNOW	1	1.7%

TABLE 9 : IMPORTANCE OF HYDRATION

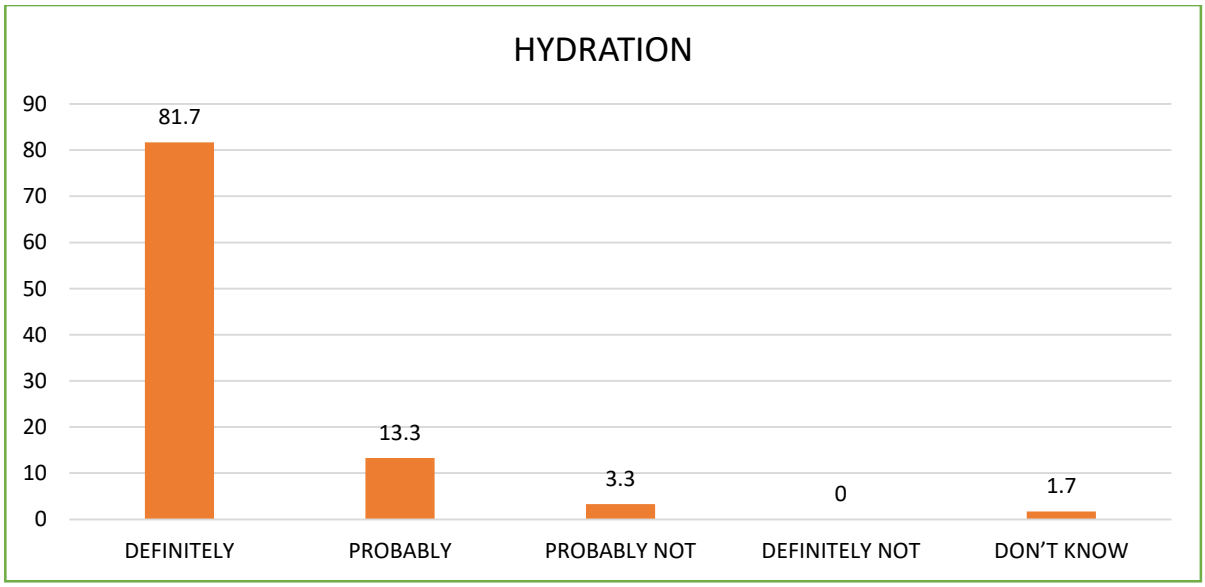


FIGURE 7 : IMPORTANCE OF HYDRATION

After evaluating knowledge of hydration 81.7% of subject population stated that drinking water is essential and 13.3% stated that they probably knew the importance of drinking water, 13.3% probably didn't knew and 1.7% didn't knew.

4.3.6 KNOWLEDGE REGARDING PHYSICAL SHAME OF THEIR CHILD

SCALE	NUMBER OF PEOPLE	%
DEFINITELY	11	18.3%
PROBABLY	16	26.7%
PROBABLY NOT	12	20%
DEFINITELY NOT	19	31%
DON'T KNOW	2	3.3%

TABLE 10 : PHYSICAL SHAME

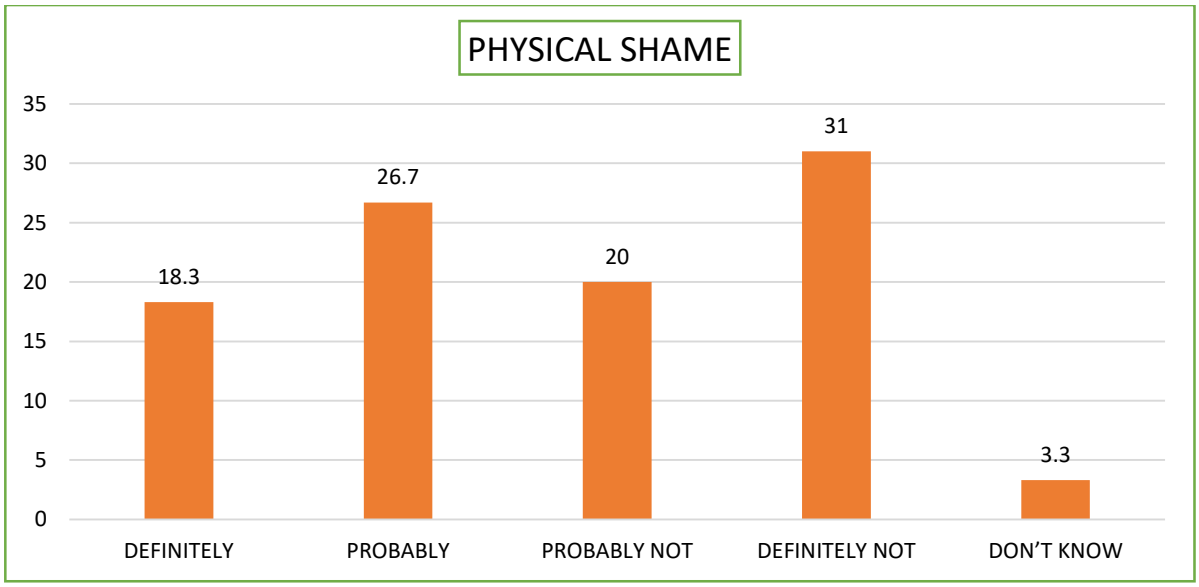


FIGURE 8 : PHYSICAL SHAME

Results shows that 18.3% of subject population knew that their child was facing physical shame regarding their appearance. 26.7% probably knew , 20% stated probably not and 31.7% stated definitely not regarding the physical shame faced by their children

4.3.7 BALANCED DIET

SCALE	NUMBER OF PEOPLE	%
DEFINITELY	31	51.7%
PROBABLY	20	33.3%
PROBABLY NOT	10	10%
DEFINITELY NOT	1	1.7%
DON'T KNOW	2	3.3%

TABLE 11 : BALANCED DIET

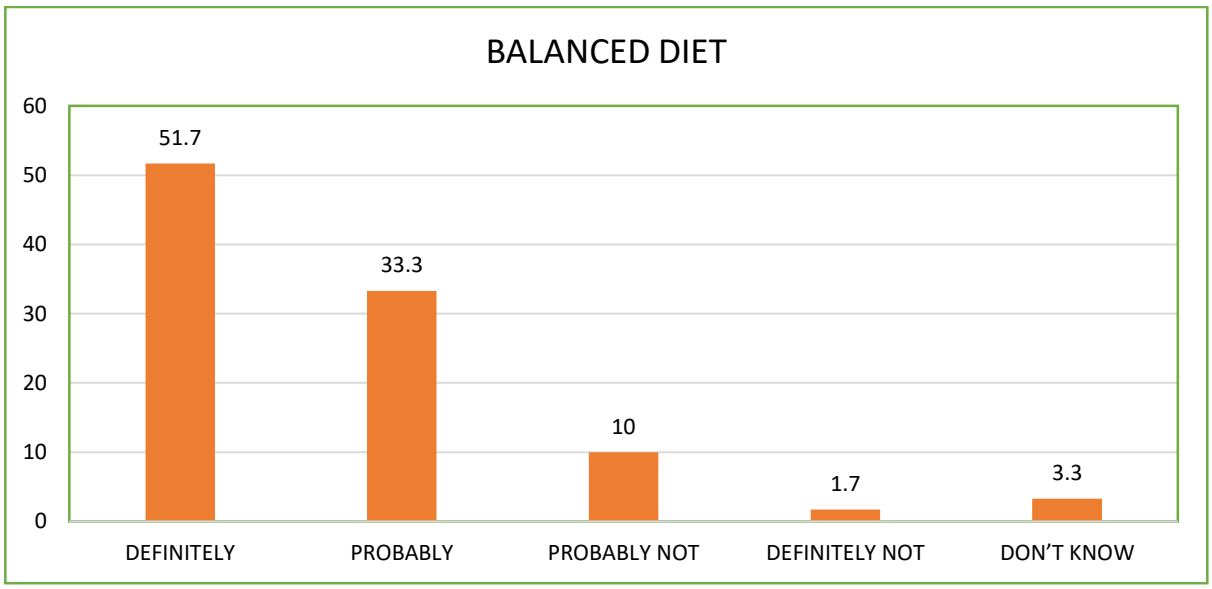


FIGURE 9 : BALANCED DIET

Results show that knowledge regarding balanced diet, 51.7% stated that they know what is balanced diet and 33.3% stated that they probably knew and 10% sated that the probably not know what is balanced diet.

4.3.8 FOOD INATKE DURING LOCKDOWN PERIOD

SCALE	NUMBER OF PEOPLE	%
DEFINITELY	24	40%
PROBABLY	24	40%
PROBABLY NOT	5	8.3%
DEFINITELY NOT	3	5%
DON'T KNOW	4	6.7%

TABLE 12 : FOOD INTAKE DURING COVID

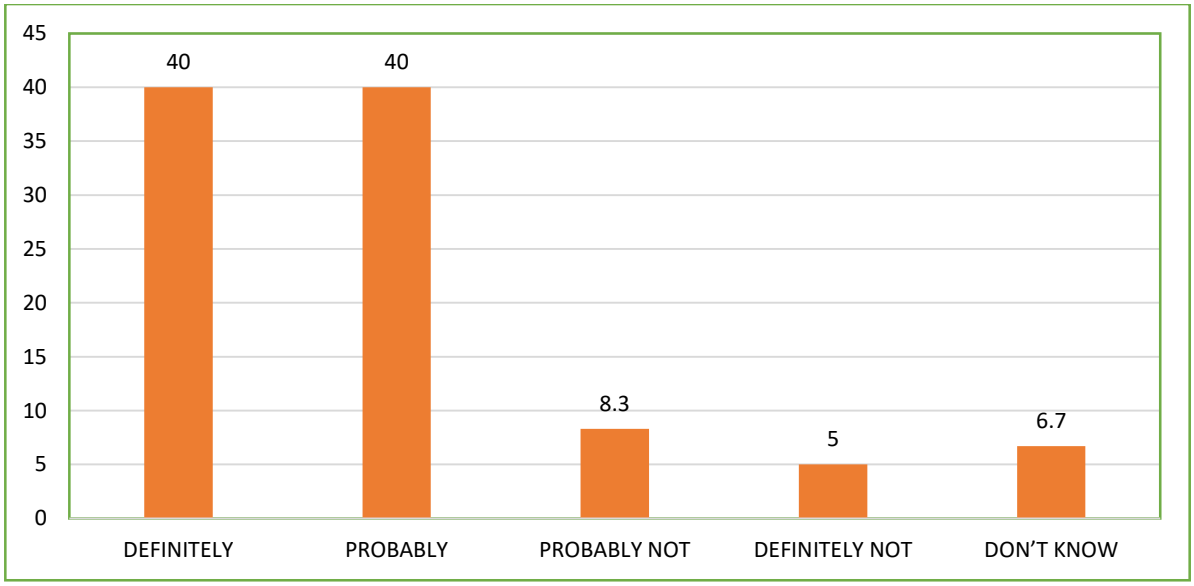


FIGURE 10 : FOOD INTAKE DURING COVID

Results shows that out of 60 subjects 40% stated that they definitely noticed the increment and decrease of food intake of their child during lockdown and 40% stated that they probably noticed their intake , 8.3% probably do not, 5% definitely not and 6.7% said that didn't noticed.

4.3.9 KNOWLEDGE REGARDING THE WEIGHT OF CHILD

SCALE	NUMBER OF PEOPLE	%
VERY UNDER WEIGHT	1	1.7%
SLIGHTLY UNDERWEIGHT	13	21.7%
ABOUT RIGHT WEIGHT	37	61.7%
UNDERWEIGHT	6	10%
DON'T KNOW	3	5%

TABLE 13 : KNOWLEDGE REGARDING WEIGHT

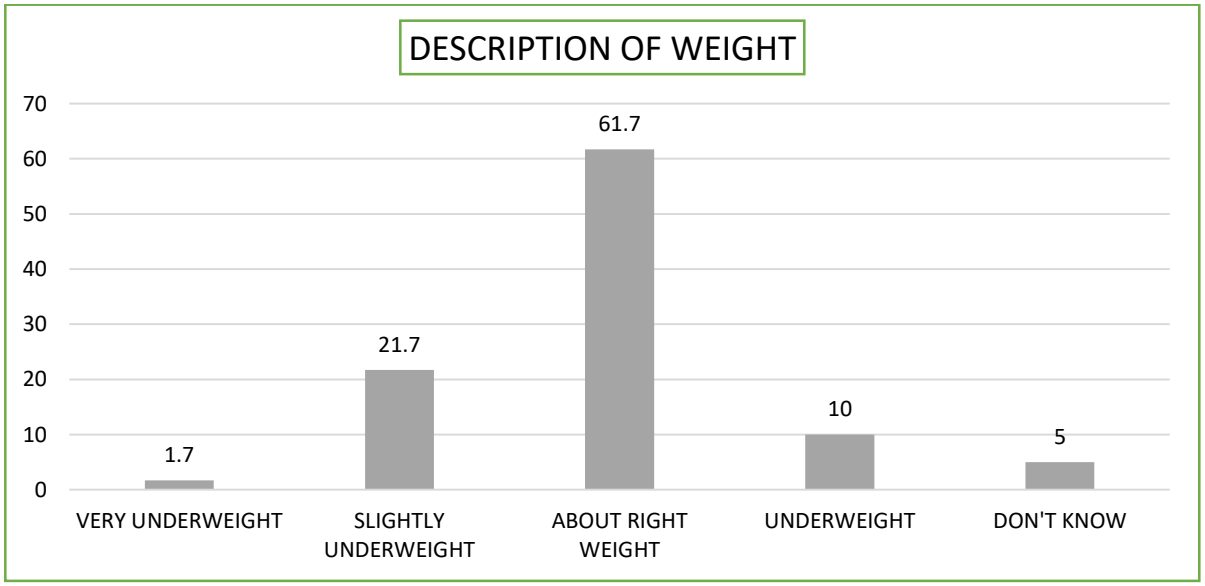


FIGURE 11 : KNOWLEDGE REGARDING WEIGHT

Results show that 61.7% stated that their child was about right weight, 21.7% stated that the child was slightly underweight and only 10% knew that their child was underweight, 5% didn't know their child's weight.

4.3.10 EVALUATION OF PLAYTIME

SCALE	NUMBER OF PEOPLE	%
NEVER	9	15%
SOMETIMES	41	68.3%
PROBABLY	7	11.7%
ALWAYS	1	1.7%
DON'T KNOW	2	3.3%

TABLE 14 : EVALUATION OF PLAYTIME

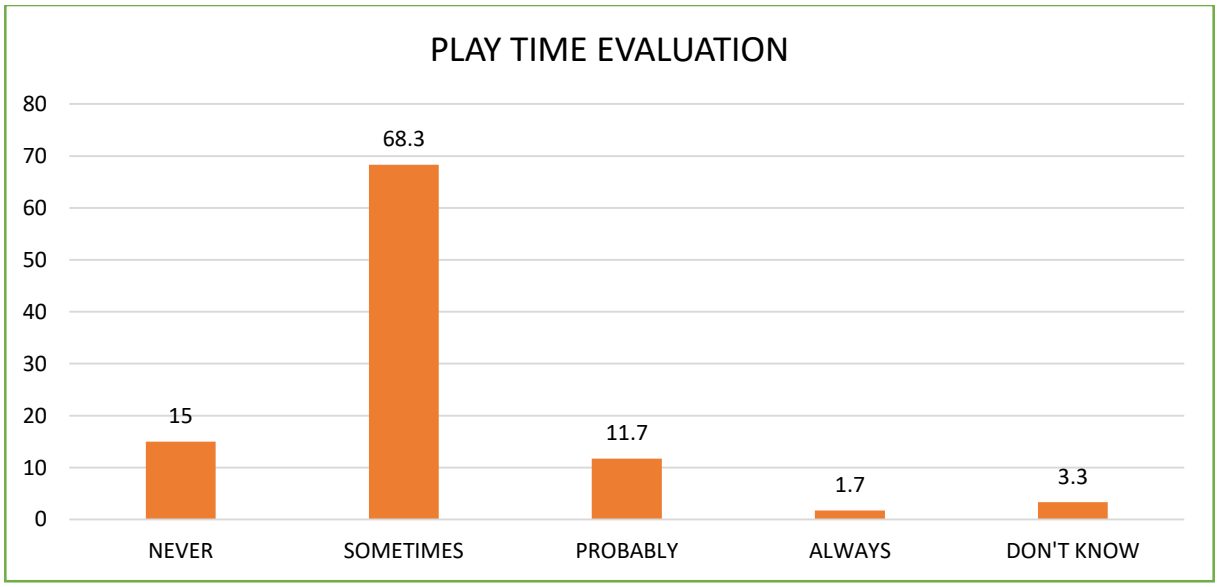


FIGURE 12: EVALUATION OF PLAY TIME

Results shows that out of 60 subjects , 68.3% stated that their child seems to be sometimes tired after playing for a while.11.7% stated that they probably noticed and 15% said that they never noticed

4.3.11 KNOWLEDGE REGARDING OTHER PROTEIN SOURCE

SCALE	NUMBER OF PEOPLE	%
DEFINITELY	37	61.7%
PROBABLY	15	25%
PROBABLY NOT	5	8.3%
DEFINITELY NOT	0	0%
DON'T KNOW	3	5%

TABLE 15: KNOWLEDGE REGARDING OTHER PROTEIN SOURCE

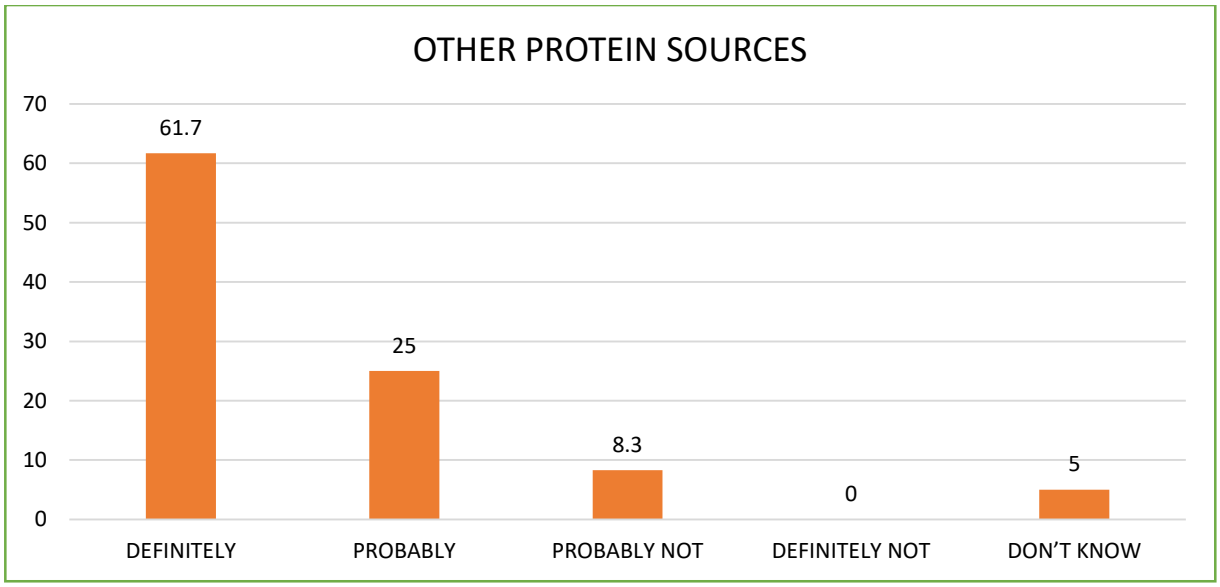


FIGURE 13 : KNOWLEDGE REGARDING OTHER PROTEIN SOURCES

Results shows that out of 60 subjects, 61.7% definitely knew protein sources other than meat and 25 % probably knew the fact and 5% didn't knew any other sources.

4.3.12 USAGE OF ADDITIONAL NUTRIENT SUPPLEMENT

SCALE	NUMBER OF PEOPLE	%
YES	31.7	19%
NO	50	30%
CHILD IS NOT INTRESTED	5	8.3%
DONOT BUY	2	3.3%
DON'T KNOW	3	5%

TABLE 16 : USAGE OF ADDITIONAL NUTRIENT SUPPLEMENT

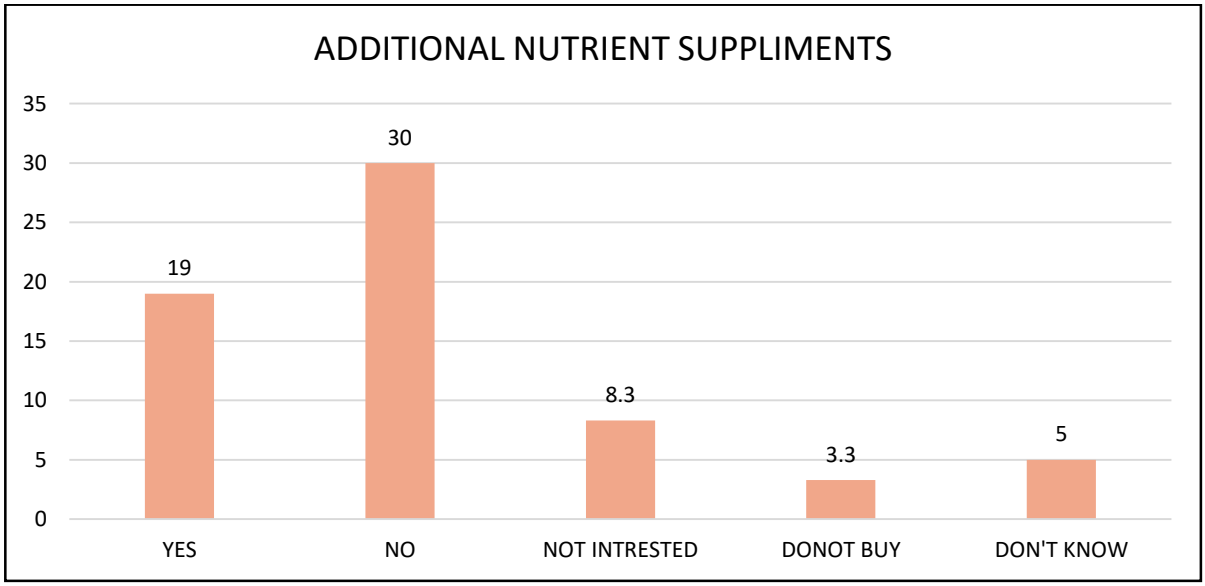


FIGURE 14: USAGE OF OTHER NUTRIENT SUPPLEMENT

Results shows that regarding additional nutrient supplements 19% stated that they used additional supplements provided by government and 30% said that they do not**.** 8.3% said that their child is not interested, 3.3% didn't bought and 5% said that they didn't know if there are such supplements available.

4. 4. ATTITUDE

4. 4.1 CONSIDERING BREAKFAST AS A HEALTHY PRACTICE

SCALE	NUMBER OF PEOPLE	%
STRONGLY DISAGREE	2	3.4%
DISAGREE	2	3.4%
NEITHER AGREE OR DISAGREE	1	1.7%
AGREE	28	47.55
STRONGLY AGREE	27	44.1%

TABLE 17: CONSIDERING BREAKFAST AS HEALTHY PRACTICE

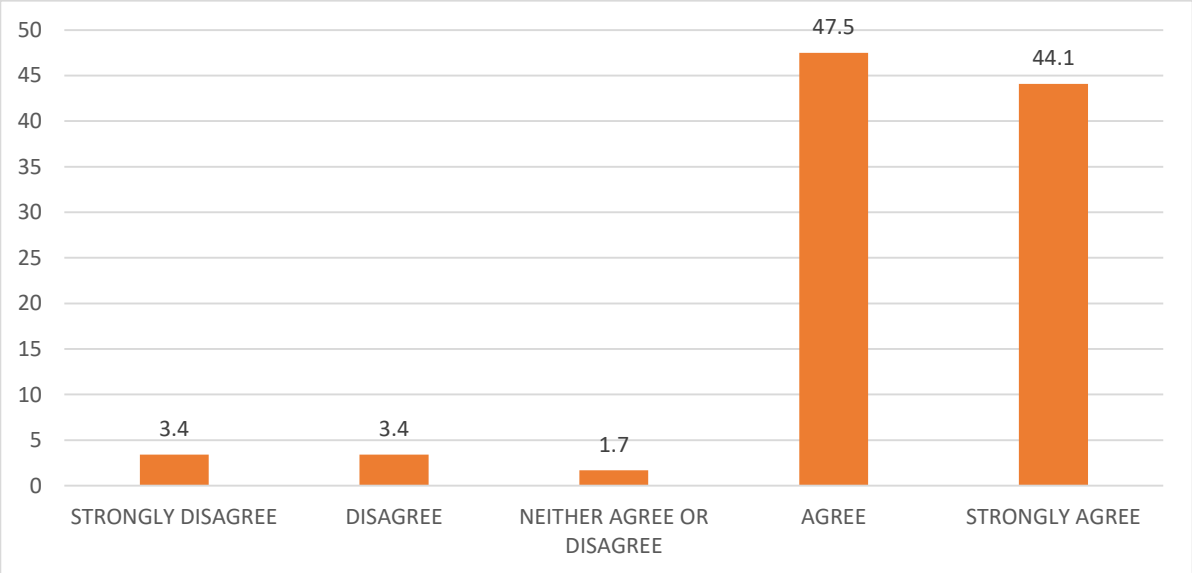


FIGURE 15 : CONSIDERING BREAKFAST AS A HEALTHY PRACTICE

Results shows that 47.5% agreed that they consider having breakfast is a healthy practice, 44.1% agreed, 1.7% neither agreed nor denied, 3.4% disagreed the concept and 3.4% strongly disagreed.

4.4.2 SMALL AND FREQUENT MEALS HELPS IN WEIGHT GAIN

SCALE	NUMBER OF PEOPLE	%
STRONGLY DISAGREE	1	1.7%
DISAGREE	7	11.7%
NEITHER AGREE/DISAGREE	3	5%
AGREE	41	71.7%
STRONGLY AGREE	6	10%

TABLE 18: SMALL AND FREQUENT MEALS

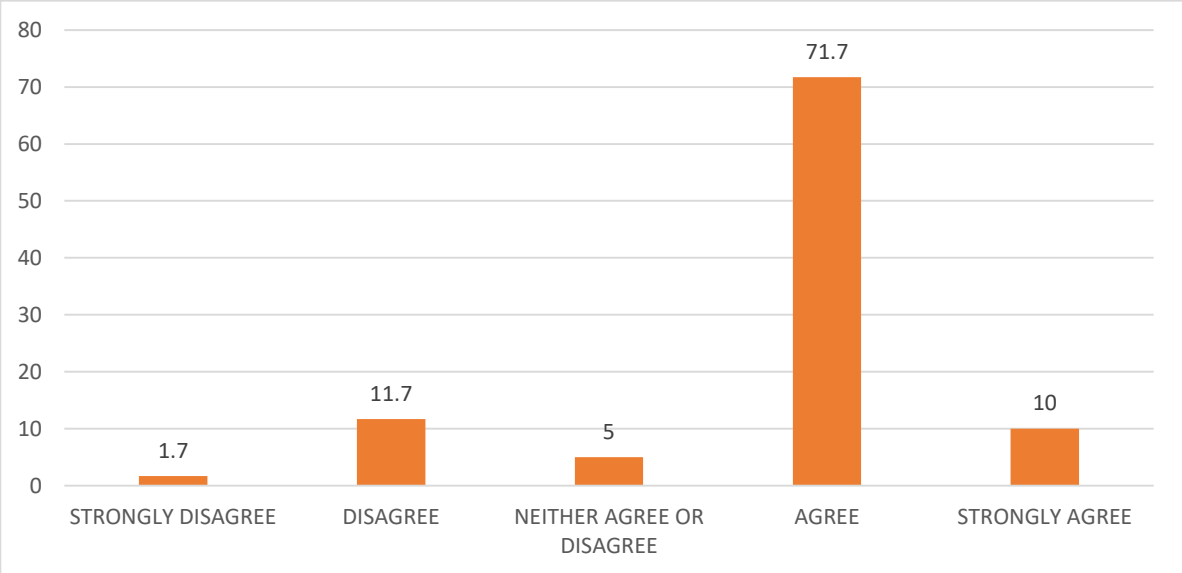


FIGURE 16: SMALL AND FREQUENT MEALS

Results shows that out of 60 subjects 71.7% agreed that small and frequent meals helps in gaining weight , 10% agreed to statement , 5% neither agreed nor denied the statement and 11.7% showed disagreement to the statement and 1.7% strongly disagreed

4.4.3 ADEQUATE PHYSICAL ACTIVITY

SCALE	NUMBER OF PEOPLE	%
STRONGLY DISAGREE	0	0%
DISAGREE	4	6.7%
NEITHER AGREE OR DISAGREE	11	18.3%
AGREE	39	65%
STRONGLY AGREE	6	10%

TABLE 19 : PHYSICAL ACTIVITY

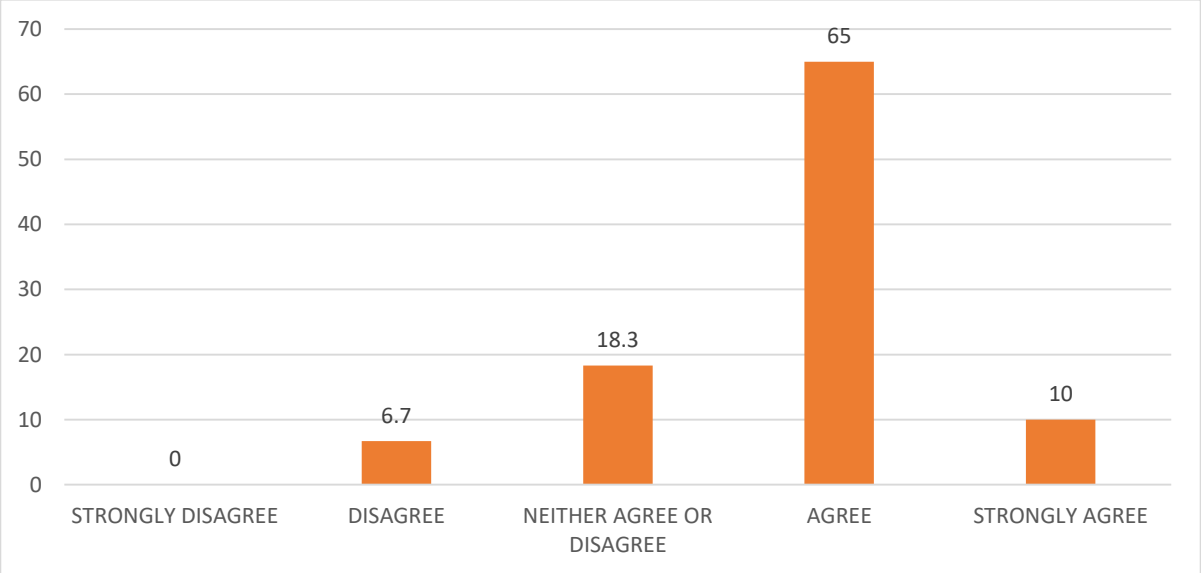


FIGURE 17: PHYSICAL ACTIVITY

Results showed that 65% believed that their child have adequate physical activity, 10% agreed the statement, 18.3% neither agreed nor denied the statement, 6.7% disagreed and no one strongly disagreed

4.4.4 DEPRESSED WHEN CHILD IS UNDERWEIGHT

SCALE	NUMBER OF PEOPLE	%
STRONGLY DISAGREE	2	3.3%
DISAGREE	10	16.7%
NEITHER AGREE OR DISAGREE	8	13.3%
AGREE	36	60%
STRONGLY AGREE	4	6.7%

TABLE 20: DEPRESSED DUE TO UNDERWEIGHT

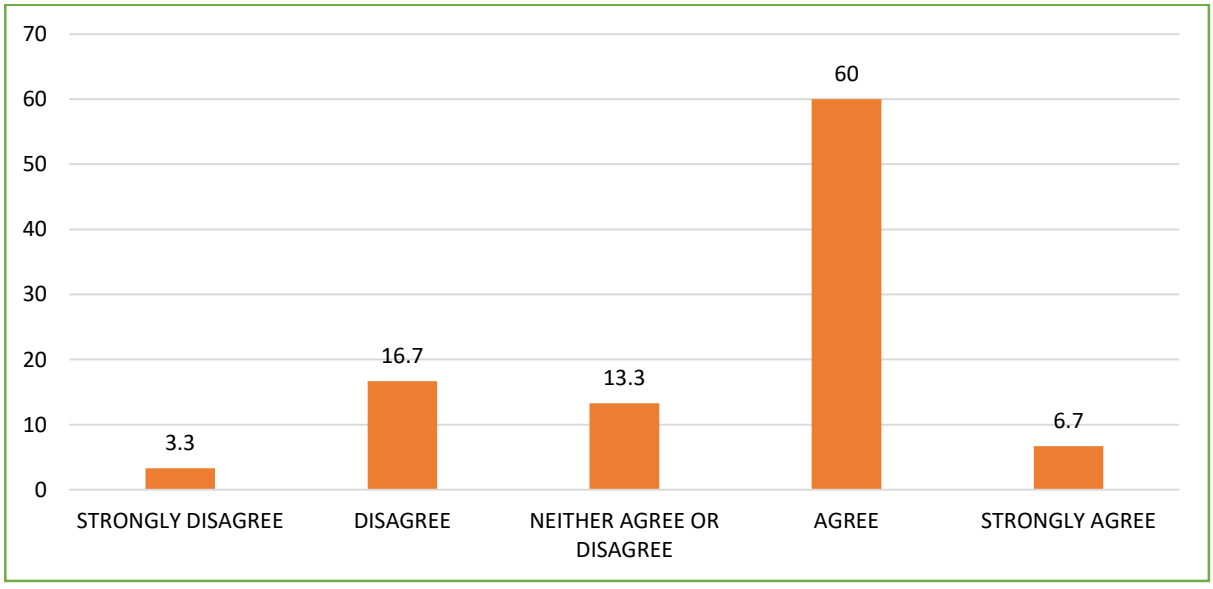


FIGURE 18: DEPRESSED DUE TO UNDERWEIGHT

Result shows that 60% agreed that they feel depressed when their child seems to be underweight. 6.7% showed strong agreement, 13.3% neither agreed nor denied the concept, 16.7% showed disagreement and 3.3% strongly disagreed

4.4.5 DAILY REQUIREMENT FOR FAMILY

SCALE	NUMBER OF PEOPLE	%
DON'T KNOW	2	3.3%
DEFINITELY NOT	2	3.3%
PROBABLY NOT	2	3.3%
PROBABLY	19	31.7%
DEFINITELY	35	58.3%

TABLE 21: DAILY REQUIREMENT OF FAMILY

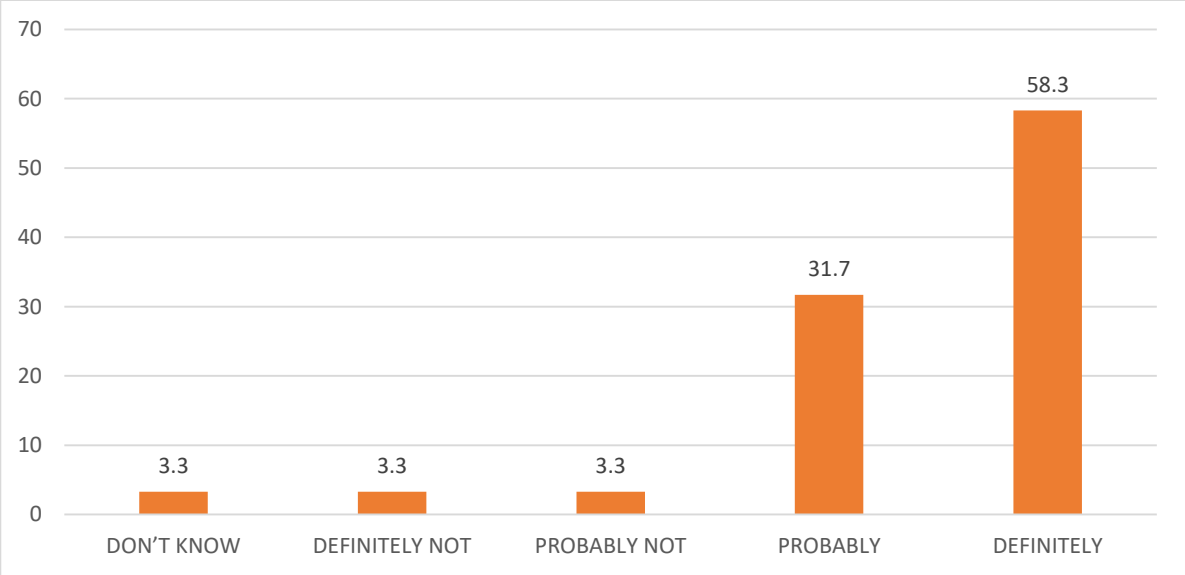


FIGURE 19: DAILY REQUIREMENT OF FAMILY

Results shows that 58.3% of total subjects stated that they were definitely able to meet family's daily requirement, 31.7% probably able to, 3.3% probably not, 3.3% definitely not and 3.3% don't know whether they were.

4.4.6 INTREST TO LEARN ABOUT NUTRITION

SCALE	NUMBER OF PEOPLE	%
DON'T KNOW	2	3.3%
DEFINITELY NOT	1	1.7%
PROBABLY NOT	2	3.3%
PROBABLY	13	21.7%
DEFINITELY	42	70%

TABLE 22: INTREST TO LEARN NUTRITION

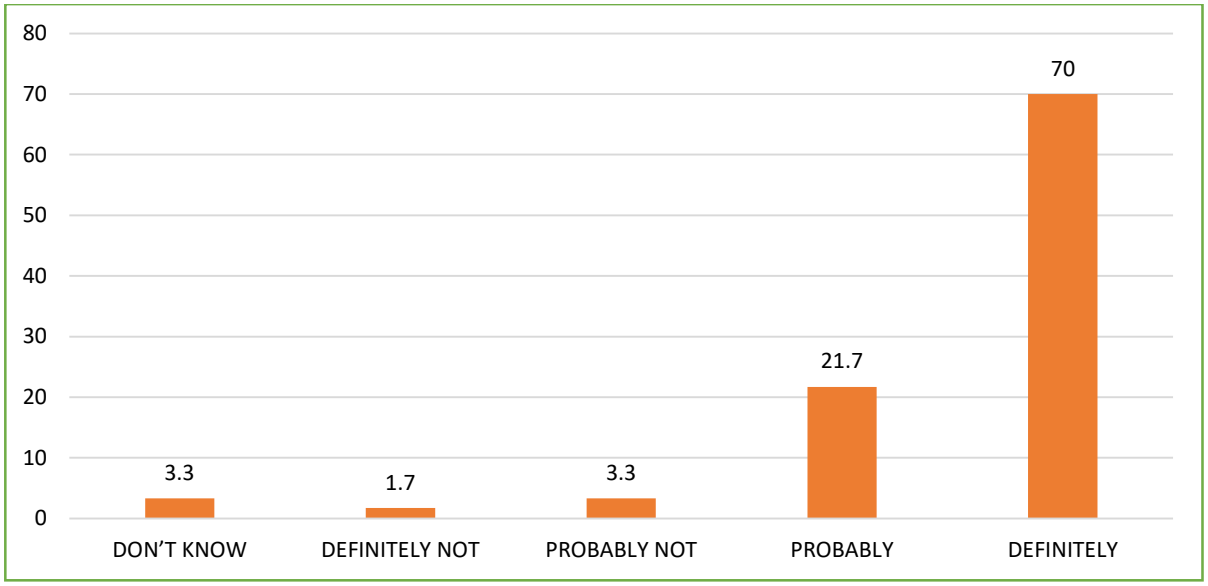


FIGURE 20: INTREST TO LEARN NUTRITION

Results shows that 70% of total population were definitely willing to learn about nutrition, 21.7% were probably willing, 3.3% probably not, 1.7% definitely not and 3.3% said they don't know.

4.4.7 ALLOWS TO EAT FASTFOOD

SCALE	NUMBER OF PEOPLE	%
RARE	39	65%
TWICE IN MONTH	6	10%
ONCE IN MONTH	7	11.6%
1 OR 2 TIMES A WEEK	4	6.7%
ONCE IN A WEEK	4	6.7%

TABLE 23: ALLOWS TO EAT FASTFOOD

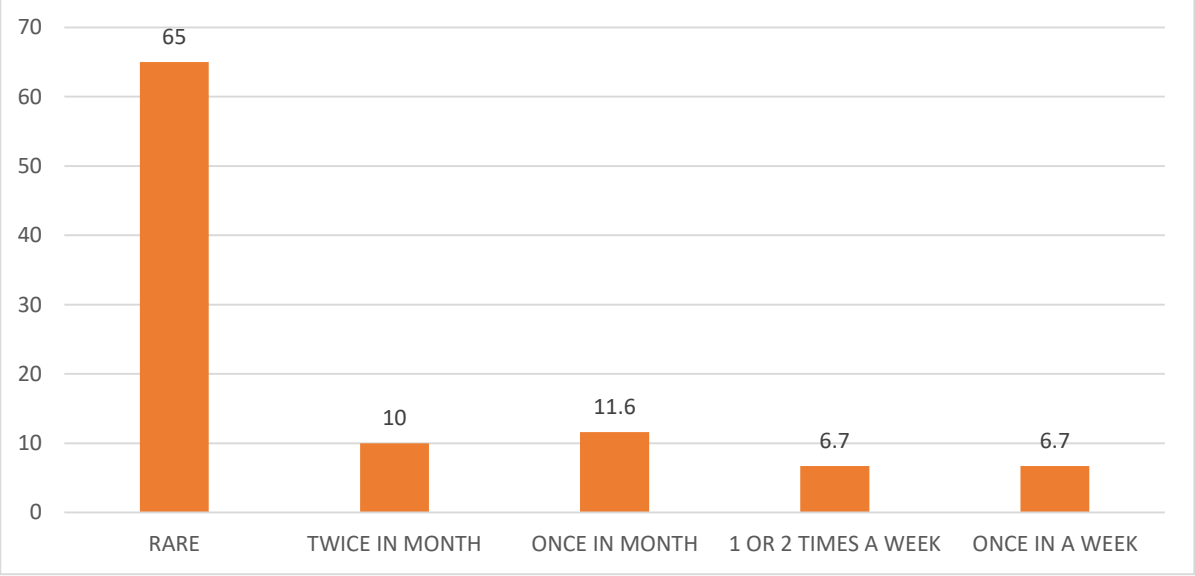


FIGURE 21: ALLOWS TO EAT FASTFOOD

Results shows that 65% of total subjects rarely allowed their child to take fast foods, 10% twice in a month, 11.6% allowed once in a month, 6.7% allowed 1 or 2 times a week and 6.7% allowed once in a week.

4.4.8 RATE OF FOOD CONSUMPTION OF CHILD

SCALE	NUMBER OF PEOPLE	%
AVERAGE	20	33.3%
ABOVE AVERAGE	6	10%
GOOD	26	43.3%
FAIR	4	6.7%
EXCELLENT	4	6.7%

TABLE 24: RATE OF FOOD CONSUMPTION

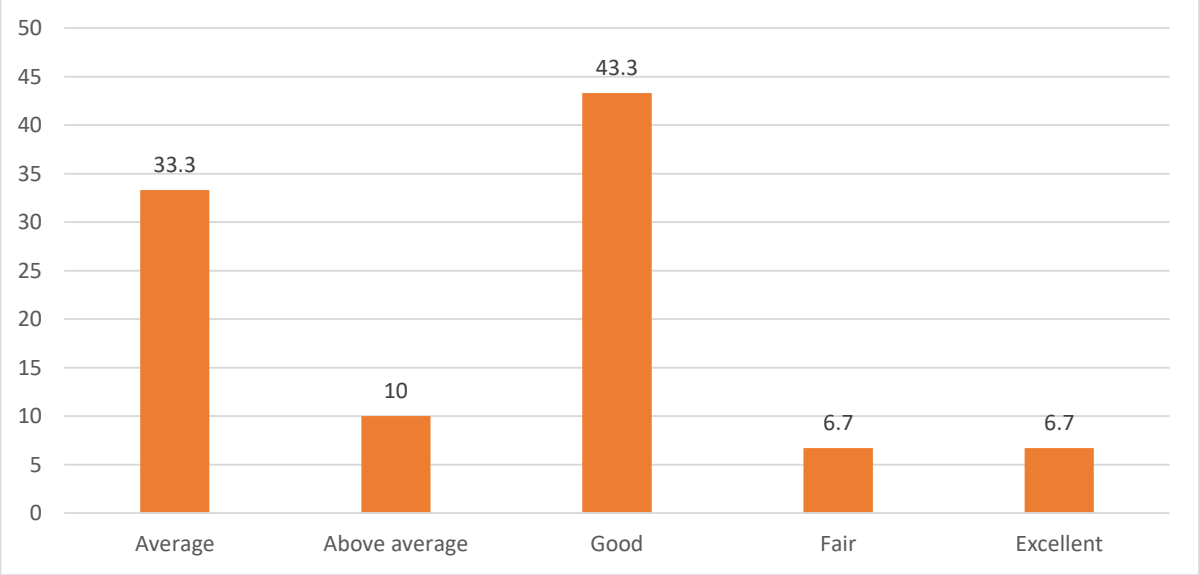


FIGURE 22: RATE OF FOOD CONSUMPTION

Results shows that 43.3% of total population stated that 43.3% had good consumption, 33.3% stated that average consumption, 10% had above average consumption, 6.7% had fair consumption, 6.7% had excellent consumption.

4. 5 PRACTICE OF PARENTS

4. 5.1 DIET PATTERN

Diet preference of children	Number	%
Non- vegetarian	41	68%
Vegetarian	10	17%
Others	9	15%

TABLE 25 : DIET PATTERN

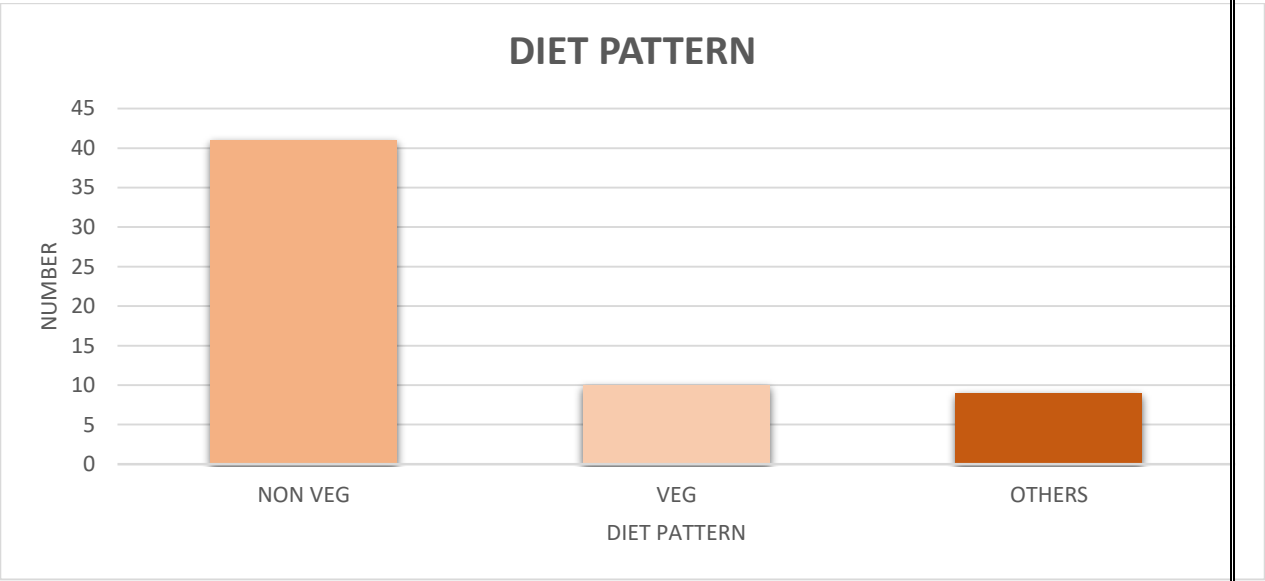


FIGURE 23: DIET PATTERN

Results shows that among 6o subjects, 41 preferred non- vegetarian, 10 of them preferred vegetarian and 9 preferred other diet such as ovo vegetarian etc.

4.5.2 CEREAL CONSUMPTION

Scale	NUMBER OF PEOPLE	%
Rare	6	10%
Once in week	7	11.7%
Twice in a week	5	8.3%
Once in a day	18	30%
1 or 2 times a day	24	40%

TABLE 26: CEREAL CONSUMPTION

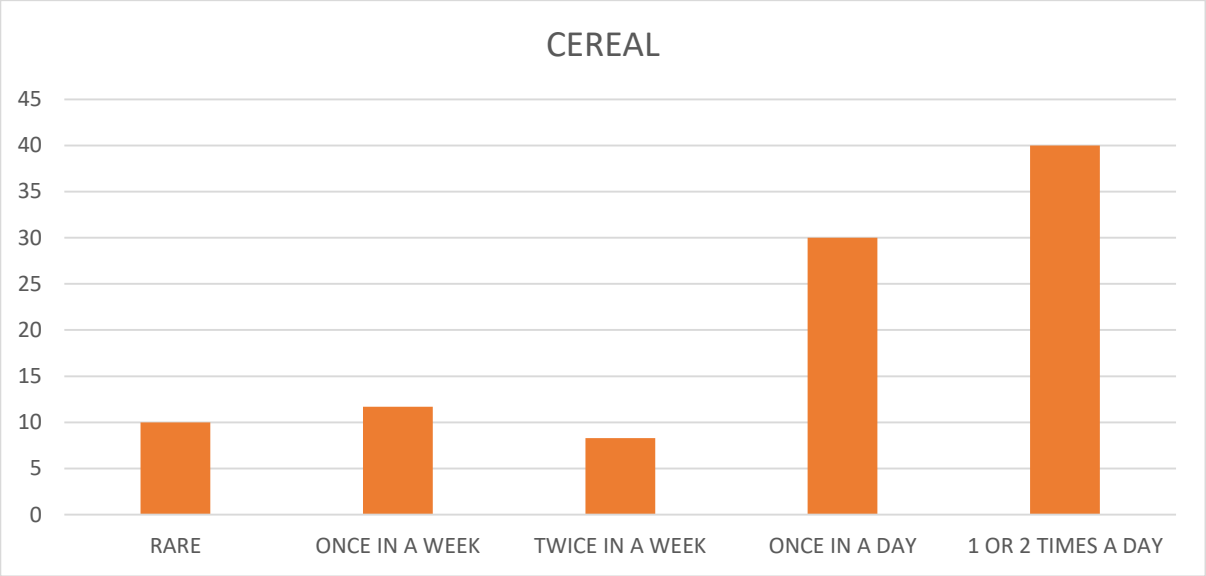


FIGURE 24: CEREAL CONSUMPTION

Results for cereal consumption shows that 40% of subjects stated that they provided cereals for 1or 2 times day, 30% stated once in a day, 8.3% provided twice in a week , 11.7 % stated that once in a week and 10% rarely consumed

4.5.3 MILLET CONSUMPTION

SCALE	NUMBER OF PEOPLE	%
RARE	46	76%
ONCE IN A WEEK	6s	10%
TWICE IN A WEEK	2	3.3%
ONCE IN A DAY	3	5%
1 OR 2 TIMES A DAY	3	5%

TABLE 27 : MILLET CONSUMPTION

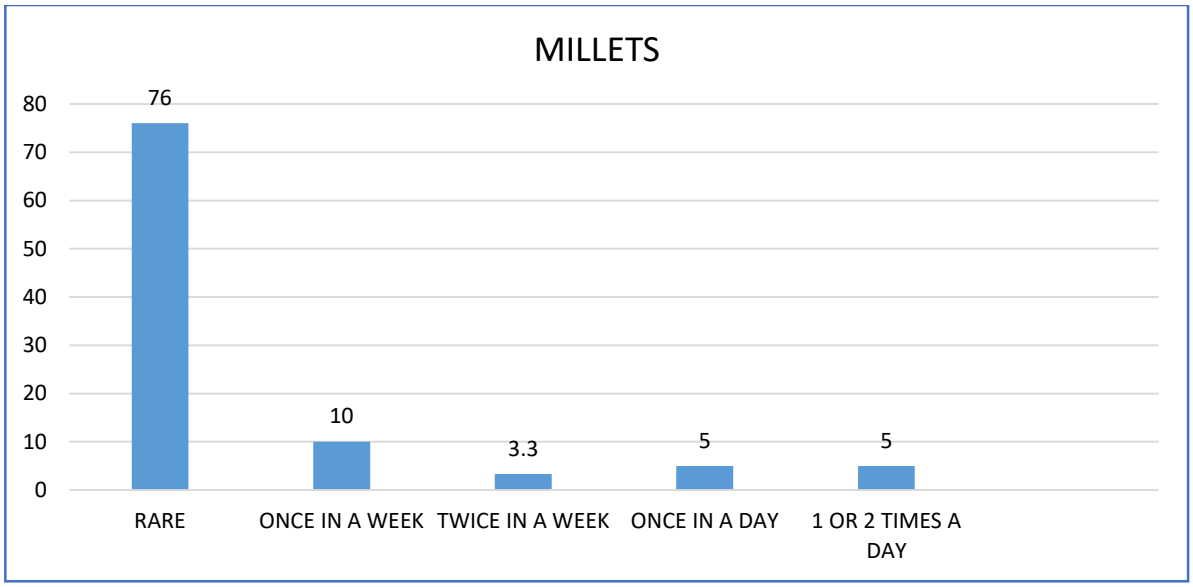


FIGURE 25: MILLET CONSUMPTION

Results show that 76.7 % of total subjects stated that they rarely used millets on food table and 10% provided millets once in a week, 3.3% offered twice in a week, 5% offered once in a day, 5% offered 1 or 2 times a day.

4.5.4 PULSE CONSUMPTION

Scale	NUMBER OF PEOPLE	%
Rare	6	10%
Once in a week	16	26.7%
Twice in a week	18	30%
Once in a day	14	23.3%
1 or 2 times a day	6	10%

TABLE 28: PULSE CONSUMPTION

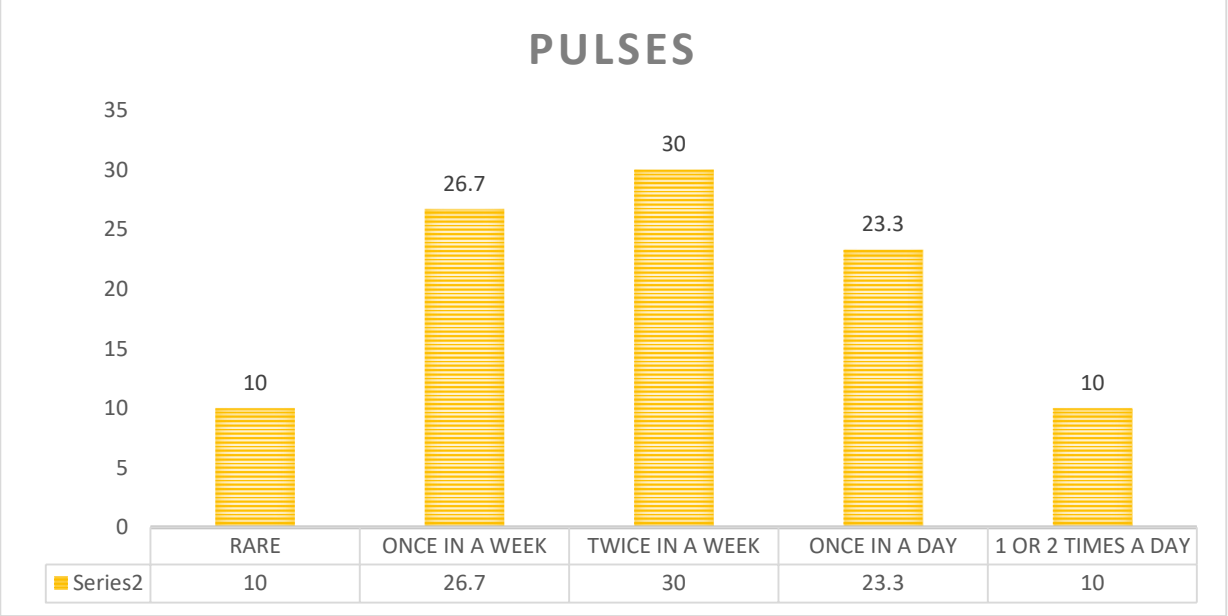


FIGURE 26: PULSE CONSUMPTION

Results shows that 10 % of total subjects used pulses 1 or 2 times day in their child's menu , 23.3 % used once in a day, 30% used twice in a week, 26.7% used once in a week and 10 % rarely provided pulses in child's menu

4.5.5 ROOTS AND TUBERS

Scale	NUMBER OF PEOPLE	%
Rare	13	21.7%
Once in a week	14	23.3%
Twice in a week	20	33.3%
Once in a day	10	16.7%
1 or 2 times a day	3	5%

TABLE 29 : ROOTS AND TUBERS

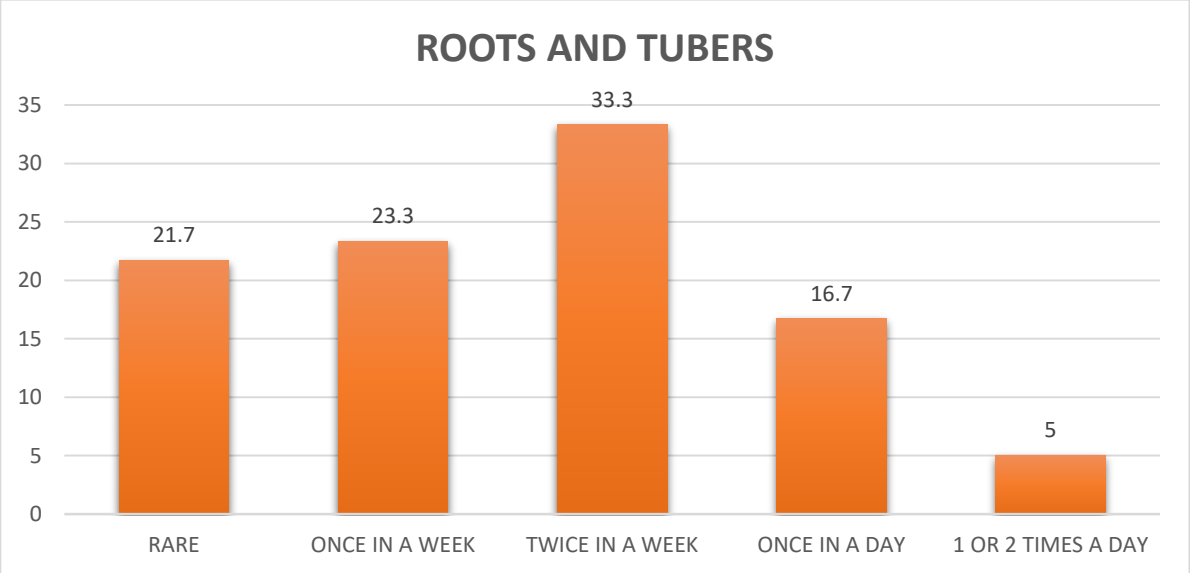


FIGURE 27: ROOTS AND TUBERS

Results shows that consumption of roots and tubers by children, 21.7 % stated that they rarely provided roots and tubers in child's menu, 23.3% stated that they provided once in a week, 33.3 % provided twice in a week , 16.7 % provided once in a day and 5% consumed on daily basis

4.5.6. EGG CONSUMPTION

Scale	NUMBER OF PEOPLE	%
Rare	11	18.3%
Once in a week	22	36.7%
Twice in a week	17	28.3%
Once in a day	6	10%
1 or 2 times a day	4	6.7%

TABLE 30: EGG CONSUMPTION

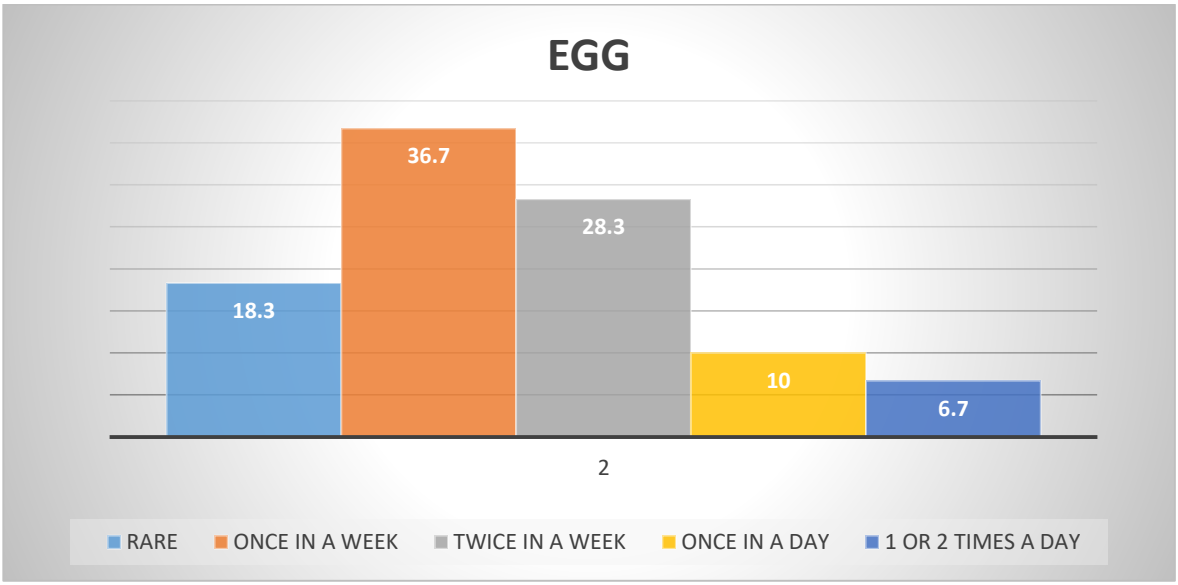


FIGURE 28: EGG CONSUMPTION

Out of 60 subjects 18.3 % claimed that they rarely added egg in child's menu, 36.7 % provided once in a week, 28.3% provided a egg twice in a week, 10% stated that they provided egg in daily basis and 6.7 % provided egg 1 or 2 times a day

4.5.7. MILK

SCALE	NUMBER OF PEOPLE	%
RARE	0	0
ONCE IN A WEEK	5	8.3%
TWICE IN A WEEK	2	3.4%
ONCE IN A DAY	15	25%
1 OR 2 TIMES A DAY	38	63.3%

TABLE 31: MILK CONSUMPTION

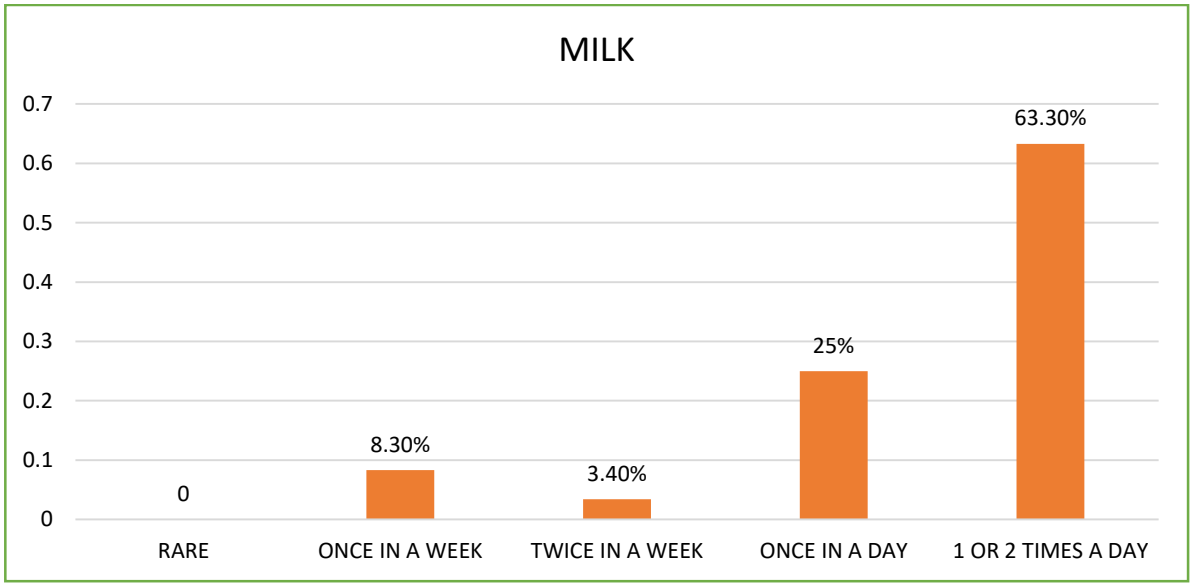


FIGURE 29: MILK CONSUMPTION

Results shows that 63.3% stated that their children were taking milk 1 or 2 times a day, 25% took once in a day, 3.4% twice in a week and 8.3% consumed once in a week.

4.5.8 .FISH CONSUMPTION

SCALE	NUMBER OF PEOPLE	%
RARE	10	16.7%
ONCE IN A MONTH	3	5%
TWICE IN A MONTH	8	13.3%
ONCE IN A DAY	29	48.3%
1 OR 2 TIMES A DAY	10	16.7%

TABLE 32: FISH CONSUMPTION

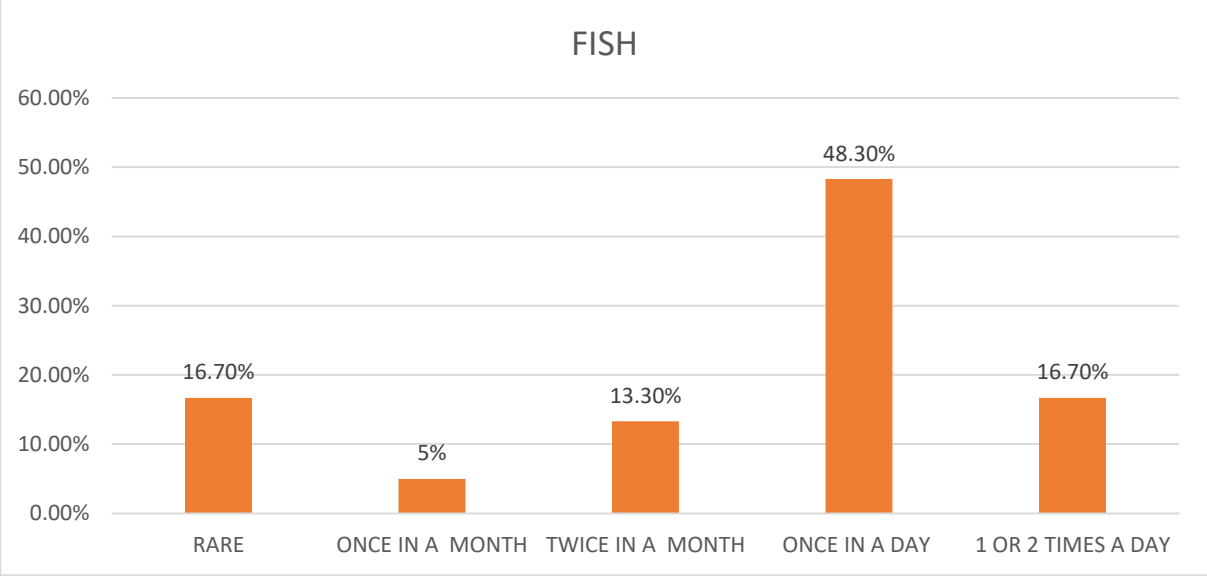


FIGURE 30: FISH CONSUMPTION

Results shows that 48.3% consumed fish once in a day, 16.7% stated that they consumed 1 or 2 times a day, 13.3% stated that they consumed twice a month, 5% consumed once in a month, 16.7% consumed rarely.

4.5.9 FRUIT CONSUMPTION

SCALE	NUMBER OF PEOPLE	%
RARE	13	21.7%
ONCE IN A WEEK	1	1.7%
TWICE IN A WEEK	6	10%
ONCE IN A DAY	23	38.3%
1 OR 2 TIMES A DAY	17	28.3%

TABLE 33: FRUIT CONSUMPTION

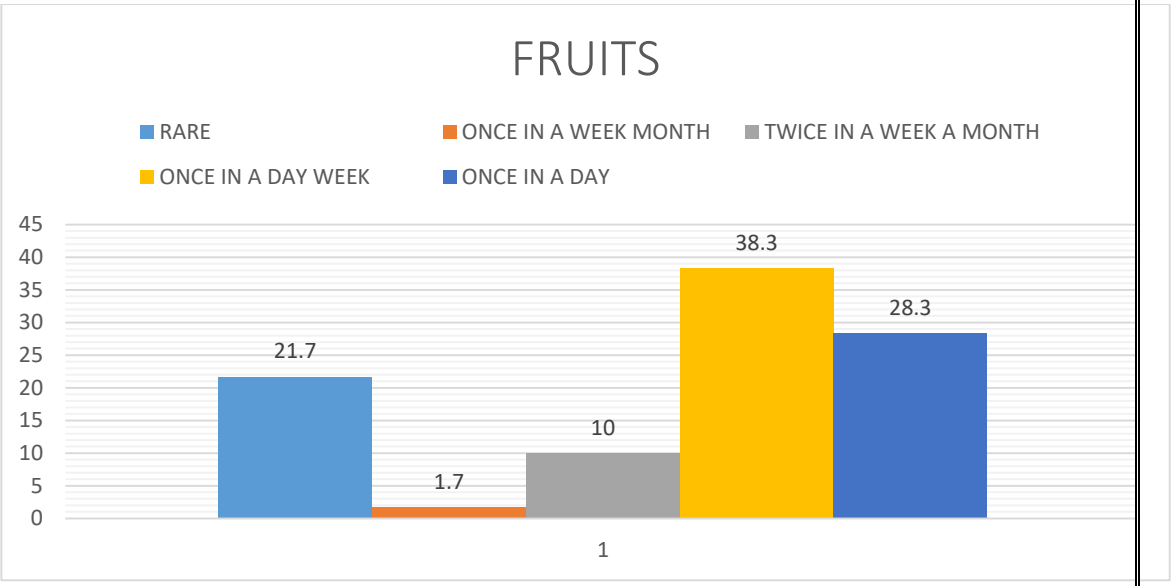


FIGURE 31: FRUIT CONSUMPTION

When checked the consumption of fruits in children results shows that 28.3 % of total subjects said that they offered fruits for children 1 or 2 times a day, 38.3% offered fruits once in a day of week, 10% offered twice in a week, 1.7% offered twice in a week and 21.7% rarely offered fruits.

4.5.10 VEGETABLES

SCALE	NUMBER OF PEOPLE	%
ONCE IN A DAY	44	73.3%
1 OR 2 TIMES A DAY	10	16.7%
TWICE IN A WEEK	1	1.7%
ONCE IN A WEEK	2	3.3%
RARE	3	5%

TABLE 34;VEGETABLES

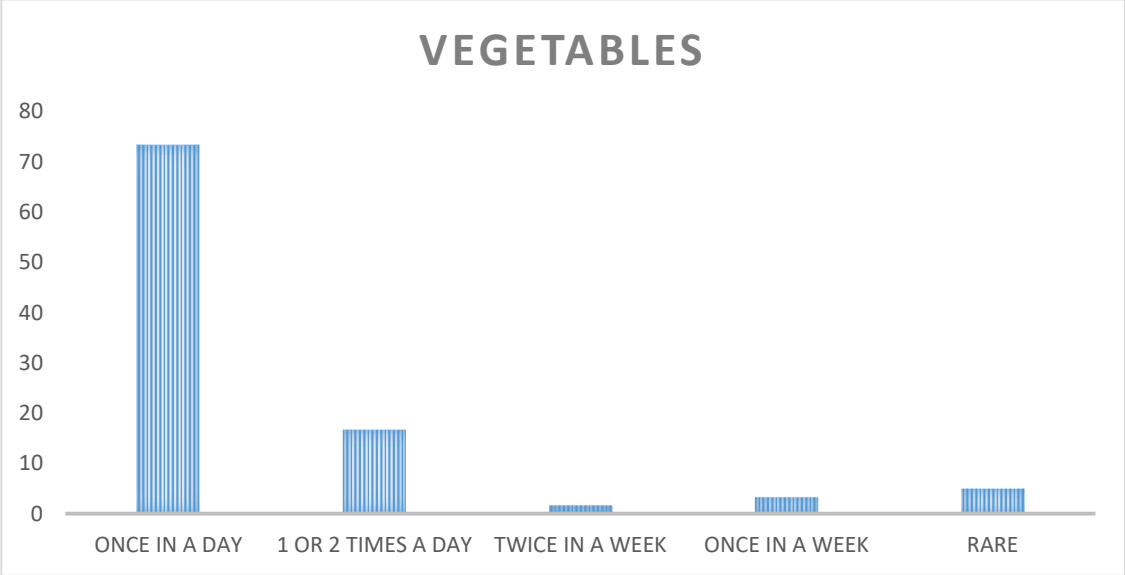


FIGURE 32: VEGETABLES

When checked for consumption of vegetables results shows that 73.3 % of total subjects included vegetable once in a day of child's menu, 16.7 % included 1 or 2 times a day, 1.7% offered twice in a week, 3.3% offered once in a week, and 5% rarely offered vegetables

4.5.11 GHEE

SCALE	NUMBER OF PEOPLE	%
RARE	24	40%
ONCE IN A MONTH	4	6.7%
TWICE IN A MONTH	3	5%
1 OR 2 TIMES A WEEK	20	33.3%
ONCE IN A DAY	9	15%

TABLE 35: GHEE

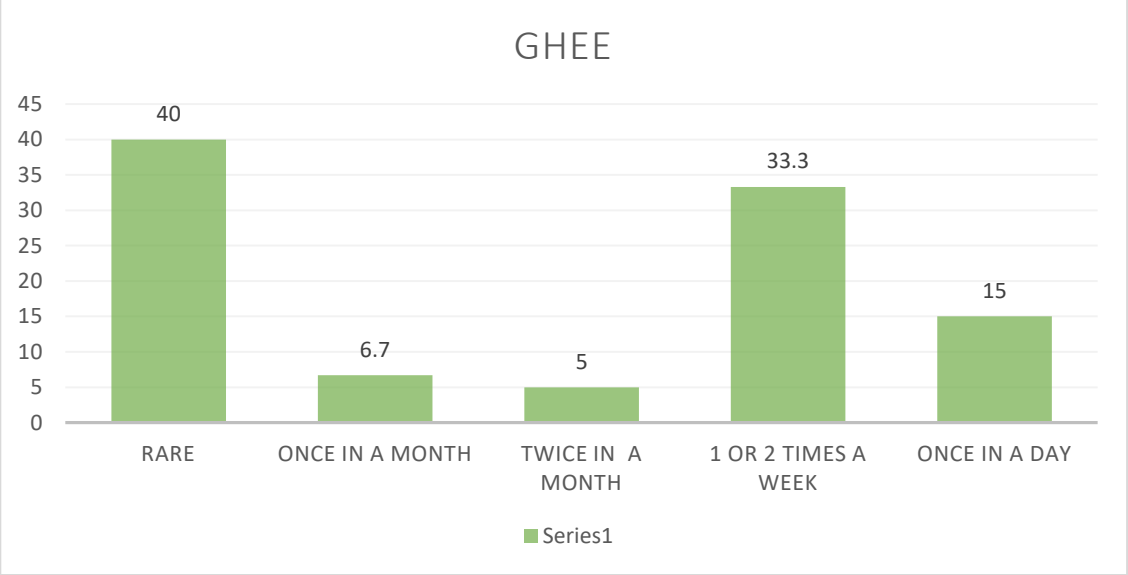


FIGURE 33: GHEE

When checked for ghee added in a child's menu 40% of total subjects rarely added ghee, 6.7% added once in a month, 5% added twice in a month, 33.3 added 1 or 2 times a week and 15% added once in a day.

4.5.12 FRUIT JUICES

SCALE	NUMBER OF PEOPLE	%
RARE	20	33.3%
ONCE IN A MONTH	5	8.3%
TWICE IN A MONTH	7	11.7%
1 OR 2 TIMES IN A WEEK	20	33.3%
ONCE IN A DAY	8	13.3%

TABLE 36: FRUIT JUICE

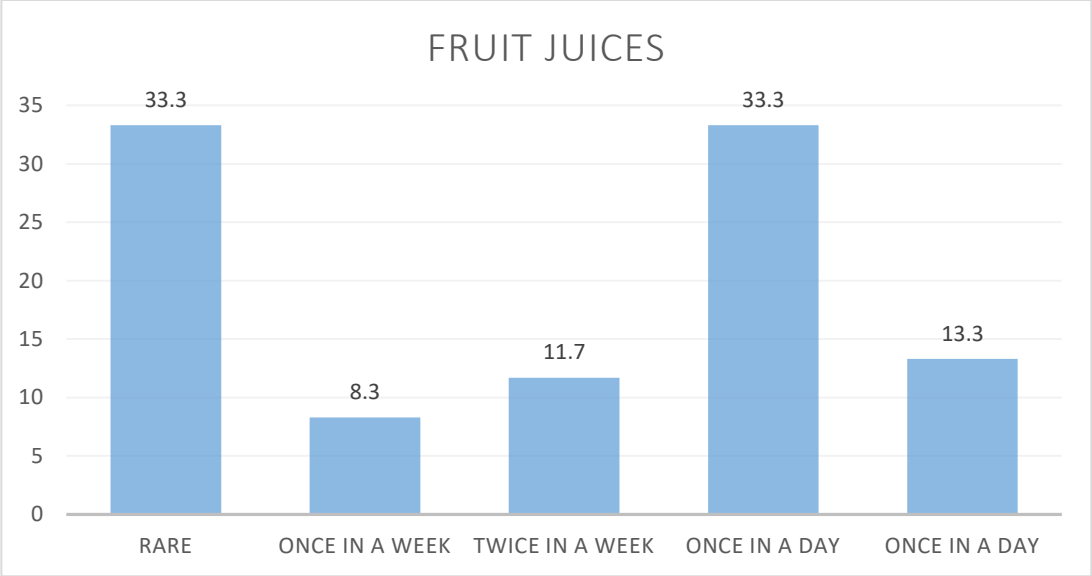


FIGURE 34: FRUIT JUICES

Results shows that 13. 3% were consuming fruit juices on a daily basis, 1 or 2 times a week is 33.3% , twice in a month is 11.7%, once in a month is 8.3% and rarely consumed is 33.3%

4.5.13 SOFT DRINKS

SCALE	NUMBER OF PEOPLE	%
RARE	44	73.3%
ONCE IN AWEEK	2	3.3%
TWICE IN AWEEK	2	3.3%
ONCE IN A DAY	8	13.3%
1 OR 2 TIMES A WEEK	2	3.3%

TABLE 37: SOFT DRINKS

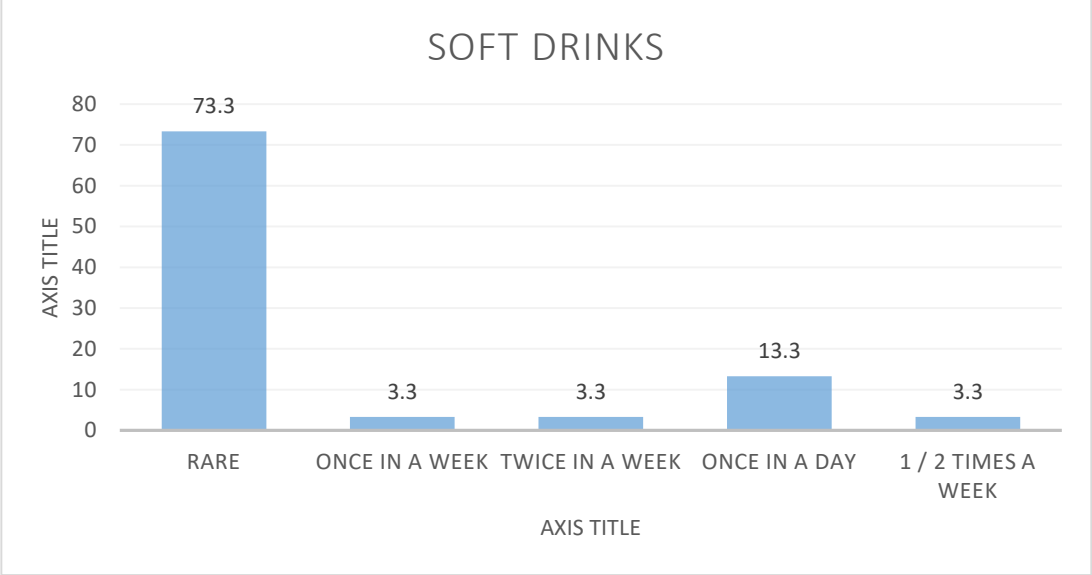


FIGURE 35: SOFT DRINKS

Results shows that 73.3% never gave soft drinks to their children, 3.3% offered once in a week, 3.3% twice a week, 13.3 % offered once in a day and 3.3 offered 1 or 2 times a week.

4.5.14 MALTED DRINKS

SCALE	NUMBER OF PEOPLE	%
RARE	35	58.3%
ONCE IN A WEEK	14	23.3%
TWICE IN A WEEK	2	3.3%
ONCE IN ADY	3	5%
1 OR 2 TIMES A WEEK	6	8.3%

TABLE 38: MALTED DRINKS

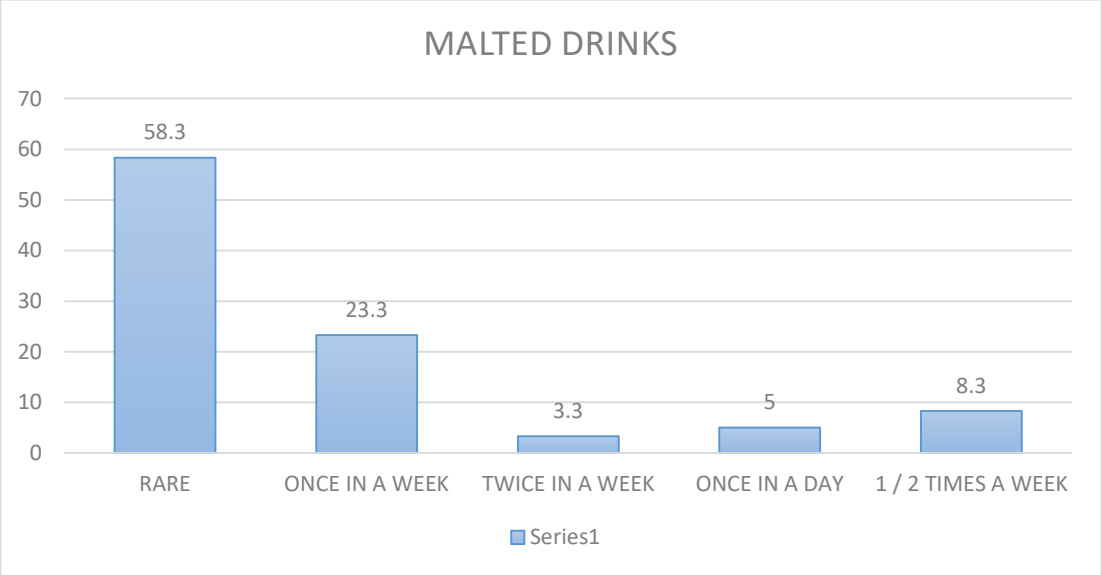


FIGURE 36: MALTED DRINKS

Results shows that 58.3% rarely offered malted drinks in child's menu, 23.3% offered once in a week , 3.3% offered twice in a week, 5% offered once in a day and 8.3% offered 1 or 2 times a week.

4.5.15 FRIED SNACKS

SCALE	NUMBER OF PEOPLE	%
RARE	22	36.7%
ONCE IN A WEEK	9	15%
TWICE IN A WEEK	5	8.3%
ONCE IN DAY	6	10%
1 OR 2 TIMES A WEEK	18	30%

TABLE 39: FRIED SNACKS

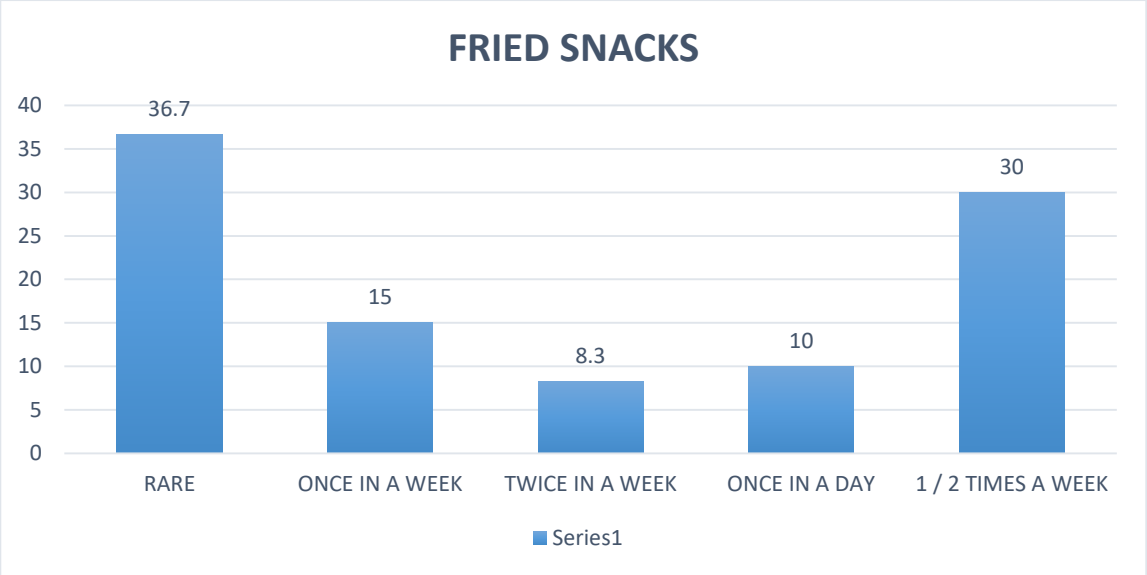


FIGURE 37 : FRIED SNACKS

Results shows that fried snacks were rarely offered in child's menu is 36.7% , once in a week is 15, twice in a week is 8.3% , once in a day is 10% and 1 or 2 times a week is 30%.

4.5.16 MEAL COURSES

SCALE	NUMBER OF PEOPLE	%
ALL 7 DAYS	24	40%
5-6 TIMES AWEEK	5	8.3%
3-4 TIMES A WEEK	14	23.3%
ONCE IN A WEEK	8	13.3%
NEVER	9	15%

TABLE 40 : MEAL COURSES

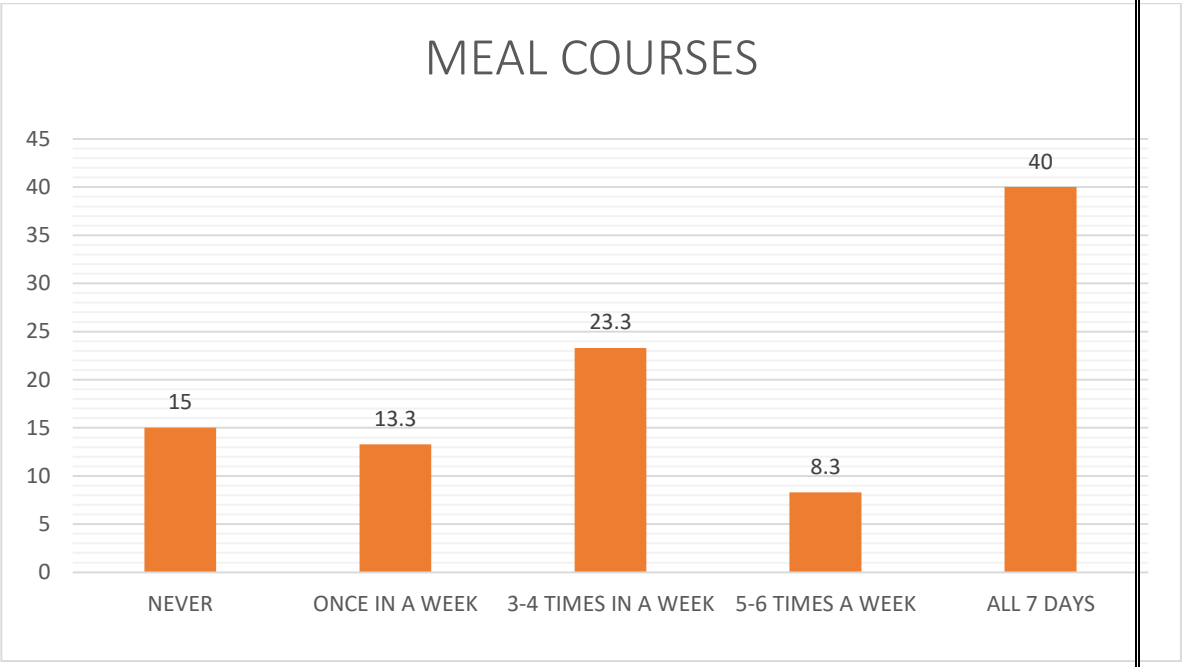


FIGURE 38: MEAL COURSES

Results shows that out of 60 subjects 40% stated that their child was consuming 3 major meals and 2 minor meals all 7 days, 8.3% consumed 5-6 times a week, 23.3% consumed courses 3-4 times a week and 13.3% consumed once in a week and 15% stated that their child never consumed.

4.5.17 PACKED CHIPS

SCALE	NUMBER OF PEOPLE	%
ALL 7 DAYS	3	5%
5-6 TIMES AWEEK	3	5%
3-4 TIMES A WEEK	9	15%
ONCE IN A WEEK	18	30%
NEVER	2	45%

TABLE 41: PACKED CHIPS

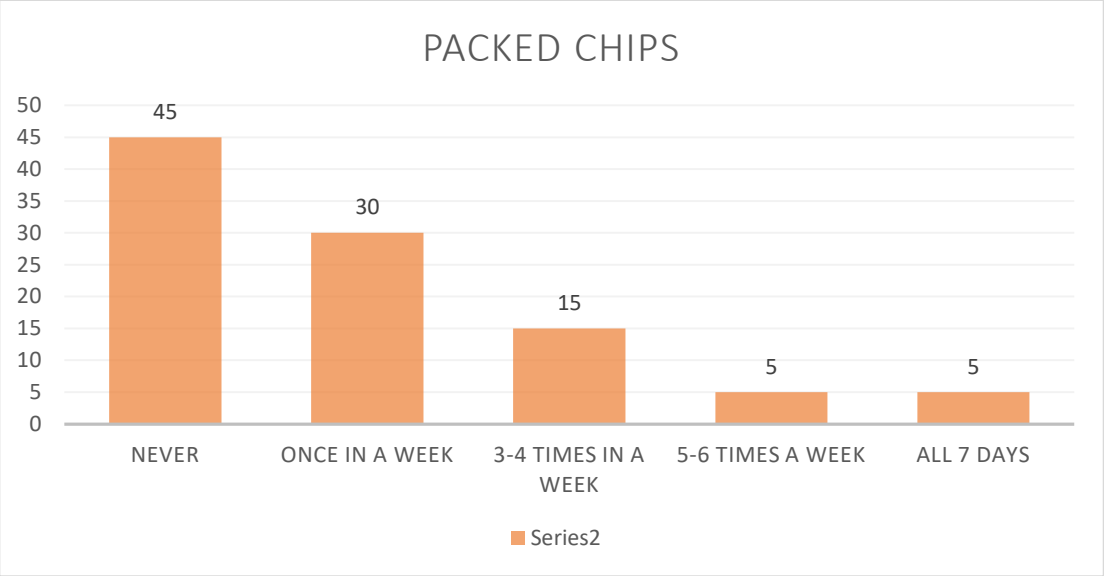


FIGURE 39 : FRIED SNACKS

Results show that out of 60 subjects 5 %said their child would love to have chips instead of meal all 7 days, 5% said 5-6 times a week, 15% said 3-4 times a week, 30% said once in a week and 45 % said their child never consumed chips instead of meals

4.5.18 HEALTH LINE OF CHILD'S EATING

SCALE	NUMBER OF PEOPLE	%
NEVER	20	33.3%
SOMETIMES	27	46%
PROBABLY	10	15%
ALWAYS	2	3.3%
DON'T KNOW	1	1.7%

TABLE 42: HEALTHLINE

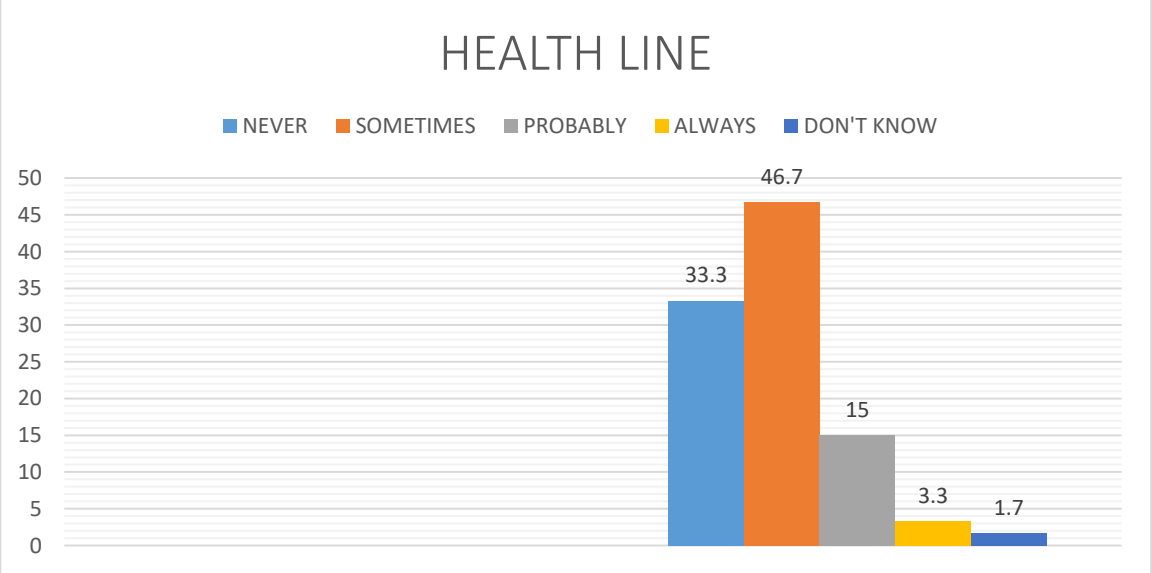


FIGURE 40 : HEALTH LINE

Results shows that out of 60 subjects 33.3% never worried about health line of the food and let the child to eat whatever they want, 46.7 sometimes worried, 15% probably worried , 3.3% always worried and 1.7% didn't think about it.

4.5.19 ANTHROPOMETRY

SCALE	NUMBER OF PEOPLE	%
NEVER	4	0.7%
SOMETIMES	26	43.3%
PROBABLY	17	28.3%
ALWAYS	12	20%
DON'T KNOW	1	1.7%

TABLE 43: ANTHROPOMETRY

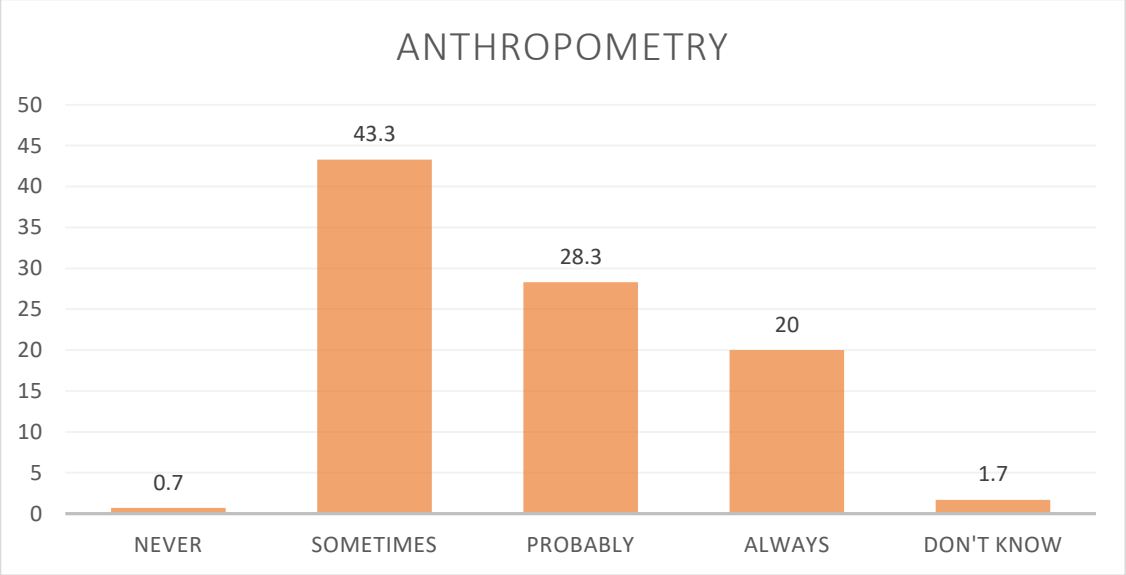


FIGURE 41: ANTHROPOMETRY

Results shows that 1.7% of parents don't know their child's height and weight, 20% always checked, 28.3% probably checked , 43.3% checked sometimes and 0.7% never checked.

4.5.20 EATING AT SCHOOL

SCALE	NUMBER OF PEOPLE	%
NEVER	4	5%
SOMETIMES	21	33.3%
PROBABLY	16	23.3%
ALWAYS	18	26.7%
DON'T KNOW	1	1.7%

TABLE 44: EATING AT SCHOOL

FIGURE 42: EATING AT SCHOOL

Results shows that 1.7% of subjects didn't knew where their child took full meal portion at school, 26.7% always asked, 23.3% probably knew, 33.3% enquired sometimes and 5% never know.

4.5.21 FAMILY MEAL

SCALE	NUMBER OF PEOPLE	%
NEVER	0	0
OCCASIONALY	7	11.7%
OFTEN	10	16.7%
SOMETIMES	7	11.7%
ALWAYS	36	60%

TABLE 45: FAMILY MEAL

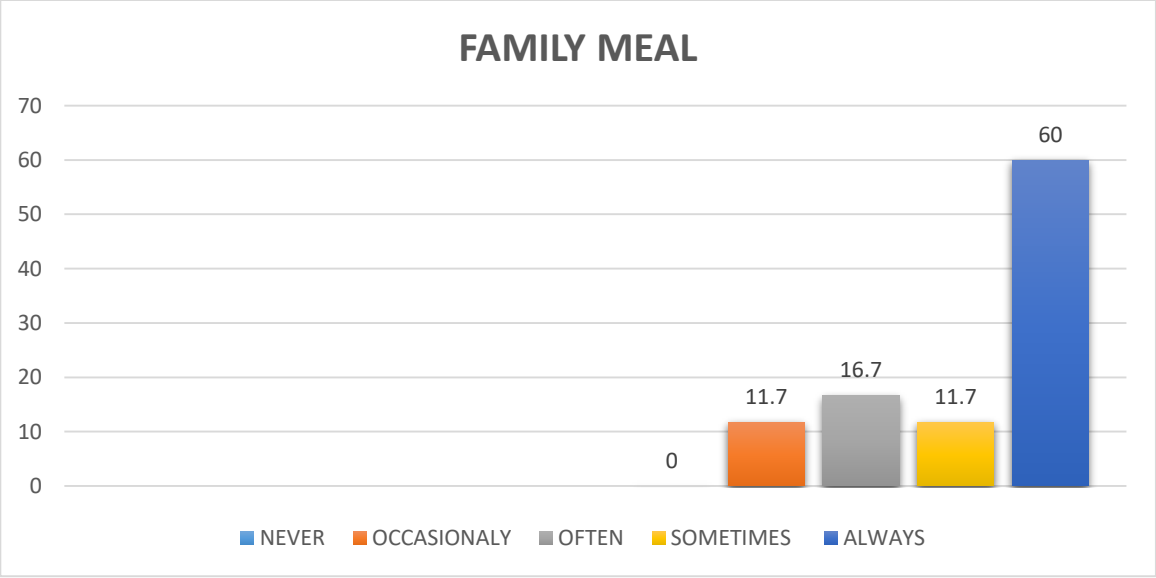


FIGURE 43: FAMILY MEAL

Results shows that 11.7% occasionally had meal with their child, 16.7% often had their meal, 11.7% sometimes do and 60% always had meal with their child.

4.6 DEVELOPMENT OF RECIPIE OUTLET

Results after analyzing the knowledge, attitude and practice of parents showed that they had high knowledge but only moderate attitude and practices to maintain good nutritional status of their children. To improve the healthy practices, an e-booklet with low cost innovative recipes was prepared to maintain optimum nutritional status of children.

4.7 TESTING HYPOTHESIS

4.7.1 EVALUATION OF SCORES FROM 5 POINT LIKERT SCALE

	KNOWLEDGE OF PARENTS	ATTITUDE OF PARENTS	PRACTICE OF PARENTS
N -VALID	60	60	60
N -MISSING	0	0	0
MEAN	34.95	23.20	51.65
MEDIAN	36.00	24.00	52.00
MODE	37[a]	24	48
Std. Deviation	4.862	3.419	9.174
MINIMUM	20	14	34
MAXIMUM	42	31	72

TABLE 46: EVALUATION OF SCORES FROM 5 POINT LIKERT SCALE

Statistically interpreted data from 60 responses showed that mean value of knowledge of parents from 12 questions was 34.95. Mean value of attitude of parents from 8 questions was 23.20. Mean value of practice of parents from 21 questions was 51.65.

While statistically interpreting data of knowledge of parents the Median value of 12 questions was 36.00. Median value of attitude of parents from 8 questions was 24.00. Median value of practice of parents from 21 questions was 52.

Mode value of 12 questions to assess knowledge of parents resulted in 37. Mode value of 8 questions to assess attitude of parents resulted 24. Mode value of practice of parents resulted in 48.

Standard deviation of knowledge of parents resulted in value of 4.862. Standard deviation of attitude of parents resulted in 3.419. Standard deviation practice of parents resulted in 9.174.

Minimum score achieved by subjects in filling knowledge questionnaire was 20 and Maximum score achieved is 42, from total scores of 48.

Minimum score achieved by subjects in filling attitude questionnaire was 14 and Maximum score achieved is 31, from total scores of 32

Minimum score achieved by subjects in filling practice questionnaire was 34 and Maximum score achieved is 72, from total scores of 84.

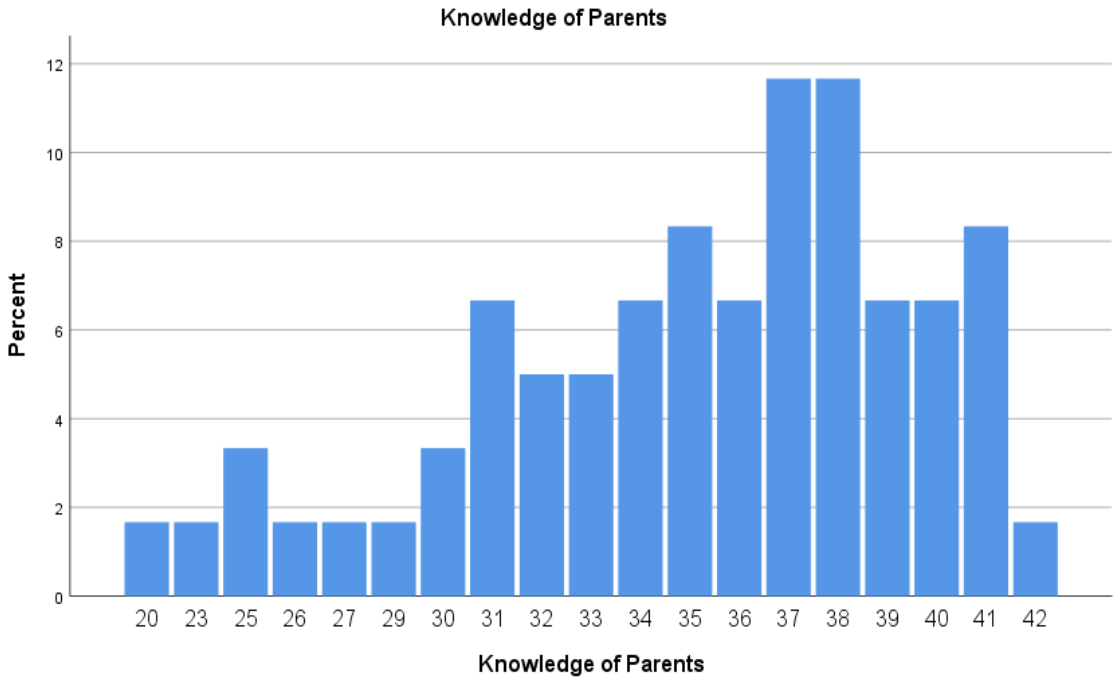


FIGURE 44: EVALUATION OF SCORES FROM 5 POINT LIKERT SCALE

While statistically interpreting the data Minimum score achieved by subjects in filling knowledge questionnaire was 20 and Maximum score achieved is 42. Highest frequency of scores awarded are 38.

4.7.2 CATEGORICAL EVALUATION- KNOWLEDGE OF PARENTS

Knowledge of Parents (Binned)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low Knowledge	9	15.0	15.0	15.0
	Moderate Knowledge	23	38.3	38.3	53.3
	High Knowledge	28	46.7	46.7	100.0
	Total	60	100.0	100.0	

TABLE 47: KNOWLEDGE OF PARENTS - BINNED

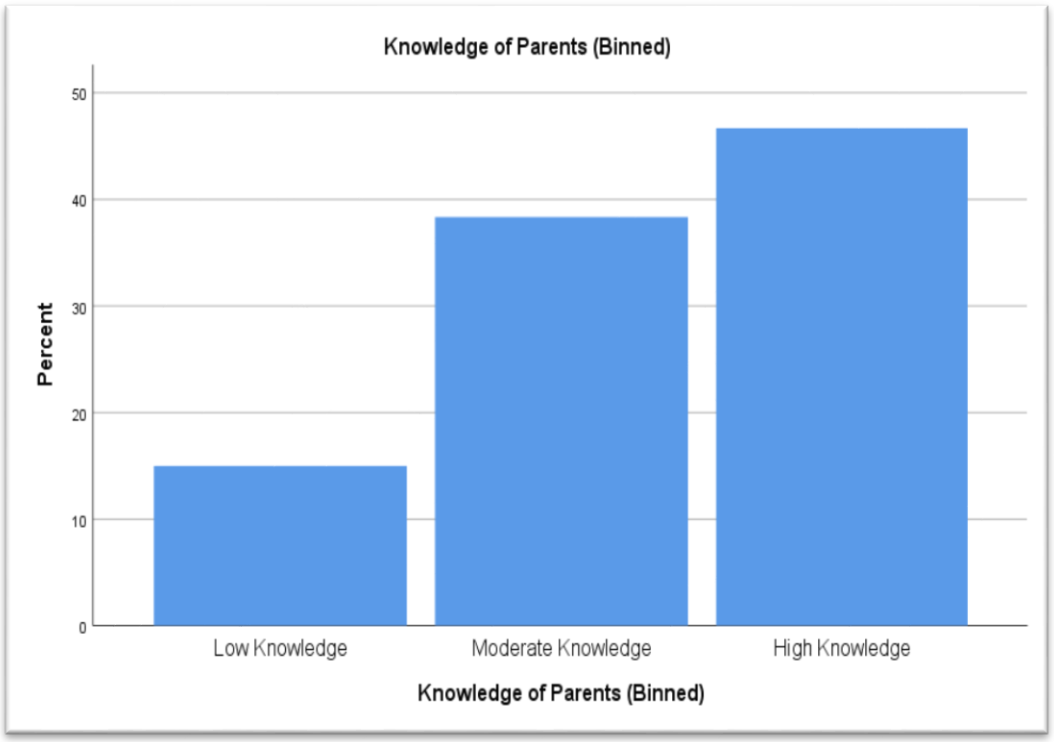


FIGURE 45: KNOWLEDGE OF PARENTS -BINNED

Scores were calculated as continuous numerical variables and converted into categorical variables as Low, Moderate, High by using statistics. Results showed that out 60 subjects 28 peoples ie 46.7% of total subjects had high knowledge.

4.7.3 STATISTICAL EVALUATION - ATTITUDE OF PARENTS

4.7.3.1 EVALUATION OF SCORES FROM 5 POINT LIKERT SCALE-ATTITUDE

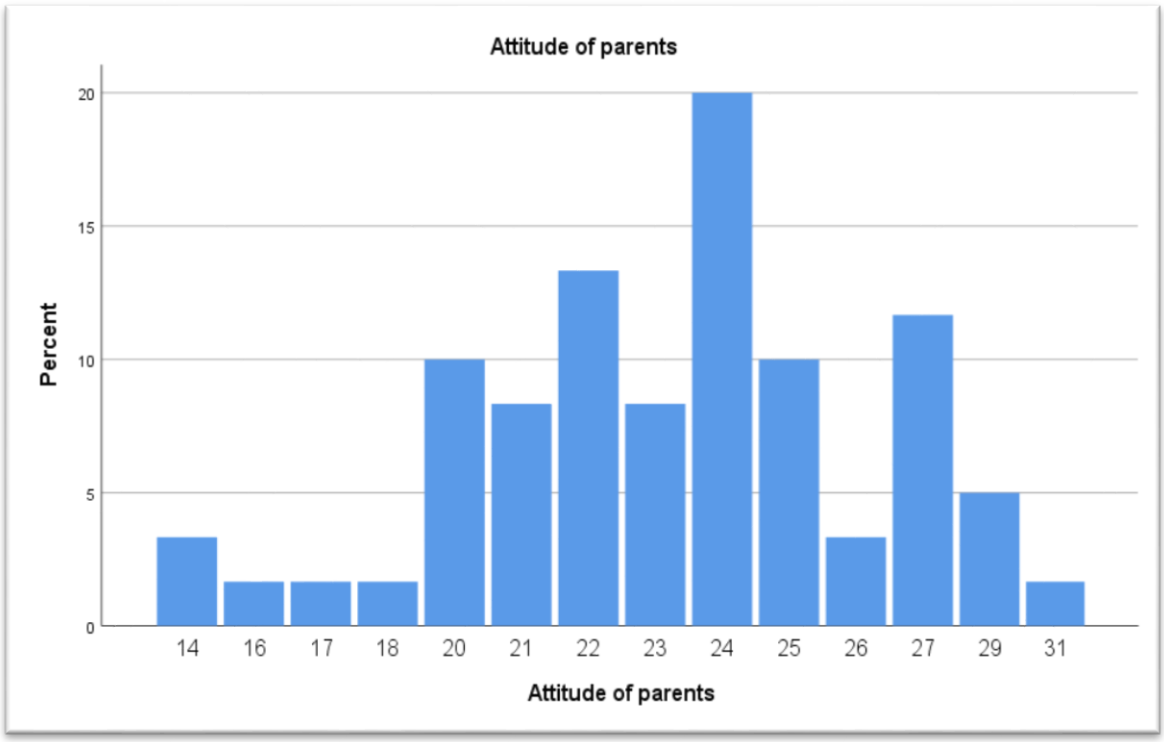


FIGURE 46: EVALUATION OF SCORES FROM 5 POINT LIKERT SCALE

Statistically interpreted data shows that Minimum score achieved by subjects in filling attitude questionnaire was 14 and Maximum score achieved is 31. Highest frequency of answer is 24 scores.

4.7.3.2 CATEGORICAL EVALUATION – ATTITUDE OF PARENTS

Attitude of parents (Binned)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low Attitude	4	6.7	6.7	6.7
	Moderate Attitude	37	61.7	61.7	68.3
	High Attitude	19	31.7	31.7	100.0
	Total	60	100.0	100.0	

TABLE 48:CATEGORICAL EVALUATION – BINNED

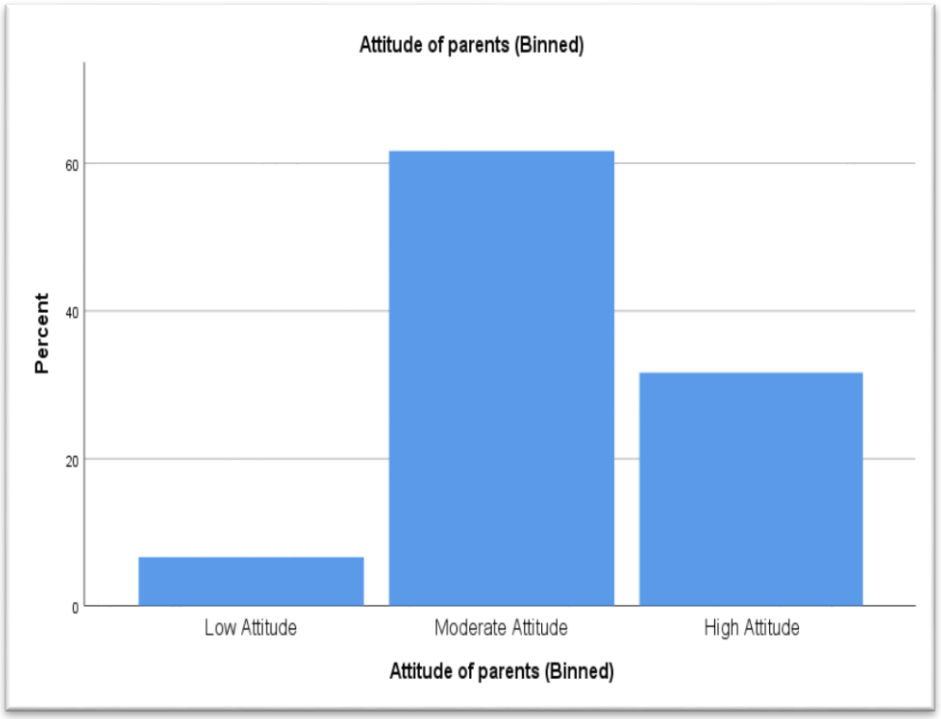


FIGURE 47 : ATTITUDE OF PARENTS – BINNED

Scores were calculated as continuous numerical variables and converted into categorical variables as Low, Moderate, High by using statistics. Results shows that attitude of parents were moderate.

4.7.4 STATISTICAL EVALUATION – PRACTICE OF PARENTS

4.7.4.1 EVALUATION OF PRACTICE FROM 5 POINT LIKERT SCALE

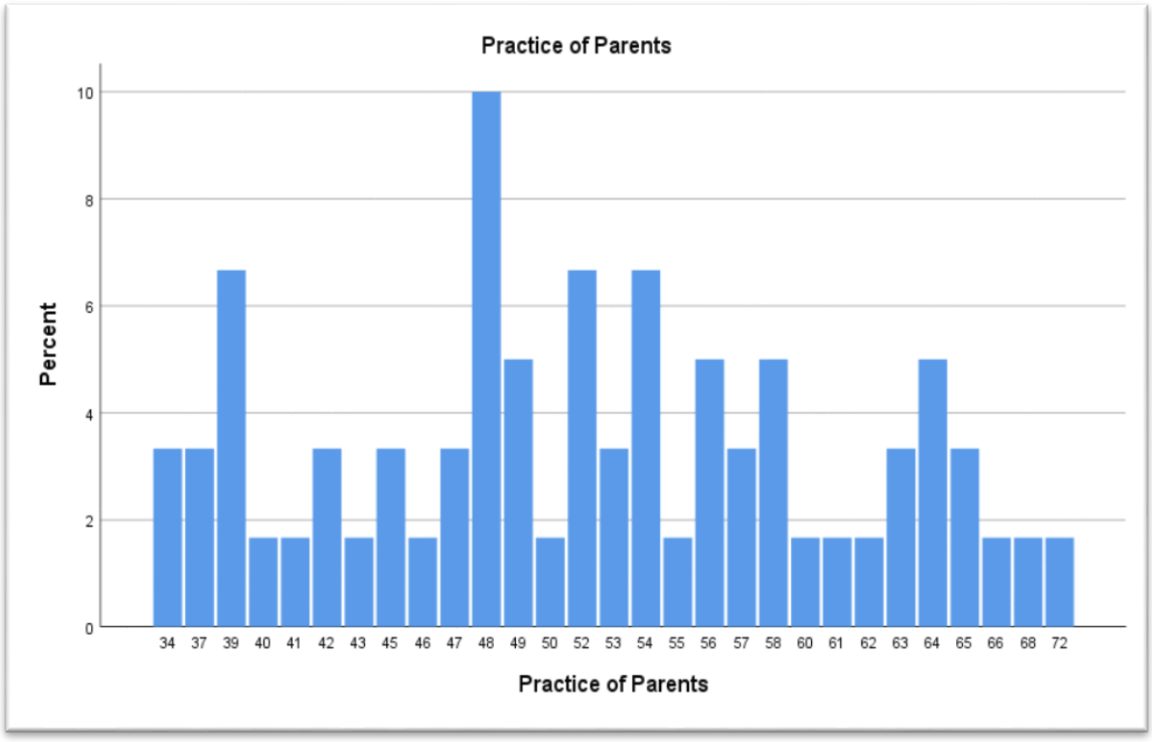


FIGURE 48: EVALUATION OF PRACTICE FROM 5 POINT LIKERT SCALE

Statistically interpreted data shows that Minimum score achieved by subjects in filling practice questionnaire was 34 and Maximum score achieved is 72. Highest frequency of score achieved by subjects is 48.

4.7.4.2 CATEGORICAL EVALUATION- PRACTICE OF PARENT

Practice of Parents (Binned)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low Practice	2	3.3	3.3	3.3
	Moderate Practice	40	66.7	66.7	70.0
	High Practice	18	30.0	30.0	100.0
	Total	60	100.0	100.0	

TABLE 49: PRACTICE OF PARENTS- BINNED

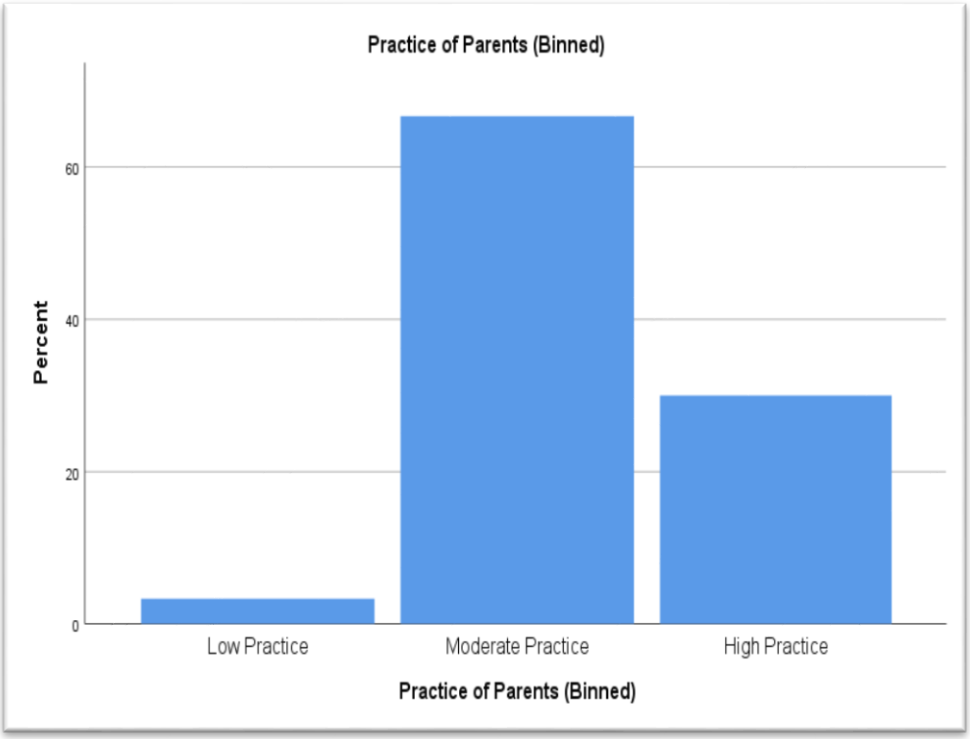


FIGURE 49: PARACTICE OF PARENTS- BINNED

Scores were calculated as continuous numerical variables and converted into categorical variables as Low, Moderate, High by using statistics. Results shows that subjects had moderate practice.

4.7.5 CORRELATION OF KNOWLEDGE, ATTITUDE AND PRACTICE

Correlations

		Knowledge of Parents	Practice of Parents	Attitude of parents
Knowledge of Parents	Pearson Correlation	1	.011	.213
	Sig. (2-tailed)		.936	.103
	N	60	60	60
Practice of Parents	Pearson Correlation	.011	1	.132
	Sig. (2-tailed)	.936		.315
	N	60	60	60
Attitude of parents	Pearson Correlation	.213	.132	1
	Sig. (2-tailed)	.103	.315	
	N	60	60	60

TABLE 50: CORRELATION OF KNOWLEDGE, ATTITUDE AND PRACTICE

While statistically interpreting the data knowledge , attitude and practice of parents, 2 tailed test was used. The null hypothesis states that knowledge of parents, attitude of parents and practices of parents are dependent to each other and alternate hypothesis states that they are independent each other. For this analysis, the significance level is 0.05. 2 tailed test value obtained is greater than p value of 1, 0.011 , 0.936, so the result is statistically not significant which indicates strong evidence for the null hypothesis. Null hypothesis is retained and the alternative hypothesis was rejected.

SUMMARY AND CONCLUSION

SUMMARY AND CONCLUSION

The study entitled **"INCIDENCE OF UNDERWEIGHT AMONG SCHOOL GOING CHILDREN AND KNOWLEDGE, ATTITUDE AND PRACTICE ASSESSMENT OF THEIR PARENTS"** has the objectives to assess the incidence of underweight among school going children using BMI age percentile within the age group(7-10) and also to assess knowledge, attitude & practices assessment among parents of selected subjects.

The result of current study summarizes as follows

- Total 132 students were selected for the study. Using BMI Age percentile tool their BMI with age percentile was determined. From 132 students, 60 were assessed as underweight.
- The current study was carried out in 60 parents of underweight school going children
- Educational qualification shows that parents of 42 % of total subjects were graduated, 10 % were post graduated, 11% completed diploma and 20% and 17% completed higher secondary and high school education
- 43.3 % of parents stated that they had knowledge about BMI entity, 21.7% stated that they probably knew what is BMI and 23.3 % didn't knew what was BMI.
- Out of 60 subjects taken 60% knew that fasting and skipping meals leads to weight loss and 26.7% probably knew the fact, 8.30% probably didn't, 5% didn't knew

- 85% knew that there is a relationship between physical activity and health status, 6.7% probably knew, 3.3% probably didn't knew ,1.7% definitely didn't knew and 3.3% do not know
- 90% of the subject population stated that breakfast is essential for optimum health, 5% probably knew, 3.7% probably didn't knew, 1.3% definitely not knew.
- 81.7% of subject population stated that drinking water is essential and 13.3% stated that they probably knew the importance of drinking water, 13.3% probably didn't knew and 1.7% didn't knew.
- 18.3% of subject population knew that their child was facing physical shame regarding their appearance. 26.7% probably knew , 20% stated probably not and 31.7% stated definitely not regarding the physical shame faced by their children
- 51.7% stated that they know what is balanced diet and 33.3% stated that they probably knew and 10% sated that the probably not know what is balanced diet.
- 40% stated that they definitely noticed the increment and decrease of food intake of their child during lockdown and 40% stated that they probably noticed their intake, 8.3% probably do not, 5% definitely not and 6.7% said that didn't noticed.
- 61.7% stated that their child was about right weight, 21.7% stated that the child was slightly underweight and only 10% knew that their child was underweight, 5% didn't know their child's weight

- 68.3% stated that their child seems to be sometimes tired after playing for a while.11.7% stated that they probably noticed and 15% said that they never noticed
- 61.7% definitely knew other protein sources other than meat and 25 % probably knew the fact and 5% didn't knew any other sources.
- 19% stated that they used additional supplements provided by government and 30% said that they do not**.** 8.3% said that their child is not interested, 3.3% didn't bought and 5% said that they didn't know if there is such facility
- 47.5% agreed that they consider having breakfast is a healthy practice, 44.1% agreed, 1.7% neither agreed or denied, 3.4% disagreed the concept and 3.4% strongly disagreed.
- 71.7% agreed that small and frequent meals helps in aiding weight , 10% agreed to statement , 5% neither agreed or denied the statement and 11.7% showed disagreement to the statement and 1.7% strongly disagreed
- 65% believed that their child have adequate physical activity, 10% agreed the statement, 18.3% neither agreed or denied the statement, 6.7% disagreed and no one strongly disagreed
- 60% agreed that they feel depressed when their child seems to be underweight. 6.7% showed strong agreement , 13.3% neither agreed or denied the concept, 16.7% showed disagreement and 3.3% strongly disagreed
- 58.3% of total subjects stated that they were definitely able to meet family's daily requirement, 31.7% probably able to, 3.3% probably not, 3.3% definitely not and 3.3% don't know whether they were

- 70% of total population are definitely willing to learn about nutrition, 21.7% are probably willing, 3.3% probably not, 1.7% definitely not and 3.3% said they don't know.
- 65% of total subjects rarely allowed their child to have fast foods, 10% twice in a month, 11.6% allowed once in a month, 6.7% allowed 1 or 2 times a week and 6.7% allowed once in a week
- 43.3% of total population stated that 43.3% had good consumption, 33.3% stated that average consumption, 10% had above average consumption, 6.7% had fair consumption, 6.7% had excellent consumption
- children of 6o subjects 41 preferred non- vegetarian, 10 of them preferred vegetarian and 9 preferred other diets such as ovo vegetarian etc.
- 40% of subjects stated that they provided cereals for 1or 2 times day, 30% stated once in a day, 8.3% provided twice in a week , 11.7 % stated that once in a week and 10% rarely consumed
- 76.7 % of total subjects stated that they rarely used millets on food plate and 10% provided millets once in a week, 3.3% offered twice in a week, 5% offered once in a day, 5% offered 1 or 2 times a day.

- 10 % of total subjects used pulses 1 or 2 times day in their child's menu , 23.3 % used once in a day, 30% used twice in a week, 26.7% used once in a week and 10 % rarely provided pulses in child's menu
- 21.7 % stated that they rarely provided roots and tubers in child's menu, 23.3% stated that they provided once in a week, 33.3 % provided twice in a week , 16.7 % provided once in a day and 5% consumed on daily basis

- 18.3 % claimed that they rarely added egg in child's menu, 36.7 % provided once in a week, 28.3% provided a egg twice in a week, 10% stated that they provided egg in daily basis and 6.7 % provided egg 1 or 2 times a day
- 48.3% stated that fish was included in menu once in a week, 16.7% stated that consumed 1 or 2 times 1 0r 2 times a day, 16.7 % rarely consumed fish
- 63.3% stated that their children were taking milk 1 or 2 times a day, 25% took once in a day, 3.4% twice in a week and 8.3% drunk once in a week.
- 28.3 % of total subjects said that they offered fruits in child's 1 OR 2 times in daily menu, 38.3% offered fruits once in a day of week, 10% offered twice in a week, 1.7% offered twice in a week and 21.7% rarely offered fruits
- 73.3 % of total subjects included vegetable once in a day of child's menu, 16.7 % included 1 or 2 times a day, 1.7% offered twice in a week, 3.3% offered once in a week, and 5% rarely offered vegetables
- 40% of total subjects rarely added ghee, 6.7% added once in a month, 5% added twice in a month, 33.3 added 1 or 2 times a week and 15% added once in a day.
- Fruit juices consumed on daily basis is stated as 13.3%, 1 or 2 times a week is 33.3% , twice in a month is 11.7%, once in a month 8.3% and rarely consumed is 33.3%
- 73.3% never gave their children soft drinks , 3.3% offered once in a week, 3.3% twice a week, 13.3 % offered once in a day and 3.3 offered 1 or 2 times a week.
- 58.3% rarely offered malted drinks in child's menu, 23.3% offered once in a week , 3.3% offered twice in a week, 5% offered once in a day and 8.3% offered 1 or 2 times a week.

- Fried snacks were offered in child's menu by subject shows that rarely is 36.7% , once in a week is 15, twice in aweek is 8.3% , once in a day is 10% and 1 or 2 times a week is 30%.
- 40% stated that their child consumed 3 major meals and 2 minor meals all 7 days, 8.3% consumed 5-6 times a week, 23.3% consumed courses 3-4 times a week and 13.3% consumed once in a week and 15% stated that their child never consumed
- 5 %said their child would love to have chips instead of meal all 7 days, 5% said 5-6 times a week, 15% said 3-4 times a week, 30% said once in a week and 45 % said their child never consumed chips instead of meals
- 33.3% never worried about health line of the food and let the child to eat whatever they want, 46.7 sometimes worried, 15% probably worried , 3.3% always worried and 1.7% didn't think about it.
- 1.7% of parents don't know their child's height and and weight, 20% always checked, 28.3% probably checked , 43.3% checked sometimes and 0.7% never checked
- 1.7% of subjects didn't knew where their child finishes complete meal portion at school,26.7% always asked, 23.3% probably knew, 33.3% knew sometimes and 5% never know.
- 11.7% occasionally had meal with their child, 16.7% often had their meal, 11.7% sometimes do and 605 always had meal with their child.
- Statistical methods such as Mean, Mode, 2 tailed test, Pearson correlation and Standard deviation was used. Scores were calculated as continuous numerical variables and converted into categorical variables as low , moderate and high. 2 Tailed test was done to check the significance of hypothesis. Pearson

correlation was done to check whether there is any relation between selected variables. IBM-SPSS 21 was used to do the statistical works for accurate results.

- The significance level is 0.05. 2 tailed test value obtained is greater than P Value ie 1, 0.011 , 0.936, so the result is statistically not significant which indicates strong evidence for the null hypothesis. Null hypothesis is retained and rejected the alternative hypothesis.
- An e booklet with low cost innovative recipes was developed to improve the healthy practices of the parents.

CONCLUSION

The present study diagnosed the incidence of underweight among school going children between the age group of 7-10 years and also assessed the knowledge, attitude and practices of their parents regarding underweight. The collected data indicated that parents had high knowledge regarding nourishment and growth of their children but they had only moderate attitude and practice towards nutrition. The reasons behind having good knowledge might be due to usage of social media , reading news papers and books and influence of commercials. The reasons behind moderate attitude and practices might be due to low confidence in implementing them to daily practices or work load of the parents. The present study concluded that with adequate knowledge, good attitude and practices are also required to prevent underweight in children. For that purpose, simple practicing techniques can be given through proper medium will help to achieve optimum nutritional status among children.

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APPENDICES

APPENDIX I

1. Do you know health status can be assessed by an entity called BMI

    - Definitely
    - Probably
    - Definitely not
    - Probably not
    - Don’t know

2. Do you know fasting or skipping meals lead to weightloss

    - Definitely
    - Probably
    - Definitely not
    - Probably not
    - Don’t know

3. Do you know Regular physical activity helps in normal health

- Definitely
- Probably
- Definitely not
- Probably not
- Don’t know

4. Do you know break fast is essential for body
    - Definitely
    - Probably
    - Definitely not
    - Probably not
    - Don’t know
5. Do you know drinking minimum of 8 glass of water is essential to keep body hydrated
    - Definitely
    - Probably
    - Definitely not
    - Probably not
    - Don’t know
6. Do you know whether your child feel shamed due to his/her physical apperance
    - Definitely
    - Probably
    - Definitely not
    - Probably not
    - Don’t know

7. Do you know what is balanced diet

    - Definitely
    - Probably
    - Definitely not
    - Probably not
    - Don’t know

8. Do you know whether your child’s intake of food has been increased/decreased during lockdown period?

    - Definitely
    - Probably
    - Definitely not
    - Probably not
    - Don’t know

9. How do you describe your child’s weight

    - Very underweight
    - Slightly underweight
    - About right weight
    - Underweight
    - Don’t know

10. Do you know whether you child get easily down after long activities

- Never
- Sometimes
- Probably
- Always
- Don’t know

11. Do you know any other sources of protein rather than nonveg

- Definitely
- Probably
- Definitely not
- Probably not
- Don’t know

12. Do you get any additional nutrient supplements provided for young children by the government

- Yes
- No
- Donot buy
- Child is not interested
- Don’t know about facility

APPENDIX II

1. I consider regular breakfast intake to be a part of healthy lifestyle
    - Strongly disagree
    - Disagree
    - Neither agree or disagree
    - Agree
    - Strongly agree
2. I consider small and frequent meals help in good weight
    - Strongly disagree
    - Disagree
    - Neither agree or disagree
    - Agree
    - Strongly agree
3. My child has adequate physical activity
    - Strongly disagree
    - Disagree
    - Neither agree or disagree
    - Agree
    - Strongly agree
4. I feel depressed when my child is underweight
    - Strongly disagree

- Disagree
- Neither agree or disagree
- Agree
- Strongly agree

5. Are you able to meet daily meal requirements for the family
    - Definitely
    - Probably
    - Definitely not
    - Probably not
    - Don’t know
6. Are you willing to learn more knowledge about healthy food and nutrition
    - Definitely
    - Probably
    - Definitely not
    - Probably not
    - Don’t know

7. I allow my child when he asks for fastfoods
    - Once in a week
    - One or two times a week

- Once in month
- Twice in month
- Rare

8. How do you describe your child's food consumption
    - Average
    - Above average
    - Fair
    - Good
    - Excellent

APPENDIX III

1. Diet pattern of your child

   - Non- vegetarian
   - Vegetarian
   - others

2. How often you offer cereals like rice,wheat,oats in your child’s menU

   - Once in a day
   - One or two times a day
   - Once in a week
   - Twice in a week
   - Rare

3. How often you offer millets like raggi, jowar in your child’s menu

   - Once in a day
   - One or two times a day
   - Once in a week
   - Twice in a week
   - Rare

4. We include pulses in daily menu(greengram,cowpeas,greenpeas)

   - Once in a day
   - One or two times a week
   - Once in month
   - Twice in month
   - Rare

5. How often do you incorporate roots and tubers like yam potatoes to your child's menu

    - Once in a day
    - One or two times a week
    - Once in month
    - Twice in month
    - Rare

6. How often your child eats any egg(quail, chicken, duck)

    - Once in a day
    - One or two times a week
    - Once in month
    - Twice in month
    - Rare

7. How often do your child drink any milk (goat, cow, buffalo)

    - Once in a day
    - One or two times a week
    - Once in month
    - Twice in month
    - Rare

8. How often your child eat any meat(chicken,goat,beef,duck)
    - Once in a day
    - One or two times a week
    - Once in month
    - Twice in month
    - Rare
9. Child consumes fish in
    - All 7 days
    - 5-6 times a week
    - 3-4 times a week
    - Once a week
    - Never
10. We include fruits in daily menu(seasonally available or home grown)
    - Once in a day
    - One or two times a week
    - Once in month
    - Twice in month
    - Rare
11. Include vegetables in daily menu (seasonally available or homegrown)

- Once in a day
- One or two times a week
- Once in month
- Twice in month
- Rare

12. How often do you add ghee in your child's food

- Once in a day
- One or two times a week
- Once in month
- Twice in month
- Rare

13. How often your child drinks fruit juices

- Once in a day
- One or two times a week
- Once in month
- Twice in month
- Rare

14. How often your child drinks commercially available drinks like cola,soda, tang ,fruity etc

- Once in a day
- One or two times a week

- Once in month
- Twice in month
- Rare

15. How often you use commercially available energy boost drinks like Horlicks ,boost in your child's menu

- Once in a day
- One or two times a week
- Once in month
- Twice in month
- Rare

16. How often do you give your child fried snacks as it is homemade or bought

- Once in a day
- One or two times a week
- Once in month
- Twice in month
- Rare

17. How often your child takes three major meals and two minor meals

- All 7 days
- 5-6 times a week
- 3-4 times a week
- Once a week

- Never

18. My child needs packed chips rather than normal meals

    - All 7 days
    - 5-6 times a week
    - 3-4 times a week
    - Once a week
    - Never

19. I let my child to eat whatever he/she like and do not worry about the health line of food

    - Never
    - Sometimes
    - Probably
    - Always
    - Don’t know

20. We keep check on child’s height and weight

    - Never
    - Sometimes
    - Probably

- Always
- Don’t know

21. My child eats complete portion of meals provided during school time

- Never
- Sometimes
- Probably
- Always
- Don’t know

22. How often your child eat atleast a meal with family member

- Never
- Sometimes
- Probably
- Always
- Don’t know