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NUTRITIONAL STATUS OF CHILDREN AGED 2-5 YEARS AND KNOWLEDGE OF MOTHERS RELATED TO IYCF PRACTICES

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National Health Mission

Haryana

Internship Training

at

By

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PGDHM

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IIHMR DELHI

International Institute of Health Management Research

Internship Training

At

NATIONAL RURAL HEALTH MISSION
HARYANA

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Post Graduate Diploma in Hospital and Health Management Year 2012-2014

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The certificate is awarded to

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In recognition of having successfully completed her
Internship in the department of

CHILD HEALTH

and has successfully completed her Project on

NUTRITIONAL STATUS OF CHILDREN AGED 2-5 YEARS AND KNOWLEDGE OF MOTHERS RELATED TO IYCF PRACTICES

Date: 5/02/2014- 5/05/2014

National Health Mission, Haryana

e comes across as a committed, sincere & diligent person who strong drive & zeal for learning

We wish her all the best for future endeavors

Medical officer (Child Health)

Deputy Director - MCH & FW
Directorate General Health
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TO WHOMSOEVER MAY CONCERN

This is to certify that **Dr. Vidhi Sharma** student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from International Institute of Health Management Research, New Delhi has undergone internship training at National Health Mission, Haryana from 05/02/2014- 05/05/2014

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.
I wish him all success in all his future endeavors.

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Certificate Of Approval

The following dissertation titled **"NUTRITIONAL STATUS OF CHILDREN AGED 2-5 YEARS AND KNOWLEDGE OF MOTHERS RELATED TO IYCF PRACTICES"** at **"NATIONAL HEALTH MISSION, HARYANA** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **Post Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

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Dr. S.B. ARORA	07/05/2014
Dr A.K. KHOKHAR	7.5.14
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CERTIFICATE ADVISORY

This is to certify that **Dr. Vidhi Sharma** a graduate student of the **Post Graduate Diploma in Health and Hospital Management** has worked under our guidance and supervision. He/ She is submitting this dissertation titled "**NUTRITIONAL STATUS OF CHILDREN AGED 2-5 YEARS AND KNOWLEDGE OF MOTHERS RELATED TO IYCF PRACTICES**" at "National Health Mission" in partial fulfillment of the requirements for the award of the **Post- Graduate Diploma in Health and Hospital Management.**

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

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This is to certify that the dissertation titled **"NUTRITIONAL STATUS OF CHILDREN AGED 2-5 YEARS AND KNOWLEDGE OF MOTHERS RELATED TO IYCF PRACTICES"** and submitted by **Dr. Vidhi Sharma** Enrollment No. **PG/12/104** under the supervision of **Dr. B.S. Singh** for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from 05/02/2014 to 05/05/2014 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

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FEEDBACK FORM

Name of the Student: Dr. Vidhi Sharma

Dissertation Organisation: National Health Mission, Haryana

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Attendance: 100% Attendence

Objectives achieved: ① Assessing the knowledge of mothers & Anganwadisworkers in relation to IYCF practices
② Assessing the nutritional status of children 2-5 yrs of age registered at the anganwadi centres.

Deliverables: ① Developed questionnaire to achieve the objectives.
② Collected data from Anganwadi centres in selected villages of panchkula.

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Suggestions for Improvement: Need more exposure in the field to understand the things better.

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EXECUTIVE SUMMARY

Nutrition is a crucial, universally recognized component of every child's right to the highest attainable standard of health, and every woman's right to proper nutrition and to full information and appropriate conditions that will enable her to feed her child as she decides[1]
The Millennium Development Goal 1 is 'Eradicate extreme poverty and Hunger' Under Goal 1, target 2 states, 'halve, between 1990 and 2015, the proportion of people who suffer from hunger' with the indicator 'Prevalence of underweight children under three years of age'. India is therefore, committed to halving the prevalence of underweight children by 2015.

Optimal IYCF (Infant and Young Child Feeding Practices) and Care addresses directly addresses seven of the eight goals:

1. Reduces poverty and hunger,
2. Increases education by increasing brain capacity,
3. Increases gender equality by providing the best start for all,
4. Prevents child mortality by at least 20%-50%,
5. Improves maternal health by impacting on postpartum blood loss and contributing to birth intervals,
6. Combats the spread of HIV from mother to child when breastfeeding is practiced exclusively, and,
7. Helps ensure environmental sustainability by reducing many forms of waste[1]

All-India trend of the proportion of underweight (severe and moderate) children below 3 years of age shows India is going slow in eliminating the effect of malnutrition. From estimated 52% in 1990, the proportion of underweight children below 3 years is required to be reduced to 26% by 2015. The proportion of underweight children has declined by only 3 percentage points during 1998-99 to 2005-06, i.e. from about 43% to about 40% and at this historical rate of decline, the measure is expected to come down to about 33% only by 2015[2]

Malnutrition is one of the significant factors contributing to Infant and child mortality in developing countries of the world. The sixth report on global nutrition showed that the extent

of malnutrition is still incongruously high and progress to reduce it in most regions of the world is slow. According to WHO 2007 estimates, there are around 19.3 and 31.6 percent of underweight and stunted children in the developing countries as compared to 1.5 and 6.0 percent of underweight and stunted children respectively in developed world[3]

The prevalence of underweight and stunted children in India is amongst the highest world, and nearly doubles that of Sub-Saharan Africa with dire consequences for mobility, mortality, productivity and economic growth. Almost half of the preschool children are stunted, two-fifths of them are underweight and one-fifths of them are wasted and nearly 60 million children are underweight in India[2]. Rural India witnesses more malnutrition cases among children less than 5 years as higher percentage of stunted, wasted and underweight children were reported from rural areas.

Breastfeeding is one of the most powerful tools available to a mother to ensure the health and survival of her child from the moment he/she is born. Breast milk provides all the nutrients a child needs for healthy development in the first six months of life. And the antibodies that are transferred from a mother to her child during breastfeeding help protect infants against common childhood illnesses that can lead to death, such as diarrhea, pneumonia, respiratory infections, otitis media. Although infants are supposed to start complementary feeding at the completion of six months, some of them are offered even earlier. This might result in increased diarrheal morbidity and risk of developing malnutrition[4]

Good nutrition during this period of rapid growth is vital to ensure that the infant develops both physically and mentally to the fullest potential. Poor feeding practices are a major threat to social and economic development. Nutritional counselling is required to improve the infant feeding practices. This study was conducted to assess mothers' knowledge regarding infant feeding and different other factor that can affect the nutritional status of pre-school children.

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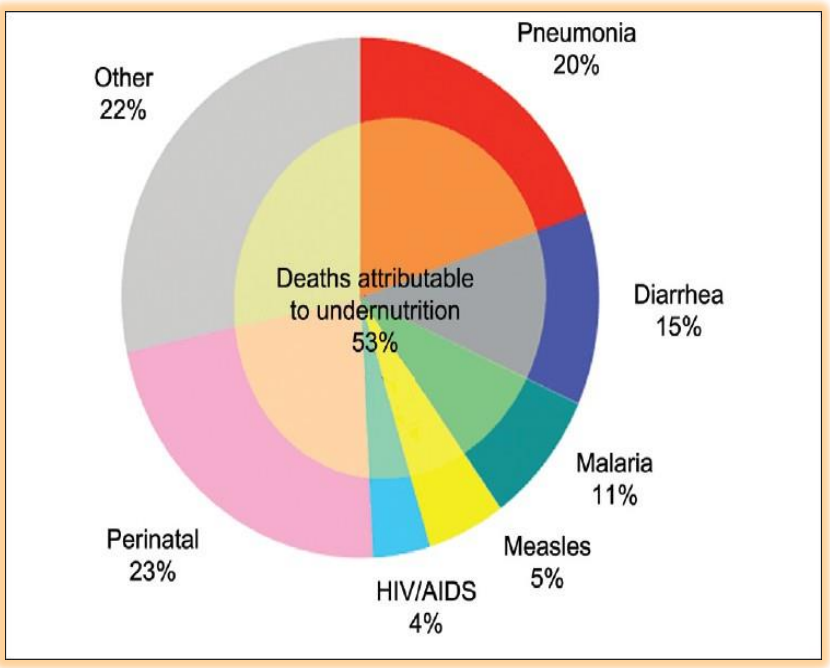
CHAPTER 1: INTRODUCTION

INTRODUCTION

1.1. Background

India, with 1.21 billion people is the second most populous country in the world. It is significant that while an absolute increase of 181 million in the country's population has been recorded during the decade 2001-2011, there is a reduction of 5.05 millions in the population of children aged 0-6 years during this period. The decline in male children is 2.06 million and in female children is 2.99 millions. The share of Children (0-6 years) in the total population has showed a decline of 2.8 points in 2011, compared to Census 2001. The share of children (0-6 years) to the total population is 13.1% in 2011 whereas the corresponding figures for male and female children are 13.3% and 12.9%. While the size of child population in the age group (0-6 years) is declining with decline in the share of children in the total population, the share of girls in 0-6 years is declining faster than that of boys of 0-6 years. This process has led to missing of nearly 3 million girl children compared to 2 million missing boy children in 2011, compared to 2001. There are now 48 fewer girls per 1,000 boys than there were in 1981[5]

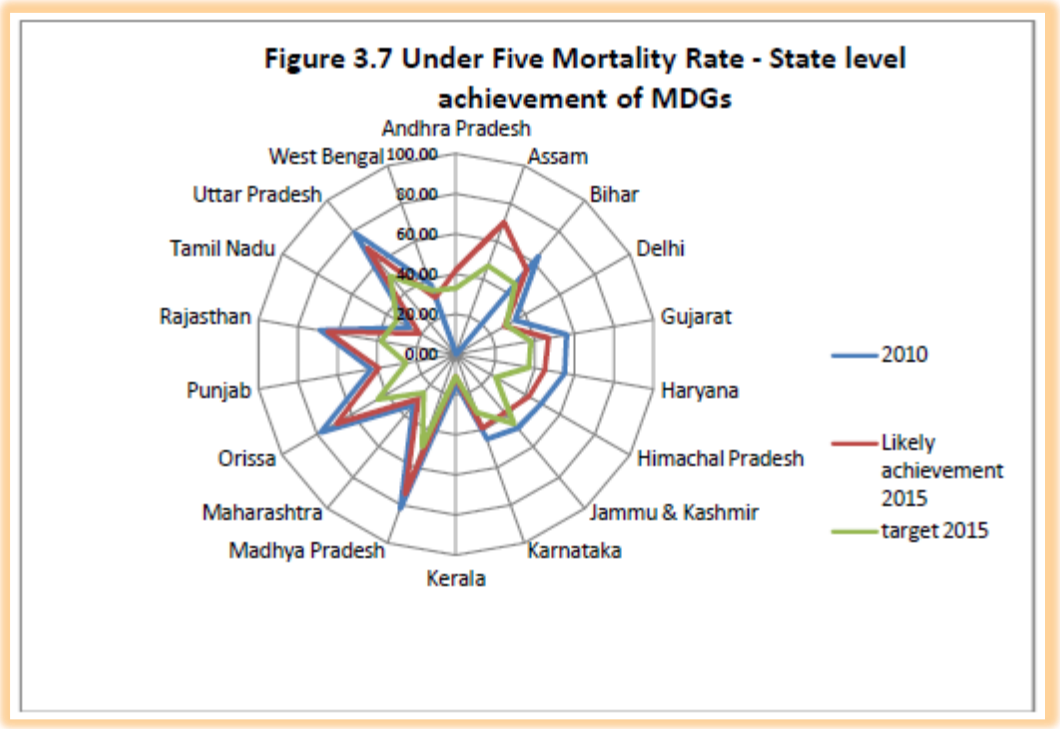
Figure 1.Causes of death in children



SOURCE: Evidence-Based preventive interventions for targeting under-nutrition in the Indian context, Sandip Kumar Ray

Children of today are citizens of tomorrow, which is why it is extremely important to ensure proper health care facilities as well as adequate nutritional intake for the children. The young child under 3 years is most vulnerable to the vicious cycles of malnutrition, disease/ infection and resultant disability all of which influence the present condition of a child at micro level and the future human resource development of the nation at the macro level.

Figure 2.Under 5 mortality- state level achievement



Source: Children in India_2012

Early childhood, that is the first six years constitutes the most crucial period in life, when the foundations are laid for cognitive, social and emotional language, physical/motor development and cumulative lifelong learning. At the micro level, malnutrition both protein energy malnutrition and micronutrient deficiencies directly affects children's physical and cognitive growth and increases susceptibility to infection and diseases. The golden interval for intervention is believed to be from pregnancy to 2 years of age, after which under nutrition may cause irreversible damage for future development. Poor foetal growth or stunting in the first two years of life leads to irreversible damage. Inadequate cognitive or social stimulation in first two to three years has lifelong negative impact on educational performance and psycho-social functioning.

India is one among the many countries where child malnutrition is severe and also malnutrition is a major underlying cause of child mortality in India. According to the records of Children in India 2012, a statistical appraisal by the Union ministry of statistics and programme implementation, acute malnutrition, as evidenced by wasting, results in a child being too thin for his / her height. While 19.8% of children, under five years of age, are wasted in the country, which indicates that one out of every five children in India is wasted, 43% of children under five years of age are underweight for their age. Nearly half of India's children- approximately 60 million - are underweight, 45% have stunted growth (too short for their age), 20% are wasted (too thin for their height, indicating acute malnutrition), 75% are anemic, and 57% are deficient in Vitamin A. Only 40.5% children are fortunate to be breastfed within one hour of child birth. Among male and female children (6-59 months) the percentage of children with any type of anemia was reported as 69% and 69.9% respectively, severe anemia was reported for 3.2 % male children and 2.7% female children. Higher is the percentage of underweight female children (< 5 years) than male children, whereas girls are in a slightly better position as compared to male children (< 5 years) in stunted growth and acute malnourishment[2]

1.2. Child Development: Relationship with Infant and Young Child

The first years of a child's life are a time of immense opportunity for growth and development. They are also the riskiest, especially in the first three years. Brain development is most sensitive to a baby's nutrition between mid-gestation and two years of age. A baby's brain size and birth weight depend on the quality of his or her mother's nutrition during pregnancy. After birth, brain growth depends critically on the quality of a child's nutrition. Infants six months of age and over need iron in their diets. Iron deficiency has been clearly linked to cognitive deficits in young children. Children also need a high level of fat in their diets due to the rapid myelinization in early life.

Research has found long-term effects of nutritional deficiencies on schooling performance, and a child's social and emotional response to stress. Early childhood intervention programme promote healthy growth through giving children, especially disadvantaged children, access to basic nutrition, health care and stimulation. More attention could and should be paid to the social and emotional development aspects of infant and young child feeding. The emotional and behavioral interaction that goes on between mother and child during breastfeeding, and

complementary feeding is important to stimulate the child and give the child a sense of security and feeling of being loved. It is similarly important to the mother's physical and emotional well-being. Due to the complexity and cost of following feeding patterns and outcomes among cohorts of children, few programmes in the developing world have evaluated the impact of optimal feeding strategies on emotional and intellectual development of a population of children

1.3. UNICEF's Medium Term Strategic Plan for Early Childhood

Traditionally, IYCF activities have concentrated on what and when to feed a child, and given less attention to how the mother feeds and cares for her child. Most often health professionals attend to the quantity and quality of a child's food, but seldom to the act of feeding itself – which is, to the quantity and quality of the mother/child interaction. Initiatives to bring together early child development and IYCF strategies could potentially help answer some persistent problems in the field[1]

UNICEF is laying the groundwork for an integrated approach in these areas. It has made available a manual providing guidance to child care workers on counseling the mother. This document includes how to assess the child's usual feeding and care for development of the child. It provides recommendations on counseling a mother regarding how to handle problems with child feeding, feeding during sickness, and care for development.

CHAPTER 2: REVIEW OF LITERATURE

REVIEW OF LITERATURE

Search engines used were Google Scholar, Pubmed, The Lancet,
Keywords used were: feeding practices, nutrition, knowledge, anemia, malnutrition, Child-feeding practices, Child nutrition, Child nutritional status, Infant and child-feeding index

According to WHO 2007 estimates, there are around 19.3 and 31.6 percent of underweight and stunted children in the developing countries as compared to 1.5 and 6.0 percent of underweight and stunted children respectively in developed world (United Nation, 2010). Therefore, malnutrition is considered as wide spread public health problem especially in developing countries[8]. Most of the research on relationship between child feeding practices and nutrition outcome has focused on single behaviour e.g. exclusive breastfeeding, timing of introduction of complimentary food, duration of breastfeeding etc. It was Ruel and Menon who first attempted to create composite age-specific feeding and index to see its association with child nutrition for the Latin American countries. Even after this there have been a few research carried out on child feeding practices and child nutrition[9].

2.1. Important definitions/terms[7]

2.1.1. Height-for-age (stunting)

Children whose height-for-age is below minus two standard deviations (-2 SD) from the median of the reference population are considered short for their age (stunted) and are chronically malnourished. Children below minus three standard deviations (-3 SD) from the median of the reference population are considered to be severely stunted. Stunting reflects failure to receive adequate nutrition over a long period of time. Height-for- age, therefore, represents the long-term effects of malnutrition in a population and does not vary according to recent dietary intake.

2.1.2. Weight-for-height (wasting)

The weight-for-height index measures body mass in relation to body length and describes current nutritional status. Children who are below -2SD from the median of the reference population are considered thin (wasted) for their height and are acutely malnourished. Wasting represents the failure to receive adequate nutrition in the period immediately

preceding the survey and may be the result of inadequate food intake or a recent episode of illness causing loss of weight and the onset of malnutrition. Children whose weight-for-height is below -3 SD from the median of the reference population are considered to be severely wasted.

2.1.3. Weight-for-age (underweight)

Weight-for-age is a composite index of height-for-age and weight-for-height. It takes into account both acute and chronic malnutrition. Children whose weight-for-age is below minus 2 SD from the median of the reference population are classified as underweight. Children whose weight-for-age is below minus 3 SD from the median of the reference population are considered to be severely underweight.

2.2. Core indicators[10]:

2.2.1. Early initiation of breastfeeding:

Early initiation of breastfeeding, within one hour of birth, protects the newborn from acquiring infection and reduces newborn mortality. It facilitates emotional bonding of the mother and the baby and has a positive impact on duration of exclusive breastfeeding. When a mother initiates breastfeeding within one hour after birth, production of breast milk is stimulated. The yellow or golden first milk produced in the first days, also called colostrum, is an important source of nutrition and immune protection for the newborn.

2.2.2. Exclusive breastfeeding under 6 months

Exclusive breastfeeding for 6 months confers many benefits to the infant and the mother. Chief among these is the protective effect against gastrointestinal infections, which is observed not only in developing but also in industrialized countries. The risk of mortality due to diarrhea and other infections can increase many-fold in infants who are either partially breastfed or not breastfed at all. In the context of HIV, introducing other milks, foods or liquids significantly increases the risk of HIV transmission through breast milk, and reduces infant's chances of HIV-free survival. For the mother, exclusive breastfeeding can delay return of fertility.

2.2.3. Continued breastfeeding at 2 years

Breast milk is an important source of energy and nutrients in children 6–23 months of age. Breast milk can provide one half or more of a child's energy needs between 6 and 12 months

of age, and one third of energy needs between 12 and 24 months. Breast milk is also a critical source of energy and nutrients during illness and reduces mortality among children who are malnourished. Breast milk reduces the risk of a number of acute and chronic diseases in early childhood and has long-term benefits for cardio-vascular health. In the context of HIV, early cessation of breastfeeding after 6 months is associated with increased serious morbidity, growth faltering and increased mortality. WHO and UNICEF recommend breastfeeding up to 2 years or beyond. Assessing breastfeeding among children 20–23 months provides a more accurate measure of those receiving the full benefit of breastfeeding for two years than measures taken for younger age intervals.

2.2.4. Introduction of solid, semi-solid or soft foods

Around the age of 6 months, an infant's need for energy and nutrients starts to exceed what is provided by breast milk and complementary foods are necessary to meet energy and nutrient requirements. At about 6 months of age, an infant is also developmentally ready for other foods. If complementary foods are not introduced when a child has completed 6 months of age, or if they are given inappropriately, an infant's growth may falter.

2.2.5. Duration of breastfeeding

This indicator is a proxy measure of the average number of months that children are breastfed and it adds to the understanding of when mothers may decide to discontinue breastfeeding.

One of every five children aged less than 5 years in low-income, developing countries is malnourished. Globally, under nutrition is associated with more than one-third of all deaths in this age group[7]. Childhood malnutrition places a heavy burden on many families in developing countries. It not only directly increases mortality but also imposes significant national health and development costs due to associated morbidities, including impaired cognitive ability and indirect deaths[8]

According to NFHS 3, 48% of children under age five years are stunted (too short for their age) which indicates that, half of the country's children are chronically malnourished. Acute malnutrition, as evidenced by wasting, results in a child being too thin for his or her height. 19.8% of children less than five years in the country are wasted which indicates that, ***one out of every five children in India is wasted***. 43% of children under age five years are

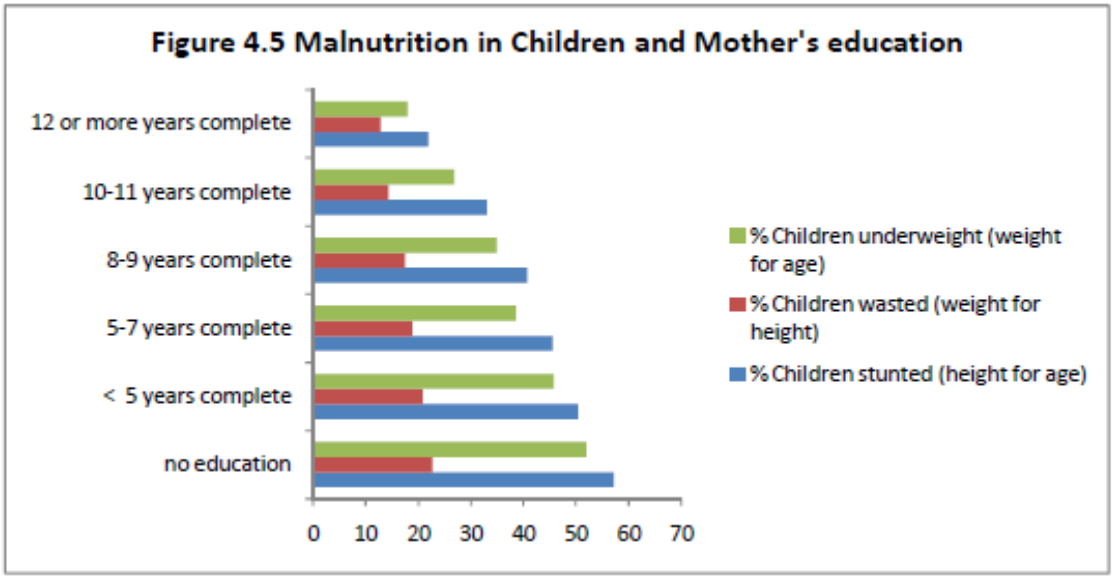
underweight for their age. Underweight status is a composite index of chronic and acute malnutrition.

Table 1. Malnourishment in children below 5 years

Table 4.1 Malnourishment in children below 5 year (%)[2]									
	Height for Age (Stunting)			Weight for Height (Wasting)			Weight for age (Underweight)		
	<-3SD (Severe)	-3SD to -2SD (Mod)	Total	<-3SD (Severe)	-3SD to -2SD (Mod)	Total	<-3SD (Severe)	-3SD to -2SD (Mod)	Total
ALL India	**23.7**	**24.3**	**48.0**	**6.4**	**13.4**	**19.8**	**15.8**	**26.7**	**42.5**

Source: National Family Health Survey, Ministry of Health and Family Welfare

Figure 3. Malnourishment and children and mother's education



Source: National Family Health Survey , 2005-06, Ministry of Health and Family Welfare

*Briend A, Bari A. Breastfeeding improves survival, but not nutritional status, of 12-35 months old children in rural Bangladesh. International Centre for Diarrhoeal Disease Research, Dhaka, Bangladesh.*The association between breastfeeding, nutritional status and survival was investigated in a cohort of 1087 children aged 12-35 months from rural Bangladesh followed monthly during 2 years. Mean weight-for-age (%NCHS) of breastfed children was 69.6 per cent (s.d.: 9.3 per cent) compared to 70.6 per cent (s.d.: 10.7 per cent) (P less than 0.001) for non-breast fed children. This confirms that after 1 year of age, breastfed children tend to be more malnourished than non-breastfed children. Despite this difference in nutritional status, risk of dying, after adjusting for age, was six times higher in non-breastfed

malnourished children than in similarly malnourished breastfed children. This suggests that breastfeeding beyond 1 year should be encouraged in communities with a high prevalence of malnutrition, despite the frequently observed association between prolonged breastfeeding and malnutrition.

The National Family Health Survey-3 (NFHS-3) data suggests that anaemia is widely prevalent among all age groups. Haemoglobin level of <11 g/dl was reported in 78.9% population. Rest of the related findings are presented in the tables below:

Table 2. Prevalence of anaemia

Vulnerable groups	Percentage anaemic
Pregnant women	58%
Non- pregnant, non- lactating women	50%
Adolescent girls (15-19 years)	56%
Adolescent boys	30%
Children <3 years of age	80%
Children <5 years of age	70%

Table 3. Micronutrient supplementation data

ACTIVITIES	FINDINGS	SOURCE
De- worming of children every 6 months	11.9 % for children 6-59 months during last six months	NFHS 3, 2005-06
Oral rehydration therapy or increased fluids for diarrhoea treatment	17.8 % for children < 6 months 34.8 % for children 6-11 months 52.3 % for children 12- 23 months	NFHS 3, 2005-06
Vitamin A supplementation every 6 months for children 9 - 59 months	55.0 % received during last 6 months	DLHS-3, 2007-08
Households with adequately iodised salt	47.5% children 6-59 months living in households using	NFHS 3, 2005-06

	adequately iodized salt	
Iron supplements to children	4.7% in the age group 6-59 months given during last 7 days	NFHS 3, 2005-06

WHO Global Data Bank on Infant and Young Child Feeding, 2009. Poor breastfeeding and complementary feeding practices are widespread. Worldwide, it is estimated that only 34.8% of infants are exclusively breastfed for the first 6 months of life, the majority receiving some other food or fluid in the early months. Complementary foods are often introduced too early or too late and are often nutritionally inadequate and unsafe.

WHO Collaborative Study Team on the Role of Breastfeeding on the Prevention of Infant Mortality. Effect of breastfeeding on infant and childhood mortality due to infectious diseases in less developed countries: a pooled analysis. Lancet 2000. Reviews of studies from developing countries show that infants who are not breastfed are 6 to 10 times more likely to die in the first months of life than infants who are breastfed. Diarrhea and pneumonia are more common and more severe in children who are artificially fed, and are responsible for many of these deaths.

Anderson JW, Johnstone BM, Remley DT. Breastfeeding and cognitive development: a meta-analysis. American Journal of Clinical Nutrition 1999. Regarding intelligence, a meta-analysis of 20 studies showed scores of cognitive function on average 3.2 points higher among children who were breastfed compared with those who were formula fed. The difference was greater (by 5.18 points) among those children who were born with low birth weight. Increased duration of breastfeeding has been associated with greater intelligence in late childhood and adulthood, which may affect the individual's ability to contribute to society

Feachem R, Koblinsky M. Interventions for the control of diarrhoeal disease among young children: promotion of breastfeeding. Bulletin of the World Health Organization 1984.
The advantages of exclusive breastfeeding compared to partial breastfeeding were recognized in 1984, when a review of available studies found that the risk of death from diarrhea of partially breastfed infants 0–6 months of age was 8.6 times the risk for exclusively breastfed

children. For those who received no breast milk the risk was 25 times that of those who were exclusively breastfed.

Sachdev H, et al. Water supplementation in exclusively breastfed infants during summer in the tropics. Lancet 1991. Several studies have shown that healthy infants do not need additional water during the first 6 months if they are exclusively breastfed, even in a hot climate. Breast milk itself is 88% water, and is enough to satisfy a baby's thirst. Extra fluids displace breast milk, and do not increase overall intake. However, water and teas are commonly given to infants, often starting in the first week of life. This practice has been associated with a two-fold increased risk of diarrhea.

Dewey KG, Adu-Afarwuah S. Systematic review of the efficacy and effectiveness of complementary feeding interventions in developing countries. Maternal and Child Nutrition 2008. From the age of 6 months, an infant's need for energy and nutrients starts to exceed what is provided by breast milk, and complementary feeding becomes necessary to fill the energy and nutrient gap. If complementary foods are not introduced at this age or if they are given inappropriately, an infant's growth may falter. In many countries, the period of complementary feeding from 6–23 months is the time of peak incidence of growth faltering, micronutrient deficiencies and infectious illnesses

PAHO/WHO. Guiding principles for complementary feeding of the breastfed child. Washington DC: Pan American Health Organization/World Health Organization; 2002. Even after complementary foods have been introduced, breastfeeding remains a critical source of nutrients for the young infant and child. It provides about one half of an infant's energy needs up to the age of one year, and up to one third during the second year of life. Breast milk continues to supply higher quality nutrients than complementary foods, and also protective factors. It is therefore recommended that breastfeeding on demand continues with adequate complementary feeding up to 2 years or beyond

*Pollitt E, et al. Nutrition in early life and the fulfillment of intellectual potential. The Journal of Nutrition 1995.*Early nutritional deficits are also linked to long-term impairment in growth and health. Malnutrition during the first 2 years of life causes stunting, leading to the adult being several centimeters shorter than his or her potential height. There is evidence that adults who were malnourished in early childhood have impaired intellectual performance.

They may also have reduced capacity for physical work. If women were malnourished as children, their reproductive capacity is affected, their infants may have lower birth weight, and they have more complicated deliveries. When many children in a population are malnourished, it has implications for national development. The overall functional consequences of malnutrition are thus immense.

*Jones G, et al. How many child deaths can we prevent this year? Lancet 2003.*Based on evidence of the effectiveness of interventions, achievement of universal coverage of optimal breastfeeding could prevent 13% of deaths occurring in children less than 5 years of age globally, while appropriate complementary feeding practices would result in an additional 6% reduction in under-five mortality

In a low socio-economic rural African community, although breastfeeding was initiated in 99.0% of the study sample, more than 60.0% of the infants included in the study had been introduced to water during their first month of life. Moreover, nearly 95.0% of the infants were introduced to solid foods at 2-4 months of age. This study therefore highlights that although the rate of breast feeding initiation is relatively high in developing countries, exclusive breastfeeding is rarely practiced.

2.3. Determinants of under nutrition in children

Das S, Hossain MZ. Levels and determinants of child under nutrition in Bangladesh. Pak. J. Statist.2008. Epidemiological studies conducted in developing countries have identified several causes of under-nutrition in children. The most prominent cause is poverty, followed by low levels of parental education, poor dietary intake by children and rural residence. For example, children < 5 years from low socio-economic households were found to have twice the risk of being stunted than children from rich households in Ghana. The association between poverty and under-nutrition is mainly due to lack of adequate and nutritionally balanced diet, health care and poor living conditions

Bloss E, Wainaina F, Bailey RC. Prevalence and predictors of underweight, stunting, and wasting among children aged 5 and under in western Kenya. J Trop Pediatr 2004. Underweight among these children were also strongly associated with maternal education, as children of mothers with no formal education were more likely to be underweight than

children of mothers with at least secondary school education (OR = 1.64; 95% CI = 1.04–2.59)

King J, Ashworth A. Historical review of the changing pattern of infant feeding in developing countries: The case of Malaysia, the Caribbean, Nigeria and Zaire. Soc Sci Med 1987.

While extended breastfeeding and early introduction of complementary feeding were traditional norms among low-income mothers in Malaysia and the Caribbean, a notable decrease in the duration of breastfeeding was observed in these countries.

Additionally, there has been an increased use of processed milk as a supplement for the infant, as a result of industrialization and promotion of infant formulas

CHAPTER 3: OBJECTIVES

OBJECTIVES

- To assess the nutritional status of pre-school children aged 2-5 years.
- To assess the knowledge related to IYCF practices of mothers of these children.
- To find the association, if any between the nutritional status and knowledge of mothers related to IYCF practices.
- To study other factors associated with the nutritional status of children.

CHAPTER 4: METHODOLOGY & DATA COLLECTION

METHODOLOGY

4.1. Study design

Cross-sectional cluster analysis

4.2. Study area

Villages of District Panchkula of State Haryana

4.3. Study population

Children of age 2- 5 years registered at the Anganwadi for pre- school education and mid day meal

Mothers of children assessed for nutritional status

4.4. Sampling technique

30*7 cluster sampling was chosen as an appropriate technique as it was seen as the best methods to chose a sample population for nutritional studies

4.5. Selection of sample- Identifying clusters

Calculating the sample interval and choosing a random number

Sampling interval was calculated using the following formula:

$$\frac{\text{Total population to be surveyed}}{\text{30 clusters}} = \text{Sampling interval}$$

The sampling interval was rounded off to the nearest whole number.

Complete a cluster identification form

- The first step was to obtain a list of all communities/villages in the area to be surveyed with as up-to-date population data as possible. A list was then made of all the villages in district Panchkula of state Haryana. Population size of each village was listed. Data was taken from the state PIP.

- Cumulative populations were calculated and written as each community/village was added. To obtain a cumulative population, population of the next village was added to the combined total of all populations in preceding villages. The final cumulative population should be the same as the total population to be surveyed.
- Select a random number which is less than or equal to the sampling interval. The number must have the same number of digits as the number of digits in the sampling interval. In the present study, a random number was chosen with the help of formula in Microsoft excel.
- Identify the community in which Cluster 1 is located. This was done by locating the first village listed in which the cumulative population equals or exceeds the random number. '1' was written beside this community in the column entitled 'CLUSTER'.
- Community in which Cluster 2 is located was then identified. The formula written below was use Random number + sampling interval=_____ or exceed the number

- 30 clusters were identified this way by using the formula:

Number which identified the location of the previous cluster + sampling interval =

- The number of clusters 1–30 was written besides the appropriate community. A single community may contain more than one cluster.

4.6. Inclusion criteria:

- Children of age group 2-5 years.
- Mothers of children of age group 2-5 years who are available for nutritional assessment.
- Mothers who were residents of that village for more than one year

4.7. Exclusion criteria:

- Children in the age group 2-5 years whose mothers were not available or alive.
- The cluster without Anganwadi center in the village.
- The Anganwadi center where the worker was not available.
- Children who were severely ill.
- More than two children of the same mother.

4.8. Methods of data collection

Birth records maintained by anganwadi workers were used to determine the age. In about 10% of the cases where records were not available, mother was interviewed to find out the age of the child. Age was computed in complete months. Children who were born before the middle of the month were counted in previous month while those who were born at or beyond middle of the month were counted in the next month.

A pre- designed interview schedule was used to collect data on socio-economic factors and Infant and Young Child Feeding practices. Weight of the children was recorded on electronic weighing machine to the nearest 50 g with minimal clothing. Height in 2-5 year olds was measured by measuring tape. Arm circumference was measured to the nearest 0.1 cm MUAC tape.

4.9. Composite Infant and Child Feeding Index

To study the various factors which may be associated with breastfeeding, a simplified score was given to each of the core indicators. 4 selected indicators related to breastfeeding were:

a) Early initiation of breastfeeding

b) Exclusive breastfeeding for 6 months

c) Timely initiation of complementary feed at 6 months of age

d) Continued breastfeeding till 2 years of age

Weightage to each indicator was given depending upon the order of the start of the activity in the indicator, determining the importance of each. For e.g.: initiation of breastfeeding was given the maximum weightage i.e. 4 as first 48 hours are the most crucial for a newborn and accounts for the maximum mortality but breastfeeding prevents hypothermia, hypoglycemia, improves immunity thus increasing the chances of survival. Scores ranged from 0-10.

For analysis, knowledge of mothers was divided into 4 categories, depending upon the score she gets:

a) Requiring immediate attention, score 0-2

b) Acceptable, score 3-5

c) Partial knowledge, score 6-7

d) Very good, score 8-10

4.11. Research Instruments

Data was analyzed using:

- SPSS16.0
- Microsoft Excel
- WHO Anthro v3.2.2

CHAPTER 5: DATA ANALYSIS AND STUDY FINDINGS

DATA ANALYSIS AND STUDY FINDINGS

Of the 140 children surveyed, 65 were boys and 75 were girls. The prevalence of wasting, underweight, and stunting was 10%, 27.1% and 27.1% respectively whereas prevalence of severe wasting, underweight and stunting was 2.9%, 10% and 18.6% respectively. A total of 48.57% of the children had neither wasting nor stunting and 51.42% children had either severe wasting or severe stunting. The prevalence of stunting was significantly higher in boys (33.85%) as compared to girls (21.33%). The prevalence of underweight was also significantly higher among boys (30.77%) as compared to girls (24%); however, prevalence of wasting was similar among boys (9.23%) and girls (10.67%) Similarly prevalence of severe stunting, wasting and underweight were significantly higher among boys.

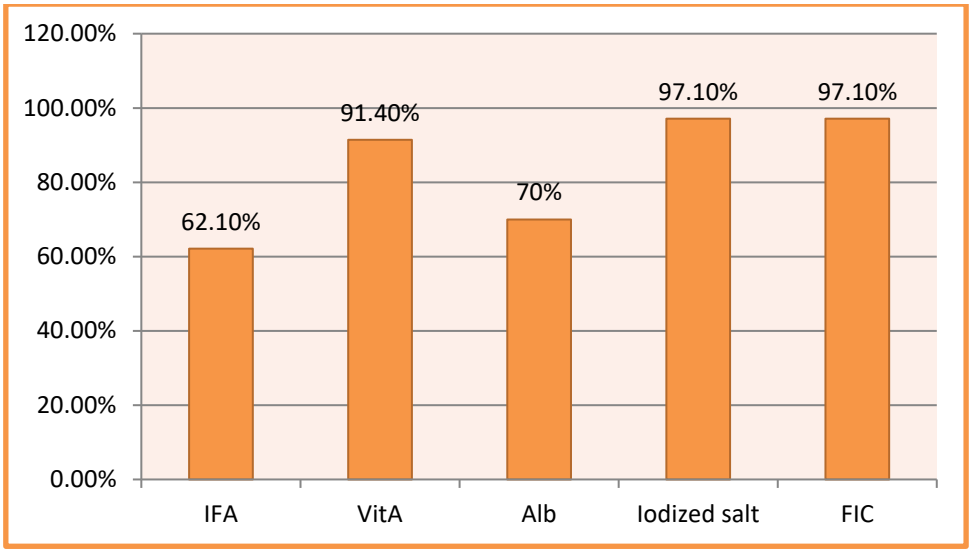
In young children, iron deficiency is due to increased iron requirement during periods of rapid growth. In addition, infant and toddler diets are often poor in bio available iron, particularly post weaning. Children who suffer from anaemia have delayed psychomotor development and impaired performance; in addition they have 5–10 point deficits in intelligence quotient. Iron deficiency can cause significant central nervous system (CNS) damage even in the absence of anaemia.

Table 4: Individual characterictics

S.No.	CHARACTERISTICS	CRITERIA	PERCENTAGES	
1	Sex of the child	Male	46.4%	
		Female	53.6%	
2	Age groups	24-35 months	38.6%	
		36-47 months	24.3%	
		48-60 months	37.1%	
3	Mother’s age	<=20 years	2.1%	
		21-30 years	80.7%	
		>30 years	17.1%	
4	Occupation of father	Unemployed	3.6%	

		Unskilled worker	75.7%	
		Semi-skilled worker	12.9%	
		Skilled worker	2.1%	
		Clerical, Shop-owner, Farmer	5.7%	
5	Occupation of the mother	Unemployed	96.4%	
		Unskilled worker	2.9%	
		Skilled worker	0.7%	
6	Education of the parents		Education of the mother	Education of the father
		Illiterate	48.6%	37.9%
		Primary school	7.1%	10.0%
		Middle school	13.6%	17.9%
		High school	20.7%	24.3%
		Intermediate/diploma	6.4%	7.1%
		Graduate/post graduate	3.6%	2.9%
7	Income of the family (PRASAD'S SCALE)	773-1546	2.9%	
		1547-2577	15.0%	
		2578-5155	31.4%	
		>=5146	50.7%	

Figure 4. Percentage of children received IFA, VitA, Iodine, Alb and Full immunization



62.1% children received Fe folic acid syrup within the time period of 1 year whereas 52% children did not receive it at all. The reasons could be many:

a) Unavailability of Fe folic acid syrup at the facility/sessions.

b) Non- compliance due to associated side effects

c) Unawareness about the benefits of Fe folic acid

Most of the mothers did receive bottles for their child but one incidence of side effects in the neighbourhood would result in withdrawal of usage by others. 91.4% children received dosage of vitamin A syrup within 6 months while 8.5% children did not receive vitamin A or took their doses before 6 months. 97.1% children were fully immunized. Albendazole was given to 70% children within the last 6 months 23.6% children did not receive even a single dose and 6.4% children received it before 6 months. Albendazole was mostly administered under direct observation. 97.1% families used iodized salt while the rest that is 2.9% mothers did not know whether their salt was iodized or not.

Figure 5. Percentage of mothers with Gravida and Parity >=3(n=140)

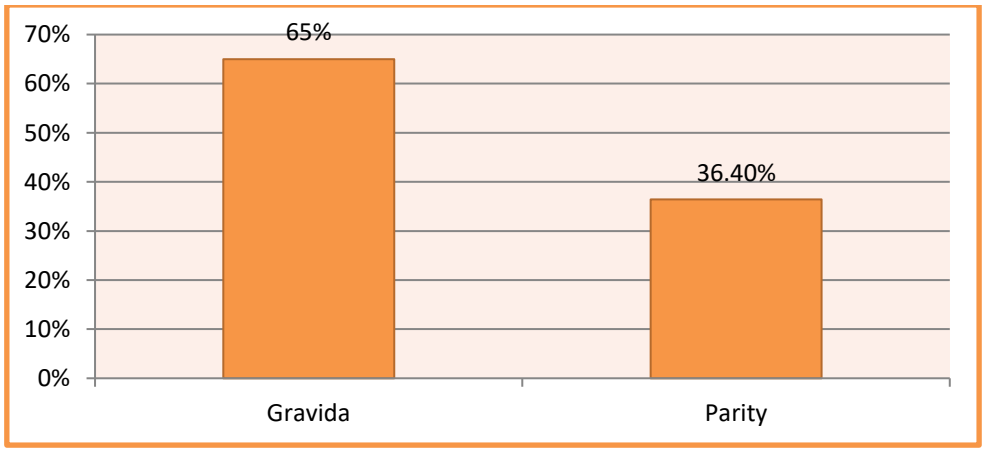
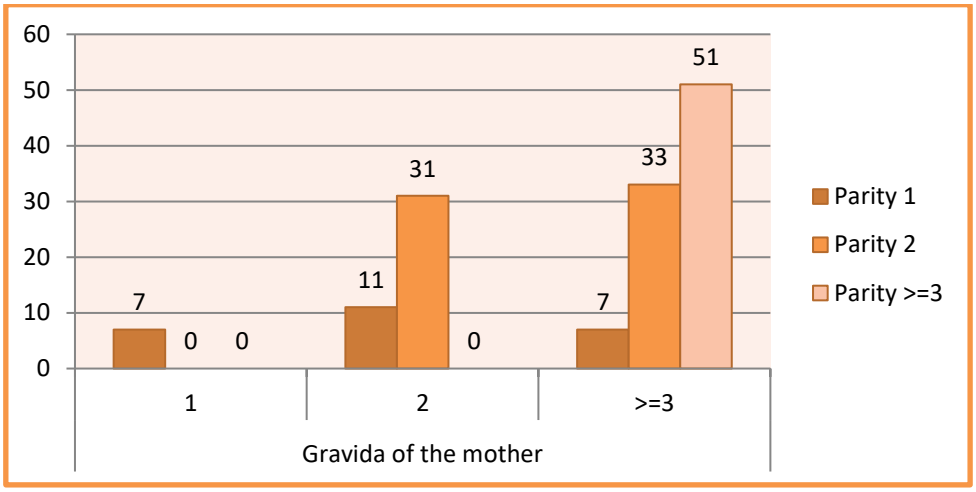
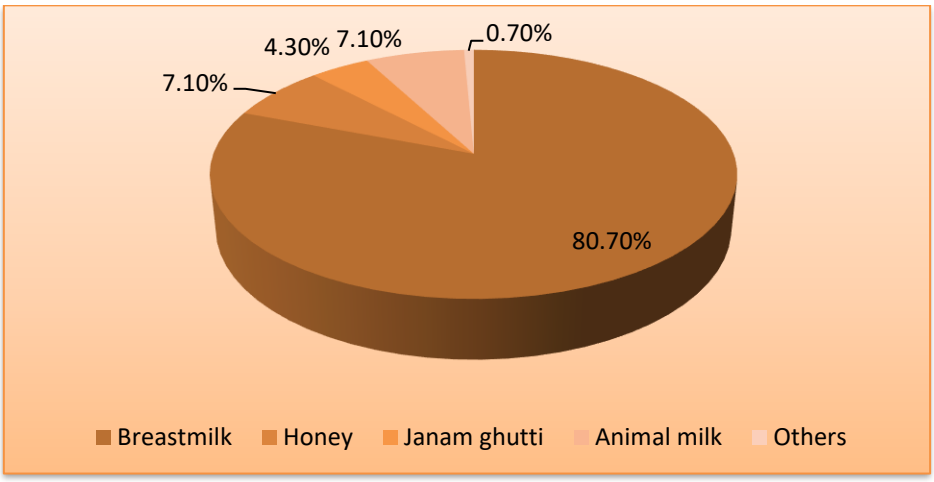


Figure 6. Relationship between gravida and parity (n=140)



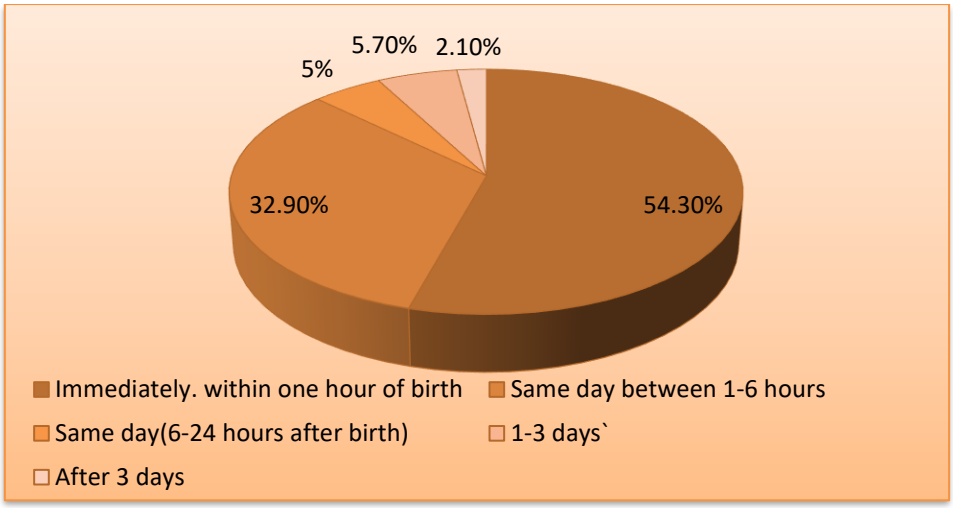
65% interviewed mothers had gravida >=3 while 36.4% had parity of >=3. Out of the 30% mothers who were gravida 2, only 73.8% mothers gave birth to 2 children which highlight the importance of family planning and ANC checkups.

Figure 7. What should be given to the child to drink/lick after birth



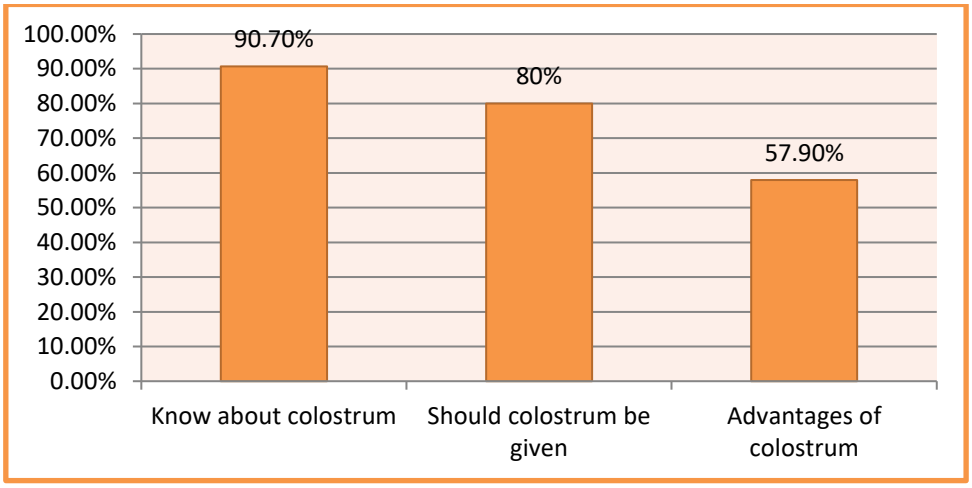
80.7% mothers said the child should be first given breast milk after birth but 19.3% mothers still resort to pre- lacteal feeds like honey, janam ghutti and animal milk.

Figure 8. When should the baby be put for feed after birth?



54.3% mothers said the baby should be breastfed immediately, within 1 hour of birth. 2.1% said after 3 days since they had the custom of feeding goat's milk to the child till then. From Fig.7 and Fig.8, we can identify the gap in awareness about breastfeeding. Out of the 54.3% mothers who agreed that the child should be breastfed immediately after birth, within one hour, 89.5% said the child should be first given breast milk. There is a need to educate and counsel the mothers during the ANC and birth preparedness session about early initiation of breastfeeding.

Figure 9. Knowledge of mothers about colostrum

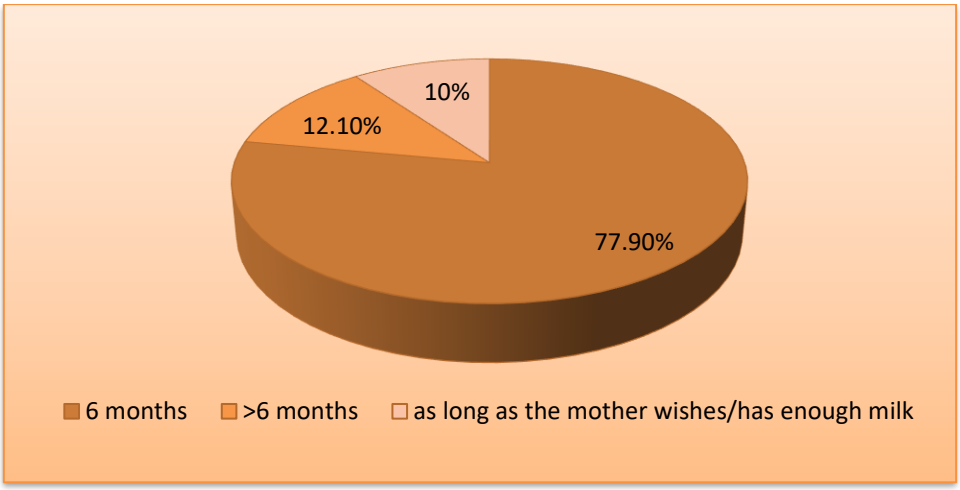


90.7% mothers knew what colostrum is while 80% knew colostrum should be fed to the baby and only 57.90% knew about the advantages of colostrum. The advantages expected to be answered by the mothers were:

a) Mother's first milk (Colostrum) protects the baby from diseases. It also increases resistance to disease. It works as the first immunization of the child.
b) Mother's first milk contains all the nutrients that are helpful in child health and their growth.

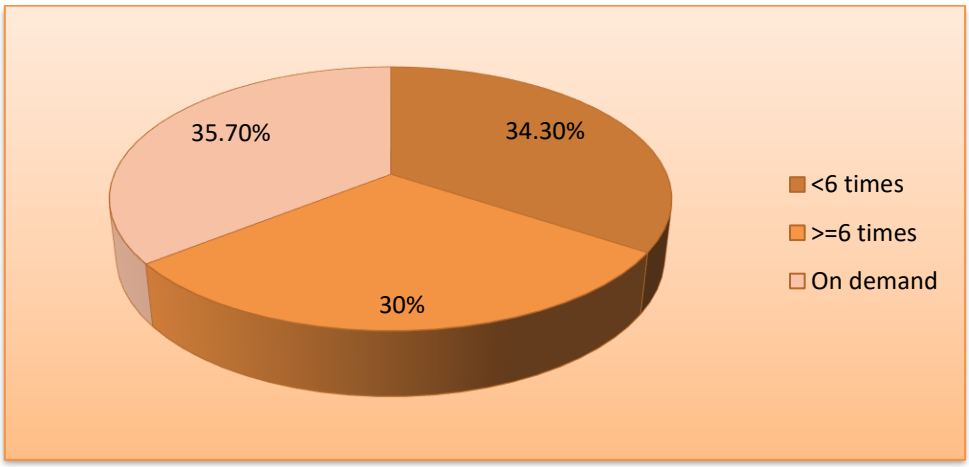
Out of the mothers who knew about colostrum i.e. 90.7% mothers, 88.19% thought it should be given to the child that is 11.81% still think it should be discarded. Out of the mothers who think it should be given, 27.7% did not even know of its benefits.

Figure 10. Recommended duration for exclusive breastfeeding



77.9% mothers knew that a child should be exclusively breastfed for at least 6 months while 22.10% mothers thought the child should be breastfed more than six months till she has enough milk or till the child wishes to feed. By the age of 6 months, a baby has usually at least doubled his or her birth weight, and is becoming more active. Exclusive breastfeeding is no longer sufficient to meet all energy and nutrient needs by itself, and complementary foods should be introduced to make up the difference.

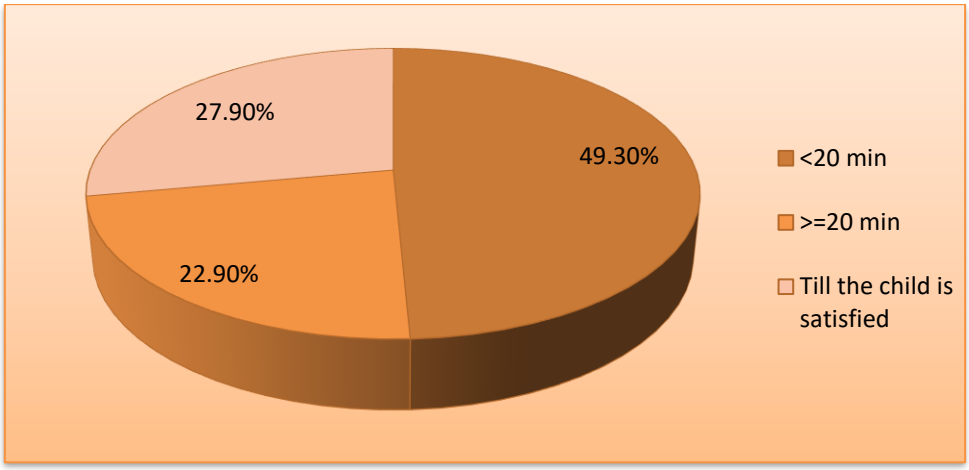
Figure 11. Frequency of breastfeeding in a day



34.3% mothers breastfed their child less than 6 times in a day while 30% breastfed their child more than or equal to 6 times a day. Maximum mothers i.e. 35.70% mothers practiced *demand feeding*, *unrestricted feeding*, or *baby-led feeding*. A baby needs to feed as often and

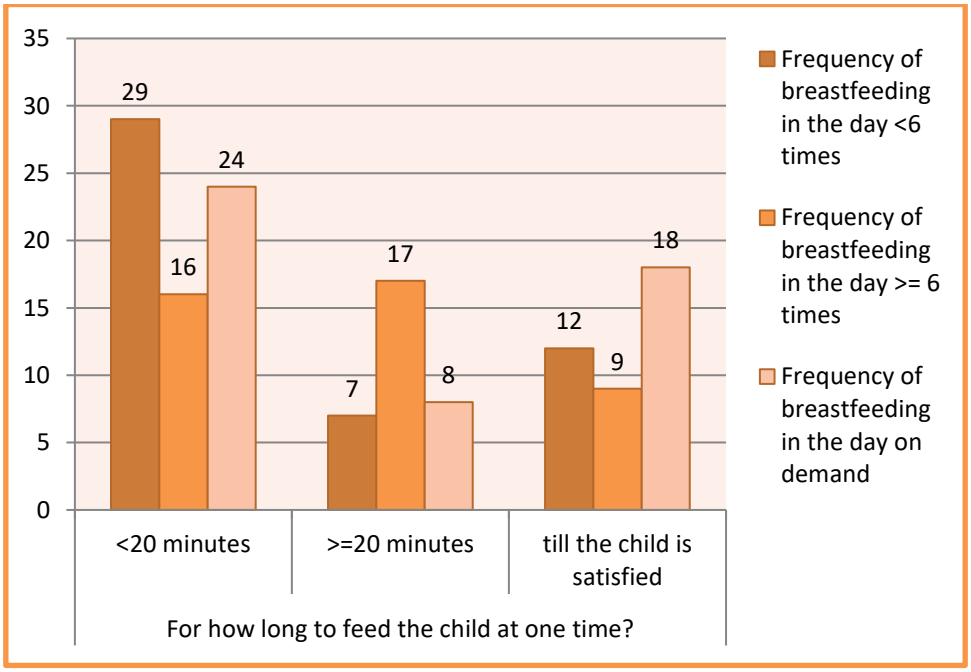
for as long as he or she wants, both day and night, this is important to ensure adequate milk production and flow for 6 months of exclusive breastfeeding[11]. Breasts seem to vary in their capacity for storing milk. Infants of women with low storage capacity may need to feed more often to remove the milk and ensure adequate daily intake and production[12].

Figure 12. For how long to feed the child at one time



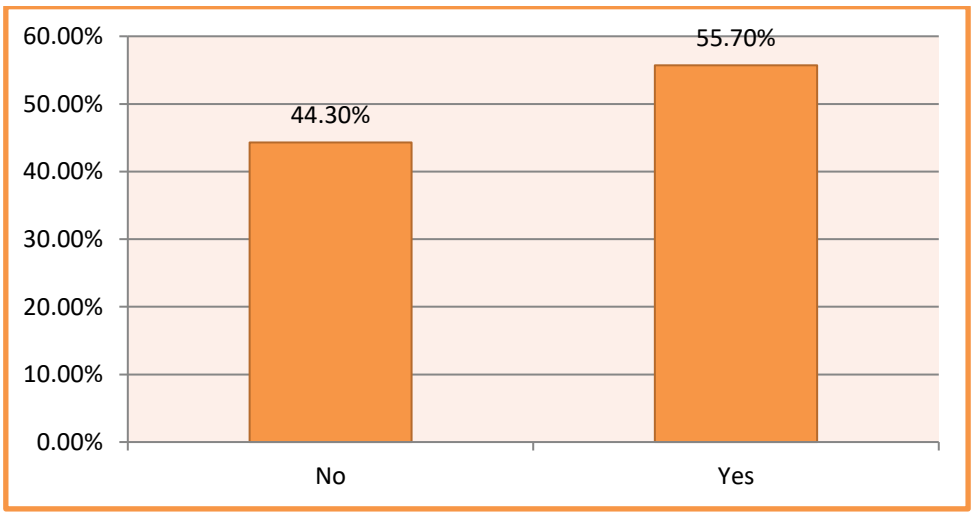
Approximately 50% mothers think that the baby should be breastfed for less than 20 minutes at one time. 22.9% mothers believe in breastfeeding the baby for more than 20 minutes while approximately 30% mothers said that the child should be breastfed till he/she is satisfied. Babies feed with different frequencies, and take different amounts of milk at each feed. The 24-hour intake of milk varies between mother-infant pairs. Infants who are feeding on demand according to their appetite obtain what they need for satisfactory growth.

Figure 13. Duration of breastfeeding and frequency of breastfeeding in the day



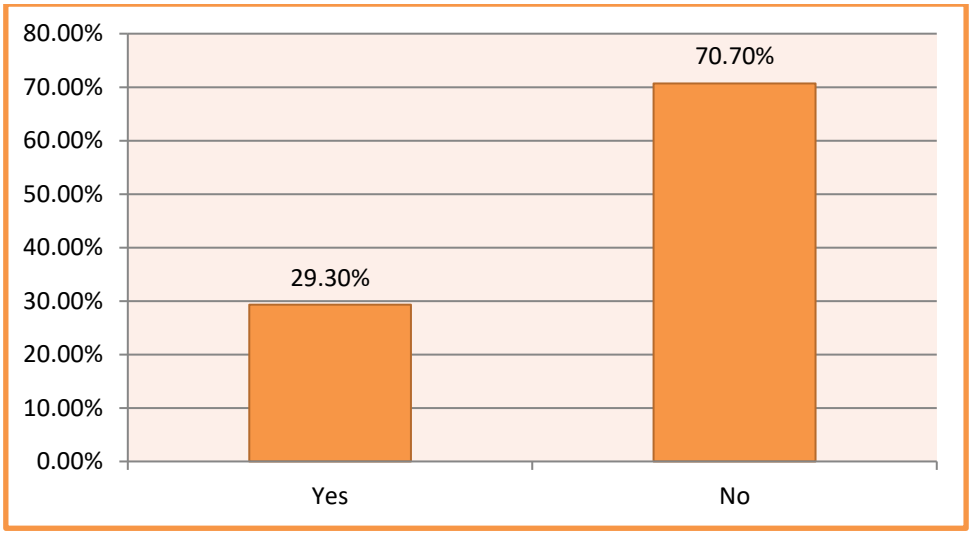
Out of the 35.7% mothers who said that the baby should be breastfed on demand, 36% mothers thought the baby should be breastfed till he/she is satisfied. 20.7% mothers thought the child should be breastfed less than 6 times a day for less than 20 minutes. It is important not to restrict the duration or the frequency of feeds – provided the baby is well attached to the breast. If a baby stays on the breast for a very long time (more than one half hour for every feed) or if he or she wants to feed very often (more often than every 1–1½ hours each time) then the baby's attachment needs to be checked and improved. Prolonged, frequent feeds can be a sign of ineffective suckling and inefficient transfer of milk to the baby.

Figure 14. Breastfeed on one side till the breast is emptied



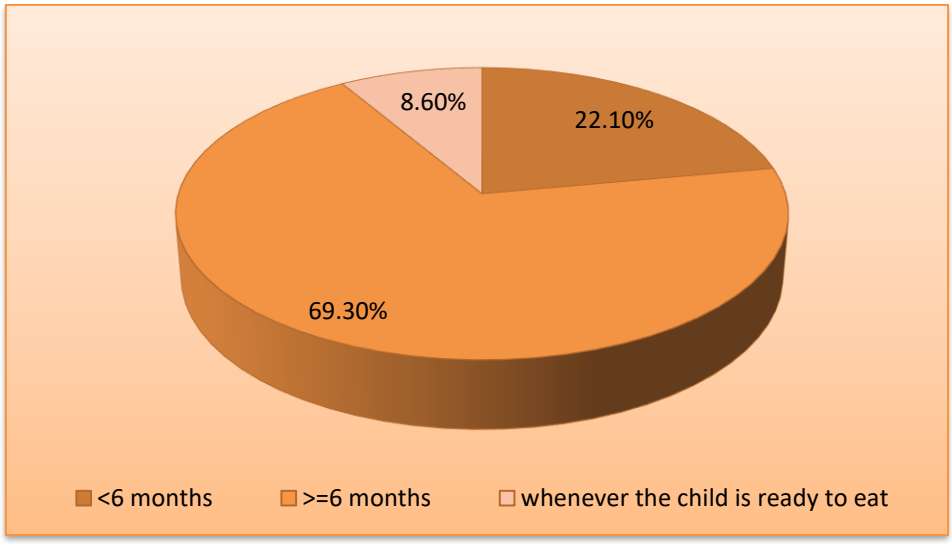
Only 55.7% mothers knew that they had to breastfeed on one of the breasts completely before switching to another. Breast feeding at one side until whole breast is emptied out should be the practice among mothers. This way the baby gets the hind milk, which is required for brain development. 46.7% mothers believed in feeding their baby from both the breasts for less than 20 minutes in total, thinking that feeding on one side is not enough for the baby and some thought their breast size would become unequal.

Figure 15. Use of expressed milk



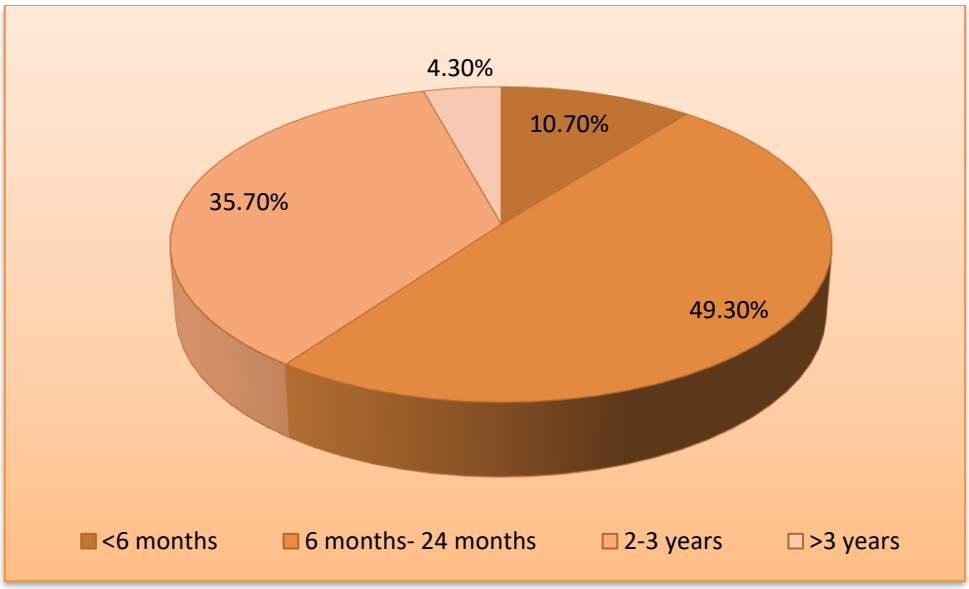
29.3% mothers agreed to the usage of expressed milk mostly for giving medication. This percentage signifies the importance of educating mothers about the cleaning and sterilization of the utensils used for feeding the baby. Expressed breast milk can be used, and for working mothers this is one way to continue breast feed even when they are away from their babies. Since a very small percentage of women were using expressed milk therefore any correlation with last episode of diarrhoea could not be seen.

Figure 16. Initiation of complementary feeding



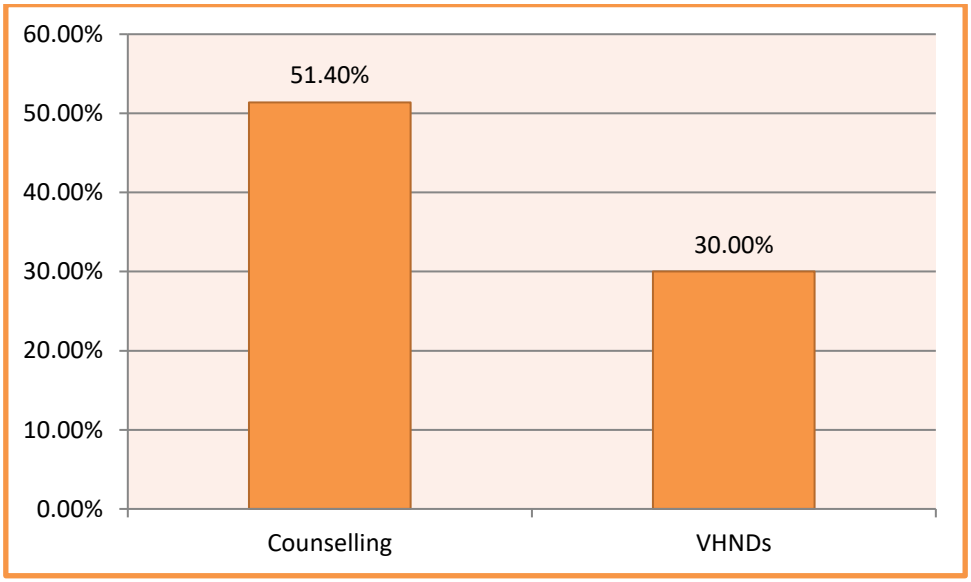
69.3% mothers knew that complementary feed should be started at/after the 6 month whereas 7.1% thought it should be left on the child, whenever he/she is ready to eat which should not be the case. Most of the mothers complained of their child not eating anything. It is our responsibility to develop our child's eating habits which will define the course of his nutritional status in later life.

Figure 17. Continued breastfeeding



49.3% mothers agreed upon continuing breastfeeding the baby along with other foods and liquid for 6 months- 2 years whereas 40% said it should be continued for more than 3 years

Figure 18. Counselling on breastfeeding and VHNDs attendance



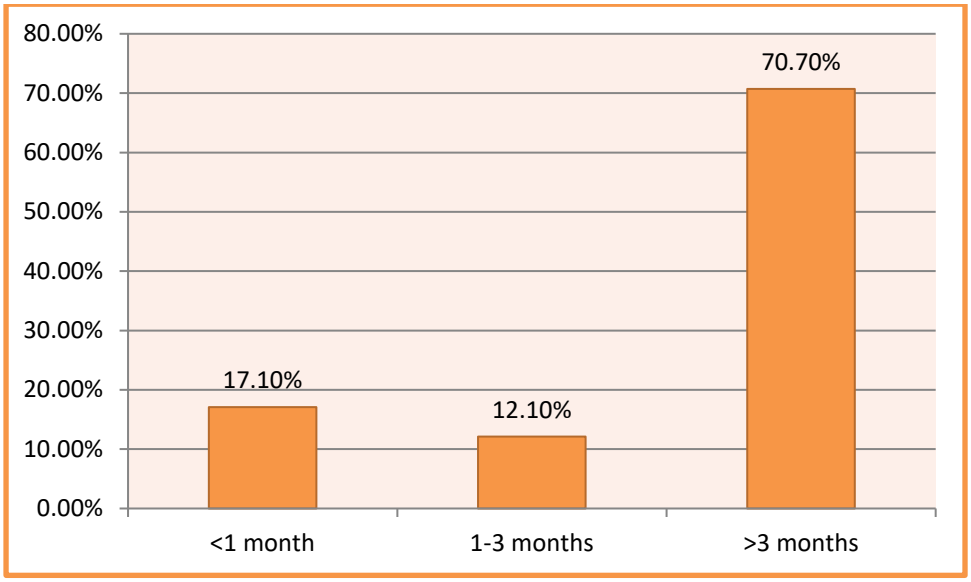
Only 51.40% mothers were counselled during Anti- natal checkups or after institutional delivery whereas 2.1% were helped when they approached any health facility or health worker in case of need. 70% mothers did not attend VHNDs at Aanganwadi centres. There can be the following reasons:

a) No VHNDs organised

b) Beneficiaries not informed

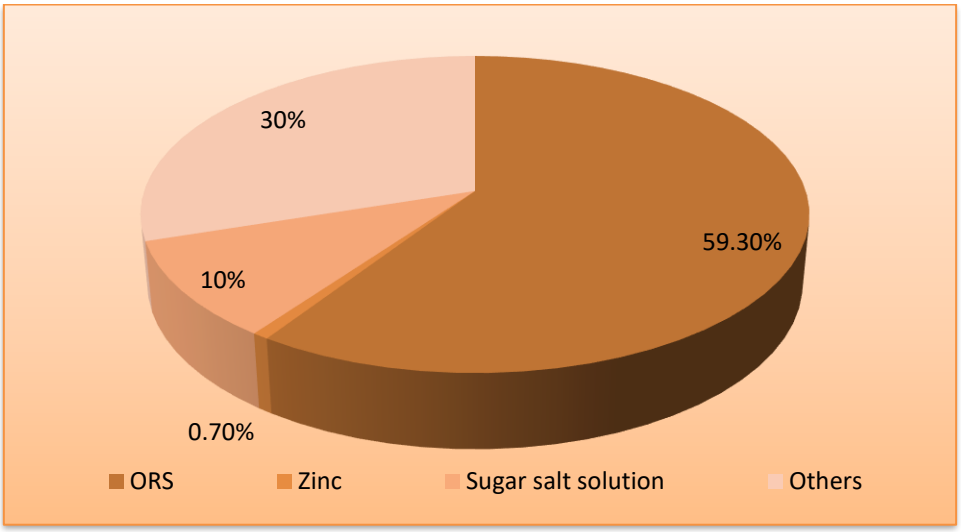
c) Mother in laws come instead of the pregnant women and mothers.

Figure 19. Last episode of diarrhoea and its management



Last episode of diarrhoea within the last one month was reported in 17.1% children. 70.7% children had an episode more than 3 months ago which was reported mainly during teething. The diarrhoeal diseases are important determinants of poor growth and development in poor countries.

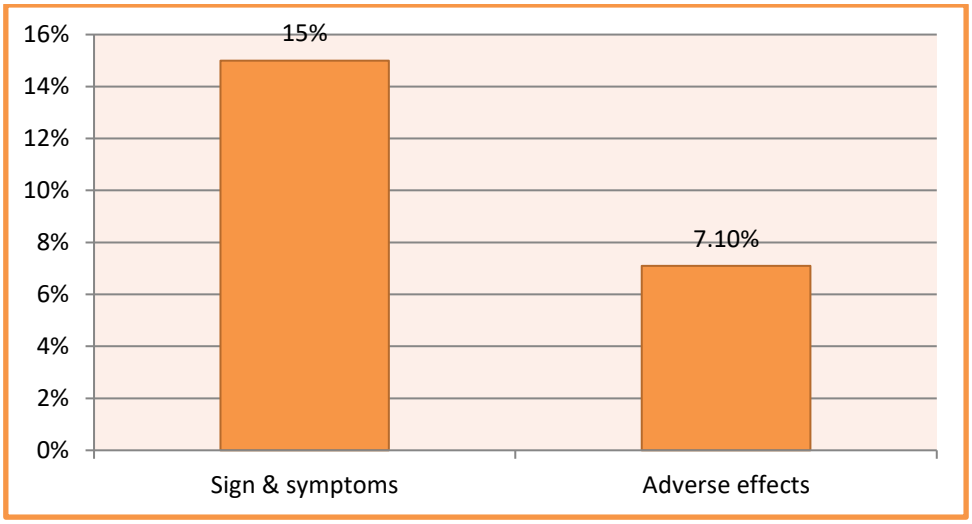
Figure 20. Diarrhoea management



59.3% of the sample population knew about ORS and its usage, 10% knew about home based preparation of sugar salt solution and 30% used other ways to treat diarrhea, for eg: taking medication from the doctor, giving the child soft diet to eat. Only 0.7% population, i.e. only one of the mothers knew about Zinc tablets. Zinc supplementation is recommended as adjunct therapy in the management of diarrhoea. Zinc (20 mg/day) should be given to all children

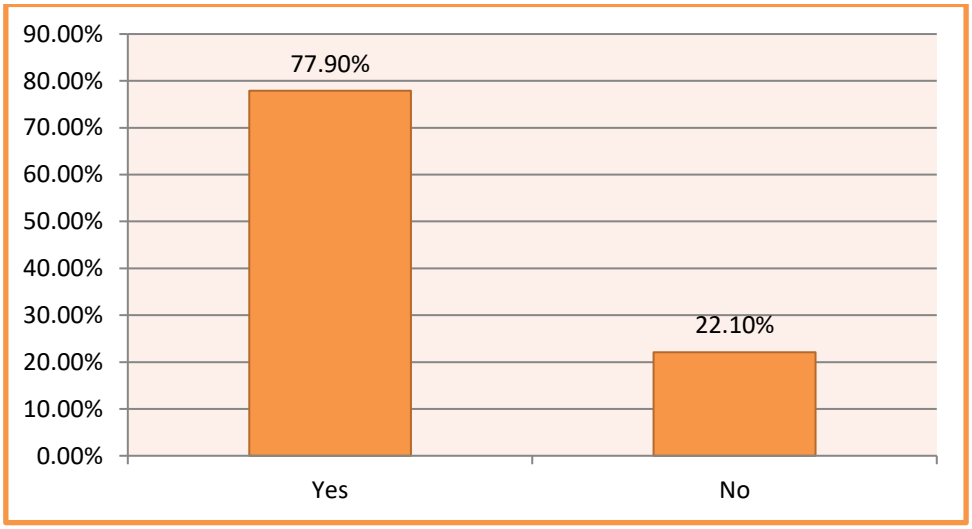
with diarrhoea for 10–14 days. In infants below 6 months of age, the dose of zinc should be 10 mg/day.[13]

Figure 21. Sign and symptoms & adverse effects of malnutrition



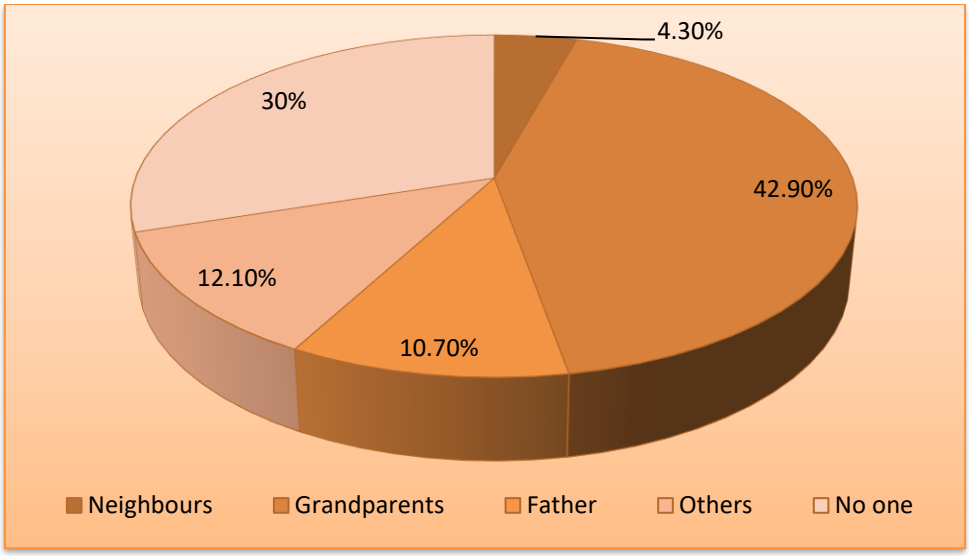
Only 15% mothers knew about the sign and symptoms of malnutrition and even less mothers that is 7.10% knew the adverse effects it can have on their children.

Figure 22. Breastfeeding continued during illness



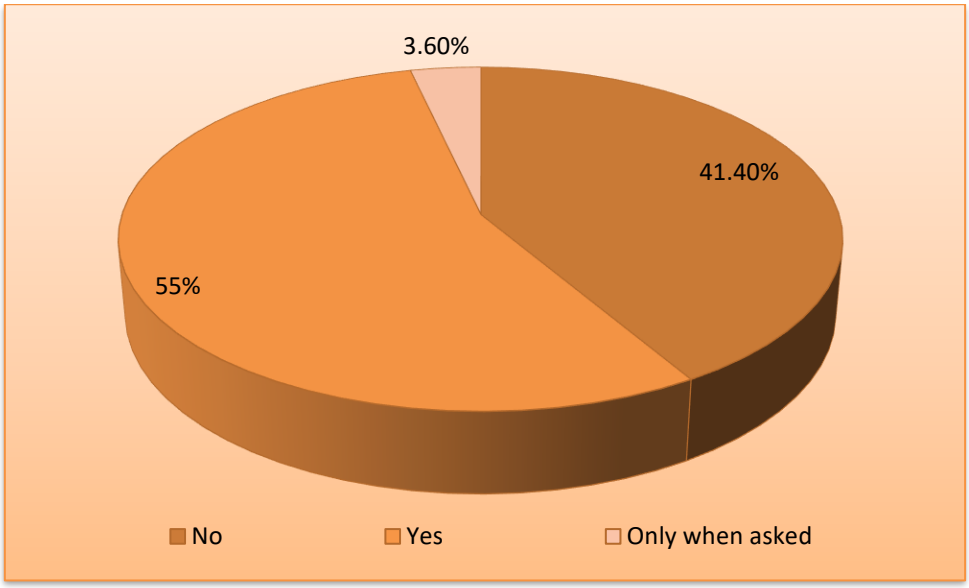
22.10% women said that they do not breastfeed their baby if he/she is ill. This is an alarming situation as the child is already low on immunity and we take his immunity and energy source away from him by stopping breastfeeding

Figure 23. Aid/support in feeding



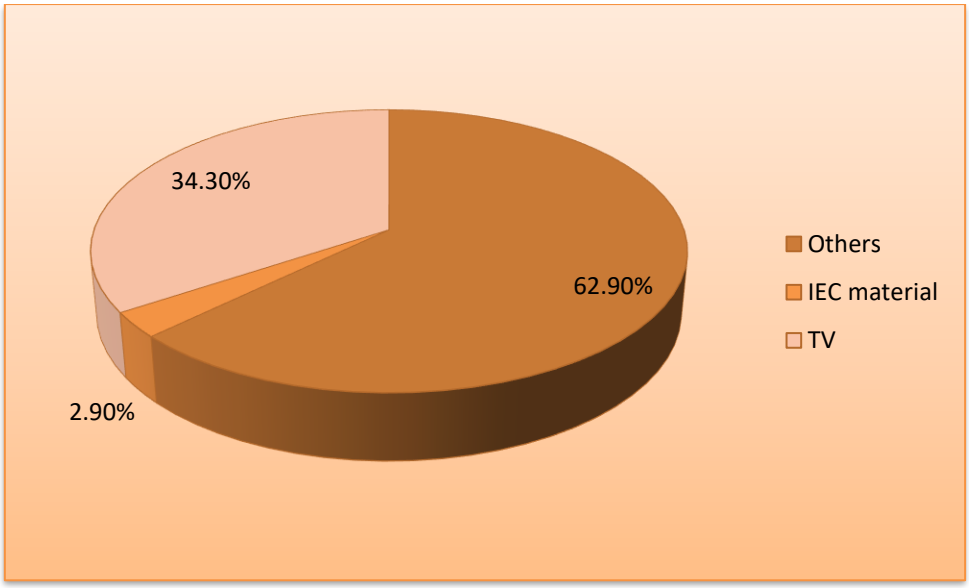
42.9% children were looked after by their grandparents in the absence and sometimes presence of mothers while 30% of mothers lived as nuclear family and had no one to look after their children in their absence.

Figure 24. Pass on the information



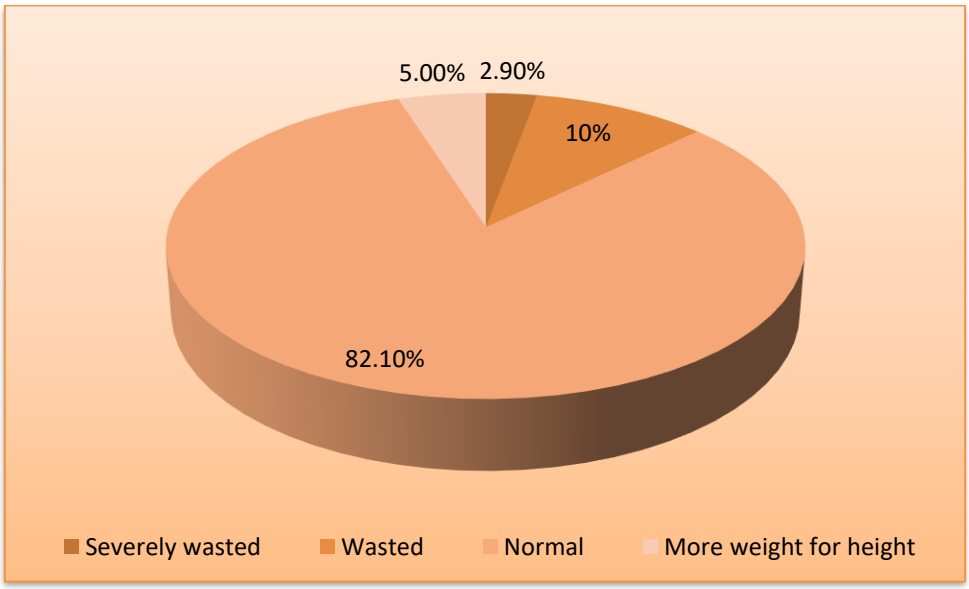
60% mothers said that they would pass on the information they have about breastfeeding and malnutrition to other women while 3.6% mentioned that they would only tell if someone asks them personally. This indicator if worked upon can ensure sustainability of the program.

Figure 25. Source of information



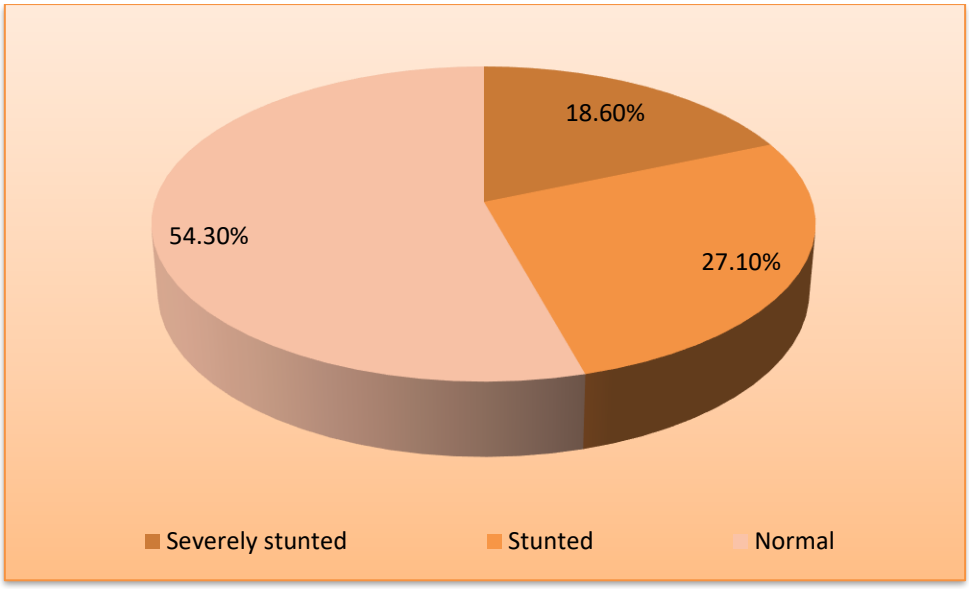
32.1% mothers had seen breastfeeding and malnutrition related information on TV, only 2.1% mothers could utilize the IEC material as not many of them were literate but mostly i.e. 65.7% mothers relied on information provided by neighbours and family members

Figure 26: Percentage of wasted children (WHZ)



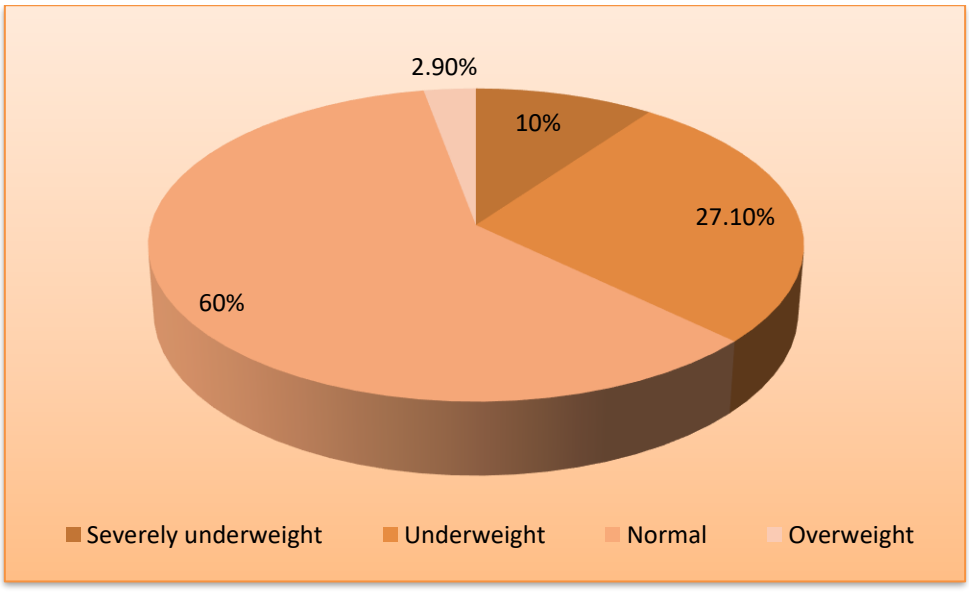
10% children were wasted i.e. Z score falling below -2 whereas severe wasting was recorded in 2.9% children. 82.10% children were not wasted but Z scores for 5% children were above +2 meaning their weight was more for their height when compared to WHO growth standards

Figure 27: Percentage of stunting in 2-5 year olds (HAZ)



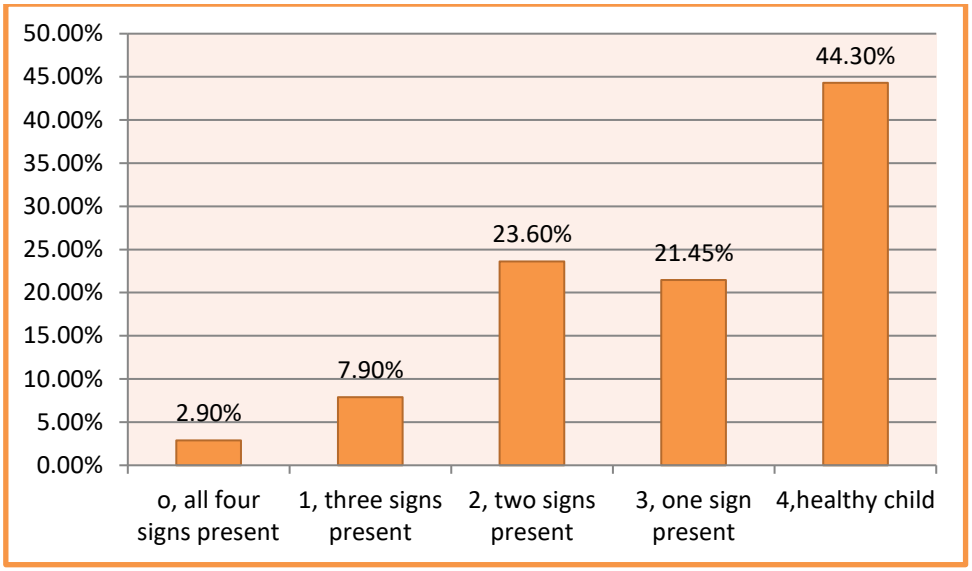
27.1% children were stunted whereas 18.60% children had severe stunting. Height of 54.30% children was in the normal range of WHO standards.

Figure 28: Percentage of underweight children(WAZ)



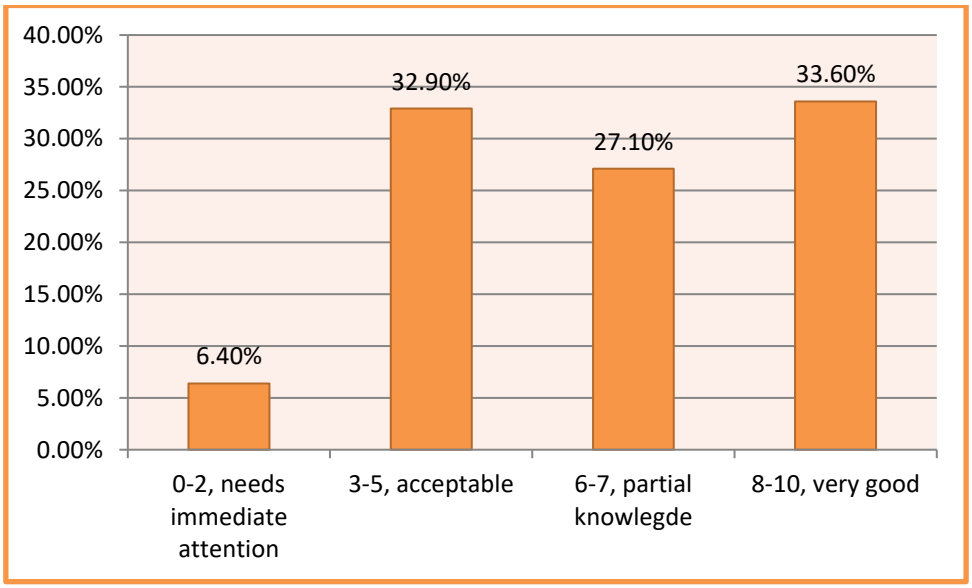
27.10% children were found to be underweight while 10% were severely underweight. 2.90% children were overweight as compared to the WHO growth standards.

Figure 29. Percentage of children showing signs of malnutrition



55.7% children presented either of the signs of malnutrition whereas 44.3% children were healthy showing no signs of stunting, wasting , underweight or decreased MUAC as compared to WHO standards

Figure 30. Knowledge assessment of mothers



Early initiation of breastfeeding, duration of exclusive breastfeeding, timely initiation of complementary feeding and duration of continued breastfeeding were the key indicators taken into consideration while assessing this variable. 33.60% mothers had very good knowledge about infant and young child feeding practices.

CHAPTER 6: DISCUSSION

DISCUSSION

Z-scores have distinct statistical advantages since these reflect the reference distribution and are comparable across ages and across indicators.

Biological, epidemiological, and statistical evidence suggests that wasting and stunting represent different processes of malnutrition. It has therefore, been recommended that attempts should be made to classify nutritional status of children for all the three basic indices namely weight-forage, weight-for-height and height-for-age. Low height-for-age (stunting) is a principal indicator of long term growth impairment caused by malnutrition in the past. Low weight-for-height (wasting) indicates a deficit in tissue and fatness compared with the amount expected for a child of the same height or length and may result either from weight loss or from failure to gain weight. Thus low weight-for height is commonly used to assess acute or recent malnutrition. Low weight-for-age (underweight) is a combined index that reflects both

height for age and weight for height data. Thus use of this indicator alone does not permit a distinction to be made between wasting and stunting.

The prevalence of all the three types of malnutrition is high in our population being 37.1%, 45.7%, 12.9% for underweight, stunting and wasting, respectively. A high prevalence of stunting with very low prevalence of wasting has also been documented in many other populations. The National Nutrition Monitoring Bureau data collected in 10 States of the country during 1974-80 showed that the prevalence of stunting is of a higher magnitude (50%) than wasting (3%). It was also revealed a significantly higher percentage of stunted children (51.9%) among 2-3 years olds as compared to younger children (30.5%). The prevalence of wasting was highest in the 1-2 year age group (4.1%).

33.60% mothers had very good knowledge of infant and young child feeding practices. 6.4% mothers need immediate attention as their knowledge regarding breastfeeding practices is very poor. No correlations could be found between their knowledge levels and nutritional status of children which cannot be inferred as they are not inter- related. This study was conducted on 3-5 year olds therefore the effects of early initiation of breastfeeding, exclusive breastfeeding; early initiation of complementary feeding could not be studied. This study was conducted to study the knowledge of mothers but their actual breastfeeding practices could not be studied which may be different as is usually affected by the knowledge level of the decision maker of the house, mostly mother in laws. For example: Out of the 54.3% mothers who agreed that the child should be breastfed immediately after birth, within one hour, 89.5% said the child should be first given breast milk. During the interview also some of the mothers while answering the questions would give correct answers but would mention if their child was fed something different like honey/janam ghutti but we mentioned what she knew.

55% mothers said they pass on the information they have to other pregnant females and mothers too. We only have to ensure that they have the correct knowledge otherwise wrong information would be spread in the field. 62.90% mothers said that there source of information related to nutrition and breastfeeding is TV while only 2.9% mothers said they read the IEC material present in the hospital or other places. The government is spending so much on IEC but what is the use if the beneficiary is not utilizing it, the primary reason being illiteracy. Therefore along with inter-sectoral coordination with other departments, there is a greater need to spread awareness about different government schemes and programmes and not to rely upon the IEC material that the beneficiaries are unable to read

LIMITATIONS

- Time limitation
- Out of the 30 clusters identified for sampling, only 21 clusters were visited
- Sometimes 3 AWC were covered in a single day so requirement of sample size from each cluster could not be fulfilled

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CHAPTER 7: RECOMMENDATIONS

RECOMMENDATIONS

There is no magic technological bullet to solve the problem of under nutrition. Long-term investments in the role of women as full and equal citizens—through education, economic, social, and political empowerment—will be the only way to deliver sustainable improvements in maternal and child nutrition and in the health of women and children more generally.

Even though food-based approaches to increasing iron intake through food fortification and dietary diversification are deemed as important and sustainable strategies for preventing iron deficiency and IDA in the general population, it is not easy to change food habits or ensure access to iron rich foods as diets in India are primarily cereal based and bioavailability of iron from such diets is limited. On the other hand, iron from dietary animal sources (haem iron) is better in terms of bioavailability but consumption is rather low or nil due to social reasons and poverty. In such a scenario, where it is difficult to influence dietary behaviour, the key

step towards addressing iron deficiency and IDA would be the implementation and scaling up of the IFA Supplementation programme and management of all forms (mild, moderate and severe) of IDA.

- More emphasis should be laid on breastfeeding counselling at the time of last ANC check up during birth preparedness or immediately after birth
- Fe Folic Acid syrup bottles of 60 mg quantity should be preferred over 100 ml to ensure compliance and reduce wastage.
- Albendazole tablets and IFA syrups should be administered under direct observation
- Monthly monitoring of weight and height increases unnecessary workload on the AWW leading to fake entries so some months could be fixed for this work
- Refresher trainings of AWW are required as most of them do not know about advantages of breastfeeding and signs of good attachment. They rely mostly on the ANMs to do the counselling during sessions
- VHNDs should be organised on a regular basis
- AWW should maintain a record of home visits they carry out in the village
- There is a need to increase the awareness about the use of Zn with ORS.
- Mostly the mother-in-laws are taking care of the child in the presence/absence of the mother so she should be necessarily called for the meetings at AWC

CHAPTER 8: REFERENCES

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CHAPTER 9: ANNEXURE

9.1 Management Of Anaemia On The Basis Of Haemoglobin Levels In Children 6 Months–5 Years

Level of Hb	Treatment	Follow-up	Referral
No Anaemia (>11 gm/dl)	20 mg of elemental iron and 100 mcg of folic acid in biweekly regimen		
Mild Anaemia (10–10.9 gm/dl)	3 mg of iron/ Kg/ day for 2 months	Follow-up every 14 days by ANM Hb estimation after completing 2 months of treatment to document Hb>11 gm/dl	In case the child has not responded to the treatment of anaemia with daily dose of iron for 2 months, refer the child to the FRU/DH with F-IMNCI trained MO/ Paediatrician/Physician for further investigation

Moderate Anaemia (7–9.9 gm/dl)	3 mg of iron/ Kg/ day for 2 months	Follow-up every 14 days by ANM Hb estimation after completing 2 months of treatment to document Hb >11 gm/dl	In case the child has not responded to the treatment of anaemia with daily dose of iron for 2 months, refer the child to the FRU/DH with F-IMNCI trained MO/ Paediatrician/Physician for further investigations
Severe Anaemia (<7 gm/dl)	Refer urgently to DH/FRU		

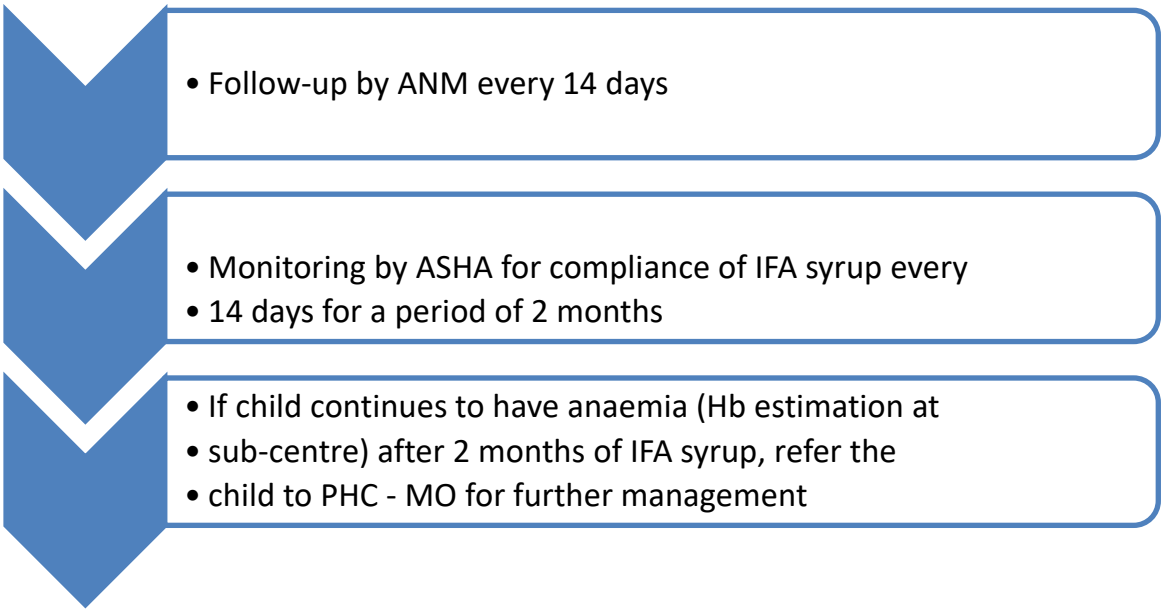
Source: Guidelines for Control of Iron Deficiency Anaemia, National Iron + Initiative, MoHFW, GoI

9.2 Dose of IFA Syrup For Anaemic Children 6 Months–5 Years

Age of child	Dose	Frequency
6 months–12 months (6–10 kg)	1 ml of IFA syrup	Once a day
1 year–3 years (10–14 kg)	1.5 ml of IFA syrup	Once a day
3 years–5 years (14–19 kg)	2 ml of IFA syrup	Once a day

Source: Guidelines for Control of Iron Deficiency Anaemia, National Iron + Initiative, MoHFW, GoI

9.3.Follow-Up Of Children Undergoing Treatment Of Anaemia To Be Done By Anm



Source: Guidelines for Control of Iron Deficiency Anaemia, National Iron + Initiative, MoHFW, GoI

9.4 Indicators For Assessing IYCF Practices

Feeding practice	Requires that the infant receive	Allows the infant to receive	Does not allow the infant to receive
Exclusive breastfeeding	Breast milk (including milk expressed or from a wet nurse)	ORS. Drops, syrups (vitamins, minerals, medicines)	Anything else
Predominant breastfeeding	Breast milk (including milk expressed or from a wet nurse) as the predominant source of nourishment	Certain liquids (water and water based drinks, fruit juice), ritual fluids and ORS, drops or syrups (vitamins, minerals,	

		medicines)	
Complementary feeding	Breast milk (including milk expressed or from a wet nurse) and solid or semi- solid foods	Anything else: any food or liquid including non-human milk and formula	N/A
Breastfeeding	Breast milk (including milk expressed or from a wet nurse)	Anything else: any food or liquid including non-human milk and formula	N/A
Bottle feeding	Any liquid (including breast milk) or semi solid food from a bottle with nipple	Anything else: any food or liquid including non-human milk and formula	N/A

Source: Indicators for assessing infant and young child feeding practices, WHO

9.5 Names Of The Selected Clusters With Their Numbers

CHC	PHC	SC	VILLAGE NAME	cluster number
1. Kalka	Old Panchkula	Naida sahib	Azad Colony	1
	Old Panchkula	Chandi Tanda	Beerghaghar	2
	Pinjore 2	Bhorian	CRPF	4
	Pinjore 2	Chicken	HMT	6
	Kalka	Tipra	Kanguwala	7
	Pinjore 2	MALLA	Kidarpur	8
	Nanakpur	Basolan	Manakpur	9
	Nanakpur	Marranwala	Nanakpur	11

	Kalka	Bar	PPC-Kalka	12 , 13
2.Raipur	Kot	Kot	Billa	3
	Kot	Ramgarh	Ramgarh	14
	Barwala	Barwala	SC- Barwala	15
	Barwala	SC- Mouli	SC- mouli	16
	Hangola	SC-HANGOLA	T-majra	28
	Barwala	Kakrali	Todo	29 , 30
3. Urban panchkula	Urban pkl	Ganoli	Ganoli	5
	Urban pkl	Urban pkl	MDR	10
	Urban pkl	Urban pkl	SEC 10	17 , 18
	Urban pkl	Urban pkl	SEC 11	19
	Urban pkl	Urban pkl	SEC 12- A	20
	Urban pkl	Urban pkl	SEC 20	21
	Urban pkl	Urban pkl	SEC 21	22
	Urban pkl	Urban pkl	SEC 25	23
	Urban pkl	Urban pkl	SEC 4	24
	Urban pkl	Urban pkl	SEC 6	25
	Urban pkl	Urban pkl	SEC 7	26
	Urban pkl	Urban pkl	SEC 8	27

9.6 Questionnaire

INDIVIDUAL CHARACTERISTICS

1	Name	
2	Age	
3	Sex	
4	Address	
5	Father's name	
6	Father's age	
7	Father's occupation	
8	Father's educational qualification	

9	Mother's name	
10	Mother'sage	
11	Mother'soccupation	
12	Mother's educational qualification	
13	Income of the family	
14	Height	
15	Weight	
16	MUAC	
17	Fe folic intake	
18	Vitamin A	
19	Albendazole	
20	Immunization	
21	iodized salt	

MOTHER'S QUESTIONNAIRE

22	Gravida	1	1
		2	2
		>=3	3
23	Parity	1	1
		2	2
		>=3	3
24	What should be given to drink/lick after birth?	Breast Milk	1
		Honey	2
		JANAM GHUTTI	3
		Sugar – Salt Water Solution	4
		ANIMAL MILK	5
		OTHERS (SPECIFY)	6
25	When should the baby be put for breast feeding after birth?	IMMEDIATELY, WITHIN ONE HOUR OF BIRTH	1
		SAME DAY BETWEEN 1 - 6	2

		HOURS AFTER BIRTH	
		SAME DAY (6-24 hours after birth)	3
		1-3 DAYS	4
		AFTER 3 DAYS	5
		Other (Specify)	6
26	Do you know about colostrum ?	Yes	1
		No	2
27	Should colostrum be given to the baby?	Yes	1
		No	2
28	If "Yes", then what are the advantages of colostrum feeding?	Mother's first milk (Colostrum) protects the baby from diseases. It also increases resistance to disease. It work as the first immunization of child	1
		Mother's first milk contains all the nutrients that are helpful in child health and their growth	2
		Others (Specify)	3
29	What else do you give your child with milk in the first few months after months?	Only mother's milk to be given to the child, not even water	1
		Mother's milk with water as and when required	2
		Largely on mother's milk, may be supplemented by other milk / liquids	3
		Other (specify)	4
		Don't know	5
30	What is the recommended duration for Exclusive breastfeeding?	<=6 Months	1
		>6 months	2

		As long as the mother wishes / have enough milk Other (specify)	3 4
31	Frequency of breastfeeding in the day	<=8 times	1
		>8times	2
		On demand	3
32	For how long to feed the child at one time?	<20 min	1
		>20 min	2
		Till the child is satisfied	3
33	Breastfeed on one side till the breast is emptied	Yes no	1 0
34	Use of expressed milk	Yes no reasons	1 2
35	Do you know what complementary feeding is?	Yes	1
		No	2
36	When mothers should start complementary feeding?(multiple options)	<6 Months	1
		>=6 months	2
		Whenever the child is ready to eat	3
		Depends on sufficiency of mother's milk	4
		Don't know	5
37	Along with other foods and liquid how many months mother should breastfeed the child?	<6 Months	1
		6 months- 2 years	2

		2-3 years >3 years	3 4
38	Councelling mothers on breastfeeding?	yes	1
		no	2
		only in case of need	3
39	VHNDs held or not?	yes	1
		no	2
40	do you know about KMC	yes no	1 0
41	last episode of diarrhoea	<1 month 1-3 months >3 months	1 2 3
42	Diarrhoea management	ORS	1
		ORS with Zn	2
		Salt sugar solution	3
		others	4
43	Sign and symptoms of malnutrition	yes	1
		no	2
44	Adverse effects of malnutrition	yes	1
		no	2
45	breastfeeding continued during illness	yes no	1 0
46	aid/support in feeding the child when not at home	neighbours grandparents father others no help	1 2 3 4 5
47	will you pass on the information	no	0

	you have	yes only when asked	1 2
48	Source of information	TV/radio IEC others	1 2 3

ANGANWADI QUESTIONNAIRE

43	Age		
44	Qualification		
45	Experience		
46	what do you understand by IYCF practices?		
47	What should be given to drink/lick after birth?	Breast Milk	1
		Honey	2
		Janam Ghutti	3
		Sugar – Salt Water Solution	4
		Animal Milk	5
		Plain Water	6
		Fruit Juice	7
		Infant Powdered Milk	8
		Tea/Coffee	9
		Sugar Or Glucose Water	10
		Others (Specify)	11
48	When should the baby be put for breast feeding after birth?	Immediately, Within One Hour Of Birth	1
		Same Day Between 1 - 6 Hours After Birth	2
		SAME DAY (6-24 Hours After Birth)	3

		1-3 Days	4
		After 3 Days	5
		Other (Specify)	6
49	What are the advantages of early initiation of breastfeeding?	While breast-feeding infant remains nearer to the mother's body which helps in maintaining heat of the child's body	1
		Breastfeeding immediately after birth helps in decreasing problems related to breastfeeding	2
		The earlier the baby is put to the breast, the more quickly it learns to breast feed.	3
		Baby is wide awake in the first hour after it is born. Its sucking reflex is strongest at this time	4
		The more the baby sucks mother's breast, the more milk is made in the mother’s body for baby.	5
		Mother's milk is the best food for the newborn	6
		Others (Specify)	7
50	Do you know about colostrum ?	Yes	1
		No	2
51	Should colostrum be given to the baby?	Yes	1
		No	2
52	If “Yes”, then what are the advantages of colostrum feeding?	Mother's first milk (Colostrum) protects the baby from diseases. It also increases resistance to disease. It work as the first immunization of child	1
		Mother's first milk contains all the nutrients that are helpful in child	2

		health and their growth	
		Others (Specify)	3
53	What is Exclusive Breast Feeding?	Only mother's milk to be given to the child, not even water	1
		Mother's milk with water as and when required	2
		Largely on mother's milk, may be supplemented by other milk / liquids	3
		Other (specify)	4
		Don't know	5
54	What is the recommended duration for Exclusive breastfeeding?	< 6 Months	1
		>6 months	2
		As long as the mother wishes / have enough milk	3
		Other (specify)	4
55	Do you know what the advantages of breast feeding are? (record multiple options)	Mental and physical development of child	1
		Mother's milk is the best and complete diet for first six months of a child	2
		Increases attachment with mother	3
		Mother's milk also saves money by having free	4
		Mother's milk is available all the time also saves time	5
		Other milk requires fuel in boiling of utensils and milk boiling whereas mother's milk saves fuel and time	6

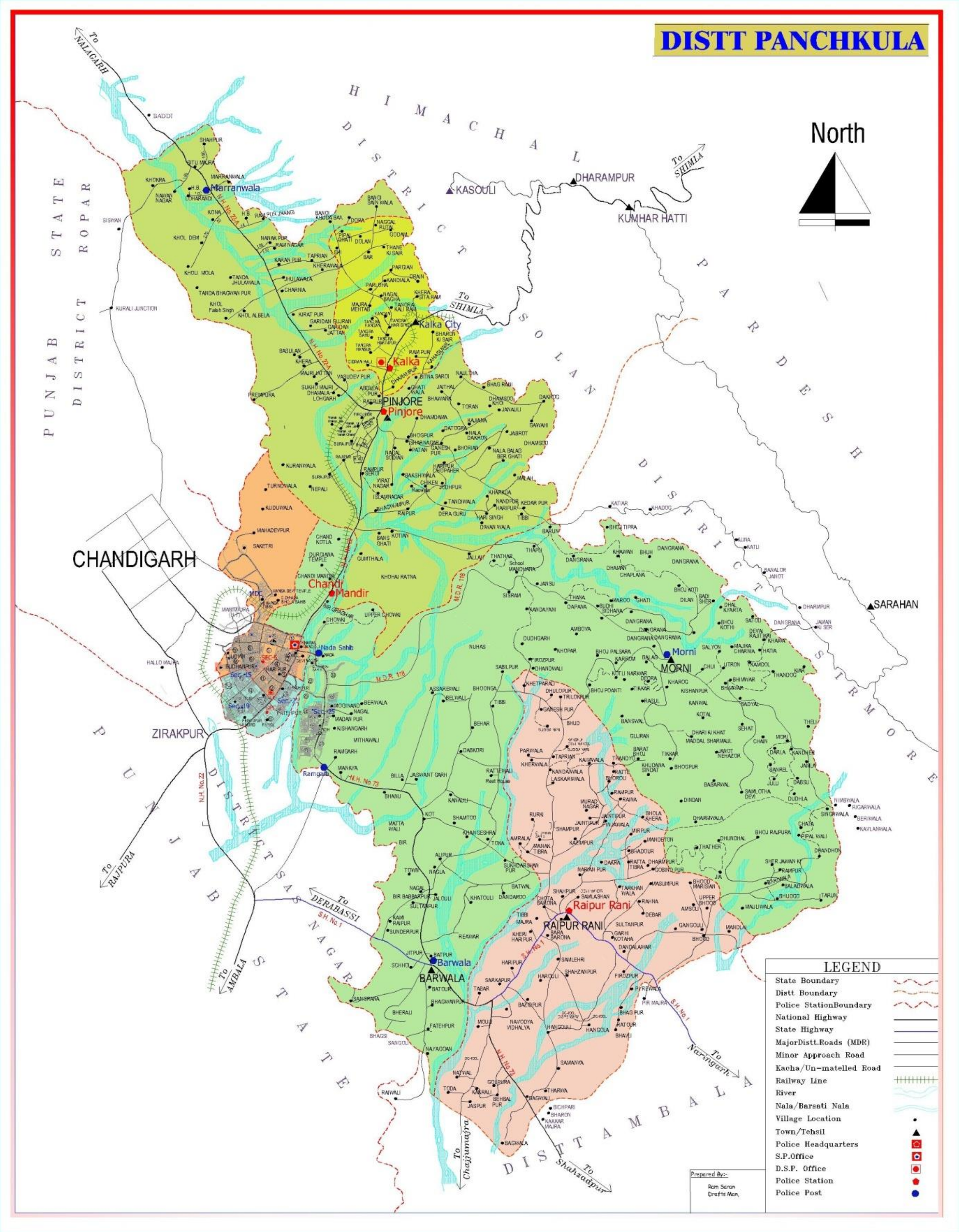
		Reduces the risk of the child falling ill frequently also saves the money spent on treatment	7
		Due to breastfeeding generally period begins after 5 to 6 months which reduces the risk of blood loss	8
		Reduces the risk of pregnancy and work as contraceptive.	9
		Protects the mother from breast cancer	10
		Others (Specify)	11
		Don't Know	12
56	Frequency of breastfeeding in the day	<6 times	1
		>6 times	2
		On demand	3
57	For how long to feed the child at one time?	<20 min	1
		>20 min	2
		Till the child is satisfied	3
58	What are the various steps for attachment of baby for breast feeding?	Yes No DKN	
	a. Hold baby close to mother with their nose level with the nipple.	1 2 3	
	b. Wait until baby opens their mouth really wide with the tongue down. Mother can encourage them to do this by gently stroking their top lip.	1 2 3	
	c. Bring baby on to mother	1 2 3	

	breast		
	d. Baby will tilt his head back and come to mother breast chin first. The baby should take a large mouthful of breast. Mother nipple should go towards the roof of his mouth.	1 2 3	
59	Various steps for position of baby for breast feeding explained by the respondent	Yes	No DKN
	a. Hold baby close to mothers breast	1	2 3
	b. Baby mouth should level with the nipple.	1	2 3
	c. Hold the baby in such a manner that his/her chin is towards mother breast.	1	2 3
	d. Baby's ear, shoulder and head and buttocks are in straight line body in a straight line	1	2 3
60	Do you know what complementary feeding is?	Yes	1
		no	2
61	If Yes, define what complementary feeding.		
62	When mothers should start complementary feeding?(multiple options)	< 6 Months	1
		> 6 Months	2
		Whenever the child is ready to eat	3
		Depends on sufficiency of mother's milk	4
		If child's growth is not optimum, / child starts moving towards	5

		malnutrition	
		Don't know	6
63	Along with other foods and liquid how many months mother should breastfeed the child?	<6 Months	1
		6 months- 2 years	2
		2-3 years	3
		>3 years	4
64	Do you know about KMC?	yes	1
		no	2
65	Information on cleaning and washing hands	yes no	1 2
66	Diarrhoea management	ORS ORS with Zn others	1 2 3
67	Sign and symptoms of malnutrition?	yes no	1 2
68	Adverse effects of malnutrition?	yes no	1 2
69	When was the last training attended?	<1 year	1
		>1 year no training	2 3
70	Growth charts? (ask and observe)	Has the knowlegde and is preparing	1
		Has the knowlegde and but is not preparing	2
		Does not have the knowledge and is preparing	3
		Does not have the knowledge and is not preparing	4

71	Referral based upon grade of malnutrition	yes	1
		no	2
72	Councelling mothers on breastfeeding?	yes no only in case of need	1 2 3
73	VHNDs held or not?	yes no	1 2
74	home visits	yes	1
		no	2

9.7 MAP OF DISRICT PANCHKULA


DISTT PANCHKULA
North
HIMACHAL PARDESH
DISTRICT SOLAN
DISTRICT SIRMORE
PUNJAB STATE
DISTRICT ROPAR
PUNJAB STATE
DISTRICT SAS NAGAR
DISTT AMBALA
CHANDIGARH
ZIRAKPUR
Marranwala
Kalka City
Kalka
PINJORE
Pinjore
Chandi Mandir
Nada Sahib
Morni
MORNI
Raipur Rani
RAIPUR RANI
Barwala
BARWALA
Ramgarh
KASOULI
DHARAMPUR
KUMHAR HATTI
SARAHAN
To NALAGARH
To SHIMLA
To SHIMLA
To RAJPURA
To DERABASSI
To AMBALA
To Chatjumajra
To Shahzadpur
To Naraingarh
LEGEND
State Boundary
Distt Boundary
Police StationBoundary
National Highway
State Highway
MajorDistt.Roads (MDR)
Minor Approach Road
Kacha/Un-matelled Road
Railway Line
River
Nala/Barsati Nala
Village Location
Town/Tehsil
Police Headquarters
S.P.Office
D.S.P. Office
Police Station
Police Post
Prepared By:-
Ram Saran
Draft Man.