

**EXPLORING FEEDING PRACTICES IN TYPICALLY DEVELOPING YOUNG
CHILDREN IN THREE DISTRICTS OF MAHARASHTRA - A PRELIMINARY
SURVEY**

CHHEDA YASHA JITENDRA

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**A Dissertation Submitted in Part Fulfilment of
Degree of Master of Science (Speech-Language Pathology)**

University of Mysore, Mysuru



ALL INDIA INSTITUTE OF SPEECH AND HEARING,

MANASAGANGOTHRI,

MYSURU-570006

AUGUST 2022

CERTIFICATE

This is to certify that this dissertation entitled “**EXPLORING FEEDING PRACTICES IN TYPICALLY DEVELOPING YOUNG CHILDREN IN THREE DISTRICTS OF MAHARASHTRA- A PRELIMINARY SURVEY**” is a Bonafide work submitted in part fulfillment for degree of Master of Science (Speech-Language Pathology) of the student Registration number 20SLP012. This has been carried out under the guidance of a faculty of this institute and has not been submitted earlier to any other University for award of any other Diploma or Degree.

**Mysuru
August, 2022**

**Dr. M. Pushpavathi
Director
All India Institute of Speech and Hearing
Manasagangothri, Mysuru- 570006**

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**Mysuru
August, 2022**

**Dr. N. Swapna
Guide
Professor of Speech Pathology
Department of Speech-Language Pathology
All India Institute of Speech and Hearing,
Manasagangothri, Mysuru-570006**

DECLARATION

This is to certify that this dissertation entitled "**EXPLORING FEEDING PRACTICES IN TYPICALLY DEVELOPING YOUNG CHILDREN IN THREE DISTRICTS OF MAHARASHTRA- A PRELIMINARY SURVEY**" is the result of my own study under the guidance of Dr. N Swapna, Professor of Speech Pathology, Department of Speech Language Pathology, All India Institute of Speech and Hearing, Mysuru and has not been submitted earlier to any other University for the award of any other Diploma or Degree.

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Chapter I

INTRODUCTION

Feeding is one of the first abilities that a child usually develops to meet his/her nutritional needs. Feeding and swallowing are the fundamental activities of prime importance for growth, development, nutrition and general health of newborns and early infants. Through the process of feeding, the satisfaction of hunger and maintenance of homeostasis is achieved. It also provides opportunities for sensory and motor stimulation, mother-child bonding and oro-motor skill development (Kummer, 2008). Children's emotional and psychosocial growth are also impacted, in addition to their physical development and health.

The development of feeding skills in the neonates begins with suckling followed by sucking. Complex series of events and coordination of the neurologic, respiratory and gastrointestinal systems are required for efficient feeding. Oral sensory motor abilities are improved through general neurodevelopment, the development of muscle control (posture and tone), and psychosocial development (Torola et al., 2012). These early gains eventually lead to biting, chewing, eating from a spoon, drinking from a cup and a straw and independent finger feeding of food of different consistencies, textures and hardness, which are more mature feeding behaviours (Dodrill, 2014; Morris & Klein, 2000). These developments occur by two years of age as the higher cortical centers gain more control.

What, when and how young children are fed during the first two years of life lay the foundation for life-long survival, growth and development. This is a critical time in which feeding-related practices and behaviours are established. An infant's interpersonal

food environment includes both what and how they are fed. The term ‘interpersonal food environment’ primarily refers to the infant's close relationships with the parents or caregivers, who impose structural restrictions, routines, and expectations for food and mealtimes. For neonates, who solely rely on these connections to obtain food and facilitate mealtimes, these interpersonal interactions are significant elements of the food environment (Rosenkranz et al., 2008).

In the first few months, the infants are exclusively on breast milk. During this period, no other food or drink including water is recommended. The infants, then move on to a diet that includes non-milk items in the pureed, semisolid, and solid form after starting off on an all-milk liquid diet. Later, complementary feeding is initiated at around six months of age, in which foods are introduced to ‘complement’ the ongoing milk feeds. It is described as the intake of meals and liquids when breast milk, infant formula, or follow-up formulations are no longer sufficient to supply the nutritional needs of newborns (Fewtrell et al., 2017). This period is marked by changes in the diet with exposure to new foods, tastes, and feeding experiences. It should promote the consumption of a variety of meals that meet nutritional needs in addition to fostering the development of the best food-related behaviours, skills, and attitudes. Complementary feeding is an important step in the process of transitioning from breast feeding to family foods.

Parents serve as the gatekeepers of the early feeding environment, which is shaped through intricate interactions between parents and children related to feeding and eating. These interactions are known as ‘food parenting’ (Vaughn, Ward, Fisher, Faith, Hughes, & Kremers, 2016). Feeding styles and feeding practices are regarded to be part of food parenting. Feeding style refers to the overall emotional climate of the feeding dynamic,

whereas feeding practices refer to the specific strategies and behaviours (the "when, what, and how") of child feeding (Vaughn et al., 2016). Feeding practices are defined as strategies or behaviours which parents employ to manage their children's diets and food intake (e.g., what, when and how much a child should eat), both within and outside of the mealtime setting (Blissett, 2011; Schwartz, Scholtens, Lalanne, Weenen & Nicklaus, 2011; Ventura & Birch, 2008). There is evidence that feeding children involves two-way interactions, in which parents' feeding practices may influence or respond to children's eating behaviours (Jansen, Williams, Mallan, Nicholson & Daniels, 2018; Mallan, Jansen, Harris, Llewellyn, Fildes, & Daniels, 2018; Selzam, McAdams, Coleman, Carnell, O'Reilly, Plomin, et al. 2018). Additionally, research indicates that parental feeding methods have a significant impact on how children acquire their taste preferences, eating habits, nutrition, and final weight status (Carper, Fisher & Birch, 2000; Faith et al., 2004; Kremers, Brug, De Vries & Engels, 2003; Webber, Cooke, Hill & Wardle, 2010).

Parental feeding and child eating are fundamental to family life and are deeply ingrained in culture and tradition. Typically, the feeding techniques are passed down from grandmother to mother to daughter (Birch, 2006). Hence, feeding practices can be culture specific and can vary across different cultures. Different foods can be introduced to children at different ages as they grow, which may vary based on the place of dwelling. Additionally, the consistency and the type of utensils used could vary. The type of food provided could also vary depending on the place of dwelling and whether the parents are vegetarians or non-vegetarians.

The majority of neonates were given infant cereal by the time they were six months old, according to a study by Yu et al. (2019), making it the most frequently introduced food

(complementary feeds). In the Indian context, in addition to the cereals such as ragi, semolina, arrowroot or banana powder, other foods are also introduced such as pulses, soup, mashed and boiled fruits, fruit or vegetable purees etc. (<https://confusedparent.in/baby-food-chart-0-6-months/>).

In addition, the time of introduction of complementary foods also could differ based on a variety of factors such as maternal education, age, occupation, family type etc. The study by Yu et al., (2019) found that educated mothers introduced complementary foods earlier. Olatona et al. (2017) discovered that understanding of complementary feeding was low (14.9%) and was related to mother's age, education, and occupation. The relationship between the child and the primary caregiver, interaction, especially during meal and snack times, family mealtime environments, food preparation techniques, and children's participation in food planning and preparation, to name a few, all have an impact on feeding practices (Collins et al., 2014; Larsen et al., 2015; Stang & Loth, 2011). Additional environmental elements that affect feeding practices include food accessibility and availability, parental qualities (beliefs, attitudes, behaviours), child characteristics (temperament, health status, eating habits, learning behaviours, and food preferences), etc. (Scaglioni et al., 2008; Webber, Cooke, Hill & Wardle, 2010).

1.1 Need for the study

India has numerous states and union territories, several thousand castes and tribes, six major world religions, and abundant ethnic and linguistic groups. It has a rich culinary heritage that evolved over centuries. Indian food style consists of a variety of regional and traditional cuisines native to the Indian subcontinent, which are unique to the soil, weather and various other environmental factors, leading to differences in locally available food

resources. Food in India has been impacted by many civilizations, each of which has contributed to its general evolution and current shape. Indian food is different from rest of the world in taste, in terms of preparation etc. as the food culture is shaped by climate, land, and access to natural resources.

Eating habits of the Indian culture are primarily based on culinary traditions. The type of food eaten across the country is diverse and highly influenced by social, cultural and economic factors. The diversity of India is surfaced with numerous cultures, religions, castes, class, family, kin-ship, tribe affiliation, lineage, religiosity, ethnicity, and increasingly, of secular group identification that can exhibit differences observed in the feeding practices, from that seen across the world. Given the diversity, what, when and how food is given to infants and children could differ across different states of India. There are higher opportunities of detailed variations in the type of food introduced at each age, its consistency, utensils, feeding position etc. Given the complexity and variation of feeding practices, studies exploring these in a country like India are vital. The present study is planned in the state of Maharashtra.

The culinary culture of Maharashtra also is unique from other states of India. It is India's third largest state, with 35 districts, each having its unique culture, traditions, and beliefs. This state's terrain features a patchwork of culinary habits spanning from the saline flavours of the coast to the rustic flavours of the inner mainland. Maharashtra is divided into the following regional formations: Konkan, Desh, Khandesh, Marathwada, and Vidarbha. The ingredients and flavour profiles of each region's food reflect its climatic and cultural differences. Each has its own cultural identity in the form of different dialects of Marathi language, folk songs, ethnicity and food (<https://www.indianculture.gov.in/>).

Consequently, the parental feeding practices and beliefs can vary from district to district. Studies examining the existing feeding practices in the Indian context are limited. Studies that have investigated the influence of parental education on feeding practices are also limited. To the best of researchers' knowledge, there is dearth of studies that address this issue, particularly in Maharashtra. Keeping this in view, this research was designed to fulfill the following aim.

1.2 Aim of the study

To investigate the nature of feeding practices in typically developing young children from one to three years in three districts of Maharashtra.

1.3 Objectives of the study

The objectives of the study include the following:

1. To compare the feeding practices across the three districts of Maharashtra (Nagpur, Mumbai-Suburban, Sangli).
2. To compare the feeding practices across the maternal literacy levels.

1.4 Hypothesis of the study

The following hypothesis are proposed for the present study

H₀₁ There is no significant difference in the feeding practices across the three districts.

H₀₂ There is no significant difference in the feeding practices across the maternal literacy levels.

CHAPTER II

REVIEW OF LITERATURE

Feeding appropriate types and amounts of foods promotes infant growth and development as well as overall health. Feeding refers to any part of eating or drinking, such as gathering and preparing food and fluids for consumption, sucking or chewing, and swallowing (Arvedson & Brodsky, 2002), while keeping the airway protected. The process of feeding in which the food gets transferred from the mouth to the stomach is classified into different phases. In order to make a cohesive bolus, the food or liquid is manipulated in the mouth. For liquids, the intake is through sucking, whereas for solids, it is chewed or masticated. This is the oral preparatory phase. This is followed by the posterior propulsion of the bolus, and the oral transit phase concludes with the commencement of the pharyngeal swallow. The pharyngeal swallow propels the bolus through the pharynx and upper esophageal sphincter, which constitutes the pharyngeal phase. Finally, the bolus is carried to the stomach through the process of esophageal peristalsis, which is the esophageal phase (Arvedson & Brodsky, 2002; Logemann, 1998).

All four steps of swallowing are reflexive and involuntary in neonates and young infants. Later, as the children age, the oral phase becomes voluntary, which is essential to allow them to begin to chew solid food. Mastication (biting and chewing) is safe and effective when appropriate sensory registration of the food supply is combined with a coordinated motor response driven by cognitive thought processes (Dodrill, 2014). In later life, the triggering of the swallow reflex is generally an involuntary activity, though it can be controlled voluntarily. However, the pharyngeal and esophageal phases of swallowing are involuntary activities.

2.1 Development of Feeding

According to Dellow (1976), swallowing begins in the fetus, with suckling movements, drinking of amniotic fluid, and occasional presentation of the thumb in the mouth. The development of the embryonic gastrointestinal system, recirculating solutes from the fetal environment, and regulating the volume and content of the amniotic fluid all depend on the fetus's ability to swallow (Ross, 1998).

Socially acceptable eating starts at birth and develops during the course of the first few years of infancy in infants with regular development. It develops in a manner similar to that of general neurodevelopment, including the development of oral sensorimotor abilities, the acquisition of muscle control, including posture and tone, the development of cognition and language, and the development of psychosocial skills.

Homeostasis (0-2 months), attachment (3-6 months), and separation/individuation (6-36 months) are the three stages of normal feeding development (Chatoor & Egan, 1984). Infants aim for environmental homeostasis during the first 2 to 3 months of life. Sleep control, regular feeding patterns, and awake states that allow emotional attachment to primary caregivers are among the objectives. Infants begin to engage in interactional patterns with the caregiver during the attachment period (Greenspan & Lourie, 1981). During nipple feedings, they might pause more frequently after sucking bursts. This pausing could be for socialization purposes and thus feeding progressively turns into a social affair. Intuitive nipple control, reaching, grinning, and social play are all made easier by successful feeding experiences.

Around six months of age, infants start to exert more control over their surroundings, which marks the beginning of the separation/individuation phase. The fundamental behavioural development from 6 to 36 months is an effort to achieve a sense of self.

During the infancy period, infants are only able to suckle liquids and swallow, with the tongue still moving back and forth. The oral and pharyngeal cavities are smaller in infants because of the relatively small mandible and fat pads in the cheeks. Later, as the oropharyngeal skill improves, advanced feeding skill develops between 4 and 36 months (Arvedson & Brodsky, 1993). As the child grows, the sucking and swallowing action is followed by biting, chewing, eating from a spoon, drinking from a cup and a straw which are more mature feeding behaviors. The range of food textures which can be eaten by the children safely and efficiently, increases as the age progresses. These developments occur as the higher cortical centers gain more control (Arvedson & Brodsky, 1993). The progression seen in the development of feeding is as follows:

2.1.1 Suckling and sucking in respect to breast feeding

At this stage of development, suckling is characterized by the tongue moving back and forth as it fills the mouth cavity (Morris & Klein, 1987) such that suction and nipple compression succeed each other, which persist until 6 months of infancy. The direction of movement is more pronounced when moving backward. Forward movement does not extend beyond the border of the lips. It involves the coordination of tongue, hyoid, mandibular muscles and the lower lip. Suckling from the breast of the mother is what the infants learn to do first. The tongue's tip remains over the lower gum and under the lower lip while breast feeding, and the remainder of the tongue cups around the breast areola. The

mandible moves the tongue up, allowing the breast areola to be compressed against the infant's alveolar ridge. Milk is then expressed into the oral cavity (Arvedson & Brodsky, 1993). The World Health Organization (WHO), United Nations Children's Fund (UNICEF), recommend and promote exclusive breast feeding for the first six months of life and continuation of breast feeding thereafter till the age of two years or older (Global Strategy for Infant and Young Child Feeding, World Health Organization, 2003).

Sucking develops between 6 to 9 months. In this type of feeding pattern, the tongue body raises and lowers with strong movement of its intrinsic muscles, and thus the jaw makes a smaller vertical excursion (Morris & Klein, 1987). With a change in the direction of tongue movement during sucking, the infant is ready to move on to foods other than breastmilk.

2.1.2 Transition from breast feeding to complementary food

Complementary foods (CF) are defined as “all solid and liquid foods other than breastmilk or infant formula”. World Health Organization (WHO) defines complementary feeding as “a process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk” (WHO, 2001). In order to supply additional nutrients to newborns, complementary foods (items other than breast milk or infant formula) should be introduced (United States Department of Agriculture, USDA, 2009). The energy and nutritional gaps between the amount ingested through breast feeding and the amount needed daily for newborns and young children are intended to be filled by complementary foods.

Complementary feeding should be given timely (start receiving from 6 months onward) and adequately (in terms of amounts, frequency, consistency, and using a variety of foods). Food should be prepared and supplied in a safe and suitable manner (food should be of acceptable texture for the child's age) and by utilizing responsive feeding principles for psychosocial care (Monte & Giugliani, 2004).

Most newborns reach developmental readiness and the capacity to tolerate complementary feeding between the ages of 4 and 6 month (Issaka, 2015), which involves progressive gradation from suckle feeding of liquids to voluntary ingestion of physically varied food material. The target age range for complementary feeding is between the age of 6 and 23 months (with continued breast feeding), where most infants reach a general and neurological stage of development (chewing, swallowing, digestion, and excretion) that enables them to be fed other foods rather than breast milk (Monte & Giugliani, 2004).

Changes in the central nervous system along with the changes in anatomy are responsible for inclination for different textures. Additionally, when their neuromuscular system develops, they get the capacity to recognize food, accept spoons, chew and swallow food, and even recognize and appreciate the variety of food flavours and colours (Cohen, 1994). The intraoral space increases as the mandible grows downward and forward. The oral cavity also elongates in the vertical dimensions. The hyoid bone and larynx shift downward, so that the breathing and swallowing coordination becomes a factor during feeding, and breathing and swallowing truly become mutual activities (Arvedson & Brodsky, 1993). While the intestinal tract's capacity to metabolize proteins, lipids, and carbohydrates improves, it also has a well-developed defensive mechanism that reduces or eliminates the danger of allergic reaction following consumption of meals containing

foreign proteins. In a similar manner, the kidney of an infant matures to the point at which it can effectively flush out waste products from food.

The biting and chewing skills develop as an eruption of teeth occurs during this period. Since the size of the oral cavity increases due to the above changes, the tongue and the buccal wall play a major role in manipulating the food. An infant is ready for cup and spoon feeding when there is a decrease in the characteristic anteroposterior tongue action of sucking.

Infants show readiness for the transitional feeding i.e., introduction to complementary feeding can also be called spoon feeding around 4 to 6 months, which also is the period of attachment.

The ability to sit up straight without much support, maintain a midline head position without assistance for several minutes, use hand-to-mouth motor skills, and separate lip and tongue movements, which creates more space for the tongue inside the oral cavity and allows vertical tongue motion in addition to "in and out" sucking, are all signs that a child is ready to eat with a spoon. Infants develop the oral sensorimotor abilities necessary to consume thicker and lumpier food by spoon throughout the following few months.

About a month after spoon feeding becomes established, cup drinking is introduced. Generally, milk, juices and water are provided in the cup. Water should also be introduced to the infants only after 6 months along with other liquid complementary foods (Global Strategy for Infant and Young Child Feeding. World Health Organization, 2003). Normal infants usually get prepared to start drinking from an open cup with assistance from caregivers between 6 and 8 months of age. They initially swallow by sucking with their

tongues outward, which causes fluids to leak out of the mouth's corners. Most infants can drink successfully from a cup held by a caregiver by the time they are 9 to 10 months old. They eventually learn to take one or two drinks from the cup held by a caregiver. By the time they are 12 months old, the majority of infants can hold a cup with two hands and take four or five drinks in a row without choking. Thus, before they turn one year old, the majority of typically developing children can drink everything from a cup (Arvedson et al., 1996).

Between the ages of 6 and 9 months, the majority of children start using "soft chewable" for finger feeding. 'Annaprahsana' is the name of the religious ceremony performed by most of the communities in India, to start introducing other food items to the child. They eventually get better at picking up little bits of food (or other items) when they develop a thumb-and-forefinger pincer grip, which is projected to happen by 10 to 12 months.

As teeth develop by 6 months, biting emerges. Chewing also emerges with early munching patterns made with vertical jaw excursions and only limited lateral tongue movements. Children gradually develop a mature chewing pattern with rotating jaw motion and increasing lateral tongue excursions as they get more accustomed to certain textures. Foods with texture are gradually introduced, including dissolvable solids (for example, soft biscuits at 6 to 9 months), textured purees (for example, mashed banana at 6 to 9 months), ground solids at 6 to 9 months, and soft diced solids at the same time (for example, fruits and vegetables at 9-12 months). By 12-18 months of age, a standard toddler diet comprising table foods is introduced (Delaney & Arvedson, 2008). Chewing skills continue to mature

over a period of 2-4 years for "tougher" solids, such as some meats, raw vegetables, and fresh fruit.

Children between the ages of 12 and 36 months continue to develop their oral skills, expand the variety of foods they will eat, get better at chewing things that require more extensive oral manipulation, and handle liquids from open cups. Their eating is basically functional for regular table food with their peers and other family members. In summary, the feeding progression from birth to 24 months has been depicted in table 1 below.

Table 2.1

Feeding progression from birth to 24 months (Source: Cichero & Murdoch: Dysphagia: foundation, theory and practice, 2006)

Age	Food	Feeding utensils
Birth to 6 months	Milk, Liquids	Breast or bottle
4-6 months	Cereals, puree	Spoon
6-9 months	Chunky puree, mashed food, soft finger foods	Spoon; drinking from cup (at 9 months)
9-12 months	Chopped food and finger food	Spoon; cup; self feeds with fingers; weaning from breast/ bottle as cup drinking increases
15-24 months	Full diet with some exclusionary items (example- nuts)	Spoon, cup, fork; self-feeding predominates.

Before birth, taste and flavour perception begins to develop. The fetus detects flavours in the amniotic fluid that were carried over from diet of the mother during pregnancy. Exposure to breast milk flavours may help to speed up the weaning process by enhancing preferences for certain flavours. After being weaned from the breast, the child accepts and appreciates that food's flavour. When a novel vegetable is initially presented, some breastfed babies are more receptive than formula-fed babies (Sullivan & Birch, 1994). Picky eating is also less likely to occur in infants who have been breastfed for at least six months (Galloway, Lee, & Birch, 2003).

Because of their sensory systems, infants have a natural affinity for sweets. Infants take about 4 months to develop the ability to taste salt and to like it. After birth, the capacity to recognize additional tastes and flavours grows. Early sensory exposure affects how children in infancy and childhood respond to flavours and foods (Mennella, Jagnow, & Beauchamp, 2001).

2.2 Prerequisites for Feeding Development

The development of feeding and swallowing is the result of a complex interface between the developing nervous system, various physiological systems and the environmental factors that begins in embryological and fetal periods and continues through infancy and early childhood. For successful feeding, children need a typically functioning oral-motor, sensory and swallowing mechanism, and adequate musculoskeletal tone, for which the development and maturation of the neurologic, respiratory and gastrointestinal systems are also essential (ASHA, n.d.).

The transition from brainstem-mediated suckling reflexes to complex, voluntary mouth movement during feeding depends on a number of important preconditions, one of which is early neurologic development. The oral cavity, pharynx, and esophagus, important in feeding, effectively integrate and coordinate their functions through a neuronal network. The integrity of these structures that constitute the feeding and swallowing mechanism is essential. The complex feeding behaviors emerge from the interactions of cranial nerves of the brainstem, which is governed by the neural regulatory mechanisms in the medulla oblongata, as well as the higher cortical and subcortical structures.

Gross motor and fine motor development is a prerequisite for independent feeding to occur. As the nervous system develops, the control of pelvis, trunk, neck, shoulder, and jaw matures in a sequence, which leads to jaw stability. Jaw stability is a prerequisite for developing appropriate refined tongue, cheek and lip movement (Morris & Klein, 1987). The gross motor control is necessary to support the fine motor control which includes chewing and biting.

Adequate oral motor development is also an essential prerequisite (Bosma, 1986). The child's oral motor skills gradually improve as they transition from breast feeding to bottle feeding, take in solid foods with a spoon, move on to mashed and soft pieces that can be broken with the tongue, and then soft and hard food textures that require biting and chewing. They also help them drink from a bottle, straw, or open cup (Dodrill, 2014; Morris & Klein, 2000).

2.3 Critical and Sensitive Periods

Lorenz (1965) stated that early on in development, the organism is prepared to take in and possibly permanently encode significant information from the environment. Although they emphasize the importance of the early experiences, these views do not rule out the possibility of later learning. It is thought that the formation of typical feeding behaviour occurs during critical and sensitive periods. Birth to two years is the important feeding learning phase (Bahr & Johanson, 2013). In humans, exposure to age-appropriate meals and experience are crucial. The introduction of chewable textures is the main emphasis of descriptions of sensitive times. When chewing, children often acquire oral side preferences that are related to hand preferences. Compared to foods that are fluid or pureed, children acquire mature chewing techniques for solid foods earlier. However, it is typical for children who haven't mastered the timing and coordination necessary for swallowing purees and other smooth foods to be maintained on such textures since caregivers could think these children aren't ready for the introduction of chewable food. This might not be the case because children need to be exposed to solid foods at the right times. If chewables are offered to infants after the crucial period, they can reject them. Many infants find it more challenging to accept chewable food the longer solids are delayed in being introduced. Respiratory regulation, one of the physiologic systems that supports oral sensorimotor and swallowing abilities, has critical times that can affect the feeding process.

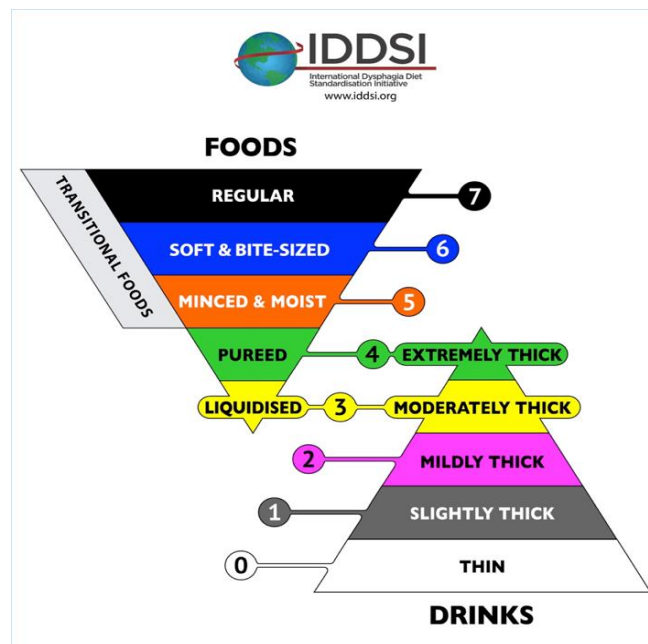
2.4 International Dysphagia Diet Standardization Initiative

The type of food and its consistency can be graded using the International Dysphagia Diet Standardization Initiative (IDDSI, Cichero, Lam et al., 2017) framework. In order to introduce supplementary foods to newborn infants around the world, this

framework offers a common terminology to describe food textures and fluid thickness. The IDDSI Framework consists of a continuum of 8 levels (0 - 7), where drinks are measured from Levels 0 – 4, while the food items are measured from Levels 3 – 7. The complete framework is depicted in figure. 2.1.

Figure 2.1

Complete framework of IDDSI for measuring food textures and drink thickness
(source:<https://iddsi.org/framework/>)



2.5 Factors Affecting Feeding Development

Feeding development is a learnt succession of behaviours that can be altered by a various factors, yet being dependent on anatomical integrity and brain maturation. Infant feeding is a reciprocal procedure involving a give-and-take exchange that is dependent on the skills and personality traits of the caregivers and the infants. This learning is heavily influenced by several experiential opportunities.

A healthy positive feeding relationship between the caregiver and the child is important for successful feeding. The process of self-regulation during the homeostasis stage is something that caregivers need to be aware of. When an infant shows signs of hunger, caregivers must notice them and act quickly. They should also help the child get back into a calm, orderly condition after becoming overstimulated or upset. Understanding the learning processes that underlie the development of food liking and self-regulation of intake during the first 24 months of life is important because what children learn in this domain during infancy and toddlerhood affects subsequent eating behavior, growth, and weight status (Paul 2009).

Caregivers also should respond appropriately to increased pauses taken during breast feeding, as they become more social. Additionally, parents and other caregivers should establish limits, rules, and structures that let infants safely experiment with food. They should have the knowledge of the type of food to be given to the child at different stages and also should use appropriate strategies during feeding.

Numerous environmental and societal factors, including religion and residence, have an impact on feeding. When compared to other religions, the Hindu religion, for instance, was found to be strongly related with timely breast feeding initiation. The basic physiologic complexity of feeding is compounded by individual temperament, interpersonal relationships, and environmental influences. Oral feeding skill is also influenced by level of awareness, stress, illness and fatigue of the caregivers.

Additionally, experiences within families and social networks as well as social and cultural factors have an impact on feeding decisions (Bloom et al., 2008; Dar et al., 2012, Kruger & Gericke, 2003; Laroia & Sharma, 2006; Yadavannavar & Patil, 2011). Bloom et

al., (2008) compared breast feeding women who were older and of higher socioeconomic position to formula-feeding mothers. They discovered that breast feeders had much higher propensities to consult literature or advice when making their decision to breastfeed. The study revealed the influence of social and cultural aspects in choosing the method of feeding.

Cultural factors, beliefs, knowledge regarding appropriate practices, timing and consistency of complementary food also influences the complementary feeding practices (WHO, 2019), which varies significantly with maternal education and paternal education and socioeconomic status. Cultural variables and women's experiences differ greatly across India. Grandmothers have an important influence on feeding practices (Laroia & Sharma, 2006), which is passed on from one generation to the next. Infant feeding and raising habits vary by community, and are influenced by social traditions, traditional beliefs and prejudices, literacy, and the family's socioeconomic situation, particularly that of the mother.

Kavitha et al. (2014) reported that the use of proper weaning practices was found to be significantly related with residence area and education level of the mother. Nursing mothers who were home makers and had a family income of more than Rs. 10,000 preferred commercial weaning foods. One of the challenges to practicing exclusive breast feeding may be maternal employment. Working mothers from rural areas find it very challenging to continue exclusively breast feeding because they must return to work as soon as possible (Annie, 2017; Zahiruddin et al., 2016). Hence, they tend to introduce complementary feeds at an early age.

In India, the pattern of complementary feeding and its timely commencement are not ideal. Women in employment face challenges for following ideal Infant and Young Child Feeding practices, which have a substantial impact on growth and development of child under 2 years of age. The goal was to research the problems encountered by women in employment for complementary feeding and its pattern in rural area. A qualitative study was carried out in the Wardha district of India's countryside. Six focus group discussions (FGDs) were held, with a total of 39 participants, including community-level service providers and working women with children aged 6 to 23 months. Women in remote areas could not practise exclusive breast feeding for six months and returned to work early. They started complementary feeding early and were not adequately informed about it. At 4-6 months, women begin semisolid and soft food, and at 7-9 months, they introduce mashed solid food. When women are at work, they frequently leave their infants in the care of local neighbours or elderly relatives. There are no creches or child care centers in villages. All of these factors put complementary feeding at risk in terms of timing, sufficiency, suggested dietary diversity, and safe feeding. The difficulties of practising exclusive breast feeding for 6 months, as well as early initiation and inadequate complementary feeding, have a negative impact on children's growth and development in rural areas, which may have unintended long-term consequences for cognitive development. An effective technique for assisting the women in employment to follow the best IYCF guidelines would be to strengthen the Anganwadi programme in India with a greater emphasis on children under 2 years old and community infant care rooms / creches services. India needs measures that provide a positive work environment and enough legal protection for working women.

National Family Health Survey-III (NFHS) & National Family Health Survey-IV (NFHS) of India identified various other determinants like low maternal education, lower maternal Body Mass Index ($<18.5 \text{ kg/m}^2$), lower wealth index, less frequent antenatal clinic visits, lack of postnatal visits and poor exposure to media for not meeting minimum dietary diversity and minimum acceptable diet in complementary feeding (International Institute for Population Sciences, 2017; Patel, 2012).

Mothers with two or more children were more likely to cease exclusive breast feeding in the first six months compared to mothers with less than two children. Also, mothers in nuclear families, compared to mothers from joint families, were more likely to cease breast feeding. Hence, the number of children and members in a family were a significant determinant (Velusamy et al., 2017).

In an Australian study, first-time mothers did not show a strong comprehension of the reasoning behind the advice to introduce complementary foods until after six months or of the signals that an infant is ready to start eating solid foods (Walsh et al., 2015).

Thus, several studies highlight that feeding practices such as age of introduction and termination of breast feeds, age of introduction of complementary feeds, the type of complementary feeds could be influenced by several factors.

2.6 Feeding Practices in the Western Context

Several studies have explored the feeding practices primarily in terms of age of introduction and termination of breast feeds, introduction of formula milk and complementary feeds. For Eastern Ethiopia, the prevalence of timely beginning of complementary feeding was 60.5%. Nineteen percentage of mothers started

complementary feeding before their babies were six months old. Due to mother's perceived insufficient breast milk production and lack of knowledge, complementary feeding was started too early. When compared to mothers of female children, mothers of male children were three times more likely to promptly begin complementary feeding. This might be due to traditional gender norms that discriminate against female feeding "female eat little talk little" this might start at an early age of life (Semahegn et al., 2014).

In a Pakistani research, just 49% of mothers started breast feeding within an hour after giving birth. For the first six months, 37% of mothers exclusively breastfed their babies. At 6 to 8 months of age, supplemental feeding was first offered by 70% of mothers. Breast feeding was continued by 82% of women for at least a year, and there were no appreciable differences in behaviours between boys and girls. Low-quality practices were discovered, and they were linked to factors like mother age, illiteracy, unemployment, and low household wealth status (Khan et al., 2017).

2.7 Feeding Practices in India

Similarly, studies have explored the feeding practices in India primarily in terms of age of introduction and termination of breast feeds, introduction of formula milk and complementary feeds. According to The Third National Family Health Survey (NFHS-3, 2005-2006) of India, overall, 48.3% of children between zero to five months were solely breastfed, and 53.8% of children aged six to nine months got introduced with complementary foods.

A study by Aggarwal et al. (2008) in an Indian tertiary hospital, 17.5% of women began complementary feeding at the suggested period. The most often cited justification

for improper behaviour among women who postponed feedings was "tried but did not eat, vomits everything." Only nine of the 151 mothers interviewed in six villages in Uttar Pradesh's Ghaziabad area offered semi-solid/solid foods with breast feeding at six months of age, according to a study by Garg and Chadha (2009).

A study by Mahmood (2012) conducted in villages of Uttar Pradesh, indicated that within 24 hours of birth, majority of the mothers (78.8%) started nursing. Colostrum was not given to 15.4% of the newborns. The most prevalent reason given by women for rejecting colostrum is that they believe it is harmful to their children. The percentage of infants who weren't exclusively breastfed was about 22.8%. Insufficient milk secretion was the most common reason for not doing so (71.4 %). Pre-lacteal meals included Ghutti, which is water combined with honey and herbs (42.9%), heated water (21.4%), tea (21.4%), and animal milk (14.3%). One-fourth of those surveyed began complementary feeding before the infant was six months old. Semi solid food was the most prevalent type of complementary meal supplied (53.7% of mothers provided the semi solid food), out of which 13.8 % of the mothers started introducing semi-solid meals, before the infant was six months old.

According to a cross-sectional study conducted by Khan et al. (2012) to examine the diet pattern of children under the age of two years with regard to specific infant and young child feeding (IYCF) indicators, 72% of Delhi children were found to be weaned at 6 to 8 months, which was greater than the data from the national family survey. 57.1 % of mothers of infants under 6 months old were found to exclusively breastfeed their children. Of children between the ages of 6 months and 2 years, 32.6 %, 48.6 %, and 19.7 %, respectively,

respectively, thought their diets met the minimum requirements for nutritional diversity, meal frequency, and minimum acceptable diet.

The parents of 100 children aged six months to two years in Madhya Pradesh favored liquid feeds (63%), followed by semisolid (32%) and solid (5%) foods. The feeds that were deemed excellent were rice water (72%) and top milk (67%). Ghee/oil was added to the child's diet by 62% of parents (Lodha, 2013). Complementary feeding was typically initiated with liquid diets such as diluted bovine milk and rice water, followed by semi-solid meals such as dal, khichdi, rice, and other locally available foods in the majority of studies. At the age of nine months, solid meals such as chapati, eggs, and mashed vegetables were introduced. Green leafy vegetables were not offered to the majority of the infants.

Kavitha et al. (2014) assessed the complementary feeding practices of 50 mothers with infants between the ages of 6 months to one year in Salem, district of Tamil Nadu. They found that 62% of the mothers had initiated complementary feeding before the recommended time of 6 months.

At the age of 6-8 months, 46.67% of newborns were fed solid, semisolid, or soft foods, according to the results of a study conducted among 120 mothers in West Bengal with children aged 0 to 23 months. The proportion of children aged six to nine months who received supplemental feeding was substantially lower than the NFHS-3 findings in rural West Bengal (55.3%) (Mondal, 2014).

Foods including mashed dal and rice, mashed seasonal fruits and vegetables, and biscuits with milk were given to the majority of the children in a study of 100 children

under the age of five in Pune. Milk was supplied to 73% of newborns, while the rest were unable to receive it either due to financial constraints (15%) or because the child refused to drink (11%) (Sapra, 2015).

In Kolkata, the weaning of only 36% of the children was started on complementary feeding at the correct age of 6 months and 32% of children aged from 6 to 23 months began before they were 6 months old (Dasgupta et al., 2014).

In another study carried out by Kalita and Borah (2016) in rural areas of Assam, it was found that before the age of six months, 14.2% (out of total 380 mothers) of mothers provided complementary foods. Insufficient breast milk was reported by 37 (68.5%) of the 54 women as the reason for starting complementary feeding earlier than six months, followed by child's demand by 17 (31.5%) of the mothers. 70 (50.3%) women were unaware of the real time of commencement, 41 (29.5%) mothers believed the kid could not digest solid food, and 28 (20.2%) mothers initiated late as instructed by elders among the 139 moms who introduced supplemental feeding later than six months.

Gaddapa and Behera (2016) studied 125 children aged 0 to 24 months and found that only 38% received complementary feeding between the ages of 6 and 9 months, compared to 48.8% who began complementary feeding before the age of six months, in some cases on the first day of birth. Sixty percent of children aged nine months and older who received complementary feeding suffered severe acute malnutrition. Malnutrition was found to have a statistically significant connection with the age at which supplemental feeding began.

According to a study conducted in Chandigarh to evaluate infant feeding behaviors among mothers of newborns, 81.7 % of 300 women began supplemental feeding between the ages of six and eight months for their infants (Pradhan, 2016).

Zahiruddin et al. (2016) investigated the difficulties faced by employed women for complementary feeding and the pattern of complementary feeding in rural area of Wardha district, Central India using focus group discussion. Thirty-nine women with children between 6-23 months were included as participants. They found that, in rural area, women start work early and find it difficult to practice exclusive breast feeding for six months. They commence complementary feeding early, but had scanty awareness regarding complementary feeding. They found that newborns were given prelacteal feeds such as honey, sugar or jaggery dissolved in water. They did not use a baby feeding bottle to feed the child. It was also noted that babies were given pacifiers in the form of biscuits and other food when he/she cries, especially when mothers are working women or when women are busy doing household work. Women begin semisolid and soft food at 4-6 months and crushed solid food at 7-9 months since they must leave their baby with elders or neighbours. This impairs complementary feeding in terms of dietary diversity, timing, adequateness, and safety.

Dhami's study (2019) found a wide range of prevalence of solid, semi-solid, or soft food (complementary meals) introduction among infants aged 6–8 months throughout regional India, with the highest prevalence in the South (61%) and the lowest prevalence in the Central and Northern regions (38%). Similarly, the South (33%) had the highest minimum dietary diversity (MDD), while the Central region had the lowest (12%). The minimum meal frequency (MMF) and minimum acceptable diet (MAD) differed

significantly between areas. The factors associated with complementary feeding practices also differed across Indian regions.

Other liquid foods, including as cow's milk, lentil soup, and rice water soup, were typically offered in Maharashtra between the ages of 5 and 7 months. The semisolid, solid foods and fruits were introduced by 6 to 8 months. Bananas were being introduced quite late compared to other fruits. It was found that infants between the ages of 6 months and 12 months received two food categories for 24 hours, namely milk and cereals, while children between the ages of 13 and 24 months received three food groups, primarily milk, cereals, vegetables, and/or fruits. However, older people, particularly grandmothers, made the decision regarding the choice of complementary feeding (Kogade et al., 2019).

Behera et al. (2020) assesses complementary feeding in an urban slum of East Delhi and explored its association with the socio-demographic factors. Early initiation of breast feeding was practiced in around half of the children. Minimum Dietary Diversity (MDD), Minimum Meal Frequency (MMF) and Minimum Acceptable Diet (MAD) was found to be 17.7%, 69.1% and 16.6%, respectively. These complementary feeding indicators were found to be better among higher age group children, mothers with higher level of education and middle socio-economic class in comparison to lower socioeconomic sections of the study population. They concluded that infant and young child feeding practices were poor.

Liaqualthali (2020) assessed the infant feeding practices in the rural region of Kancheepuram district, Tamil Nadu from June to December 2019. They found that only 10.2% were solely breastfed for 6 months. 58.6% of children were introduced to soft/solid/semisolid food at the end of 6 to 8 months. Infants who were breastfed had a minimum acceptable diet of 31.5 %, while non-breastfed infants had a minimum acceptable

diet of 14 %. Additionally, they discovered that proper Infant and Young Child Feeding practices were statistically associated with the mother's age, educational level, employment position, and mode of delivery.

Kamble et al. (2020) found that mothers in Haryana had good knowledge about breast feeding, but with regard to complementary feeding practices, there was a knowledge gap regarding initiation and composition of complementary foods.

To summarize, an in-depth review of literature revealed that the feeding practices across India, particularly the age of introduction of complementary feeds and the type of food introduced are varied. The review also highlighted that the feeding practices are influenced by several factors. The existing studies mostly focused on the type of food and age of introduction of food. The consistency of the food, the utensils used and the position used for feeding have received less attention. These are important from the perspective of management of feeding difficulties for speech-language pathologists. Moreover, the knowledge regarding the type of food and liquid including water introduced and age of introduction, will assist the speech-language pathologists during management. Most of the existing studies have been conducted from the nutritionist perspective. Similar studies in parts of Western India, particularly in Maharashtra, are scarce. Since studies investigating these aspects are limited, the present study was planned with the aim of assessing prevalent feeding practices in Maharashtra. The next chapter describes the method used for the study.

CHAPTER III

METHOD

The primary aim of the current study was to explore the feeding practices among three districts of Maharashtra. The study investigated the feeding practices across the three districts and across maternal literacy levels. This chapter describes the participants who were involved in the study, the tool that was developed and used in the survey, and the procedures that were followed in the process of collecting and analyzing data.

3.1 Research Method/Design

The study followed a cross sectional survey type of research design conducted through an online mode.

The study was conducted in three phases:

Phase 1: Development of the survey tool

Phase 2: Validation of the tool

Phase 3: Administration of the tool

3.2 Phase 1: Development of the survey tool

A survey tool was developed to assess the feeding practices incorporating different sections. The survey tool was designed based on a literature search through google and books related to development of feeding. Item pools for each section were created after taking into consideration the redundancy of items and relevance under each domain of interest. Care was taken to maintain suitability of the items to Indian context.

3.2.1 Section 1

The survey tool comprised of a section on demographic details of the participants. The questions of the demographic section was intended to gather information like maternal age, contact details, number of children, their ages and gender. It also included questions to extract information about maternal education, employment, socioeconomic status, religion, type of family, type of diet, first/second time mother etc.

3.2.2 Section 2

The section 2 of the survey was developed to gather information on the child's general health and behavior. This was included to ensure all the children had normal developmental milestones with no health and behavioral issues. It also gathered information on child's feeding behavior whether the child was a picky eater and whether the child was easy to feed.

3.2.3 Section 3

The third section of the survey tool was developed to extract information about the hierarchy of food type, texture and consistency introduced, the age at which introduced, position used to feed the child, utensils used etc. Information regarding introduction of water was also included. Provision was also made to document the variety of food items fed to the child in the first two years of life. Sixteen items were included in this section. Pictures were added to support the written information for the options of a few items on consistencies, textures, utensils and positions used for feeding.

3.3 Phase 2: Validation of the tool

The prepared survey tool was given to three Speech-Language Pathologists (SLPs) with at least ten years of clinical experience in the area of feeding and its disorders. The content validation was done using the parameters from feedback rating questionnaire (adapted from Manual for Non-fluent Aphasia Therapy in Kannada, Goswami et al., 2012) and Survey Instrument Validation Rating Scale (Michael, 2020). The SLPs were asked to judge the clarity, simplicity, relevance, framing, applicability and appropriateness of the items as well as clarity, simplicity, relevance, color, appearance and iconicity of the pictures included using a Likert rating scale from 1 to 5 wherein 1 indicated 'poor', 2 indicated 'fair', 3 indicated 'good', 4 indicated 'very good' and 5 indicated 'excellent'.

A master chart was made with the validation scores and remarks provided by all the three SLPs. The items with a rating of 3 and above, by 2 or more SLPs were included in the tool. The modifications and suggestions provided by the judges were incorporated. The options under the items related to position were expanded. A few questions were reframed to resolve their ambiguity. A few questions were added based on the suggestions provided by the judges. A few pictures were replaced with other pictures better clarity.

A pilot study was conducted on six participants (two from each district) after which a few age ranges in the options were modified. The final survey tool had the same three sections as the initial one, however, the number of items in the third section were 21. The final survey tool has been attached in the Appendix.

3.4 Phase 3: Administration of the tool

3.4.1 Participants

The present study included 95 mothers of typically developing children in the age range of 1-3 years - 30 mothers from the two districts- Nagpur, Sangli and 35 mothers from the district Mumbai Suburban. Mumbai-Suburban District belongs to Konkan Division in the west of the Maharashtra. Nagpur belongs to the Vidarbha Division in the north-east of the Maharashtra and Sangli belongs to the Desh Division in the south of the Maharashtra. These three districts were taken because of their geographical location for better representation of the Maharashtra state as a whole. Convenience sampling method was used to select the participants. The participants were recruited through personal contacts, referral through friends and family, and parent groups on various social media platforms and nursery schools. The participants were selected based on the following inclusion and exclusion criteria.

Participant inclusion criteria

- Females in the age range of 18-40 of years
- Both first and second time mothers
- Mothers of typically developing children
- Native residents of the particular district
- Mothers with feeding experience of at least 6 months

Participant exclusion criteria

- Mothers of specially abled children

- Mothers of children with frequent medical illness
- Mothers of children who went to the day care

The mothers belonged to the age group of 25-35 years. The mean age of infants across all the districts was 2.3 years out of which 44 were males and 51 females. In order to determine the socio-economic status of participants, Modified Kuppaswamy socioeconomic scale updated for the year 2021 (Sheikh et al., 2021) was used. Majority of the mothers belonged to middle class and resided in urban areas. 80 mothers were homemakers and the rest were employed. Majority of the mothers belonged to Hindu religion. Most of the mothers were first time mothers. 58 mothers resided in a joint family and rest were in a nuclear family. Half the number of total participants were vegetarians and half were non vegetarians.

The participants of all the districts were divided into three groups based on their literacy levels: Group 1 consisted of graduate as well as post-graduate mothers, Group 2 consisted of mothers who completed either Secondary School Certificate Exam or Higher Secondary School Certificate Exam (till 10th or 12th grades) and Group 3 consisted of mothers who studied till primary or secondary grades of school (till 4th or 9th grades) as well as illiterate mothers. Among the total participants, Group 1 consisted of 40 mothers, whereas Groups 2 and 3 consisted of 29 and 26 mothers respectively.

Table 3.1.*Distribution of maternal literacy levels across all the districts*

Groups	Nagpur	Mumbai	Sangli	Total
Group 1	13	15	12	40
Group 2	8	12	9	29
Group 3	9	8	9	26

3.4.2 Procedure

The finalized survey tool was administered on the participants through the virtual mode in the form of an interview via Google Meet or Whatsapp Video Call. Since there were participants from all socioeconomic strata, both these online platforms were chosen. The specific online platform for a particular participant was selected based on the convenience, availability and the knowledge regarding its use. During the interview, the participants were also shown the pictures of various utensils, positions used to feed the child, textures and consistencies of the food items, which were a part of the third section of the survey tool. Before the initiation of the interview, the purpose of study was explained. All ethical standards were met for participant selection and their participation. Prior to testing, a written consent was obtained from the parents of the participants after explaining the purpose of the study. AIISH Ethical Guidelines for Bio-Behavioural Research involving Human Subjects (AEC, 2009) were followed. The online interview was conducted for about 30-35 minutes for each participant.

3.5 Assessment of test-retest reliability

To assess the reliability of the data, the survey tool was readministered on ten percent of the participant sample (3 per district), selected randomly after 1-2 weeks of the initial responses.

3.6 Data Analyses

The compiled data was analyzed through appropriate statistical measures. As the present study was survey type of research, simple descriptive statistics were applied to obtain the frequencies and the percentage. The next chapter describes the findings obtained in the study, which have also been discussed with regard to the existing literature.

CHAPTER IV

RESULTS AND DISCUSSION

The primary aim of the current study was to investigate the nature of feeding practices in typically developing young children up to three years (Mean=2.3, S.D=0.49) in three districts of Maharashtra. The objectives were to compare the feeding practices across the three districts (Mumbai-Suburban, Nagpur and Sangli) and to compare the parental feeding practices between literate and illiterate groups. A total of 95 mothers (30 from Nagpur, 35 from Mumbai and 30 from Sangli) in the age group of 20-38 years (Mean=29.6, S.D=3.47) participated in the study.

The survey tool had three sections, section 1 focused on documenting the demographic details, section 2 focused on the child's general health and behavior and section 3 included items related to the hierarchy of food type, texture and consistency introduced and the age at which introduced, position used to feed the child, utensils used etc. The third section contained 21 items.

The survey tool was validated by experienced speech-language pathologists. The responses from the parents were obtained through an online interview and the responses were recorded. Statistical Analysis (frequency and percentage) was carried out using SPSS-Statistical Package for Social Sciences Version 20.0 (IBM Corp., Armonk, NY, USA).

In order to assess the reliability of the responses obtained, the assessment of test-retest reliability was done. The survey tool was re administered for 10% of the population (3 from each district) within 1-2 weeks from the first administration. The Cronbach's alpha

value was calculated for each item, which turned out to be 1, suggesting high reliability of the responses.

In addition to the maternal age, the other demographic details of the participants documented through the section 1 of the tool were literacy levels, religion, type of family, type of diet, occupation, socioeconomic status, and first/second time mothers. This information was extracted as these factors could influence feeding practices. The details of the demographic information have been provided in the tables 4.1 to 4.7.

Table 4.1

Distribution of maternal literacy levels across districts

Groups	Nagpur		Mumbai		Sangli		Total	
	n	%	n	%	n	%	n	%
Group 1	13	32.5	15	37.5	12	30	40	42.1
Group 2	8	27.6	12	41.4	9	31	29	30.5
Group 3	9	34.6	8	30.7	9	34.7	26	27.4

It was found that the literacy level varied widely across the participants. Hence, the participants were divided into three groups based on the maternal literacy. Group 1 consisted of graduate as well as post-graduate mothers, Group 2 consisted of mothers who completed either Secondary School Certificate Exam or Higher Secondary School Certificate Exam (till 10th or 12th grades) and Group 3 consisted of mothers who studied till primary or secondary grades of school (till 4th or 9th grades) as well as illiterate mothers. Group 1 consisted of 40 mothers, whereas Groups 2 and 3 consisted of 29 and 26 mothers

respectively. The distribution of data indicated that participants in the group 1 were higher than in group 2 and 3 across all districts. According to Kavitha et al. (2014), appropriate weaning practices are significantly related to the literacy levels of the mothers.

Table 4.2

Distribution of religion of the mothers across districts

Religion	Nagpur		Mumbai		Sangli		Total	
	n	%	n	%	n%	n	%	
Hindu	25	32.9	25	32.9	26	34.2	76	80
Jain	0	0	7	63.6	4	36.4	11	11.6
Muslim	5	62.5	3	37.5	0	0	8	8.4

The data in table 4.2 revealed that greater number of participants belonged to the Hindu religion compared to the other two religions as reflected through the total number and the number across districts.

Table 4.3*Distribution of type of families across districts*

Type of family	Nagpur		Mumbai		Sangli		Total	
	n	%	n	%	n	%	n	%
Joint	20	34.4	19	32.8	19	32.8	58	61.1
Nuclear	10	27	16	43.2	11	29.8	37	38.9

The data in table 4.3 revealed that greater number of participants stayed in a joint family as reflected through the total number and the number across districts. Studies in the literature suggest the type of family could influence feeding practices. For example, a study by Velusamy et al. (2017), found that mothers of nuclear family terminated the breast feeding early because of their other household chores which have to be looked upon by them single handedly.

Table 4.4*Distribution of type of diet across districts*

Type of diet	Nagpur		Mumbai		Sangli		Total	
	n	%	n	%	n	%	n	%
Non-vegetarians	16	36.4	11	25	17	38.6	44	46.3
Vegetarians	14	35.9	17	43.6	8	20.5	39	41.1
Jains	0	0	5	55.5	4	44.5	9	9.5
Eggetarians	0	0	2	66.6	1	33.4	3	3.2

The data in table 4.4 revealed that greater number of participants belonged to the non-vegetarian group as reflected through the total number. However, there was a near equal number of vegetarians as well across all districts. The number of Jains and eggetarians were very low compared to the other two groups. Jain diet is completely lacto-vegetarian, with no consumption of roots and underground vegetables such as onion, potato, garlic etc. Eggetarian diet includes eggs, milk and milk products, fruits, vegetables, cereals and pulses with no other non-vegetarian items.

Table 4.5*Distribution of maternal occupation across districts*

Occupation	Nagpur		Mumbai		Sangli		Total	
	n	%	n	%	n	%	n	%
Homemaker	29	36.2	23	28.8	28	35	80	84.2
Employed	1	6.7	12	80	2	13.3	15	15.8

The data in table 4.5 revealed that greater number of participants were unemployed as reflected through the total number and the number across districts. The employment status of the mothers also could influence feeding practices. For example, studies by Zahiruddin et al. (2016) and Annie (2017) found that the employed mothers tend to terminate breast feeding early and introduce complementary feeding because they have to return to their work. Also, Kavitha et al. (2014), found that working mothers from rural areas found it difficult to continue the exclusive breast feeding and thus, started the complementary feeding early.

Table 4.6*Distribution of socioeconomic status of mothers across districts*

Socio-economic status	Nagpur		Mumbai		Sangli		Total	
	n	%	n	%	n	%	n	%
Upper	0	0	4	100	0	0	4	4.2
Middle	21	32.3	22	33.9	22	33.8	65	68.4
Lower	9	34.6	9	34.6	8	30.8	26	27.4

The data in table 4.6 revealed that greater number of participants belonged to the middle socio economic status as reflected through the total number and the number across districts. Studies have revealed that mothers from lower socioeconomic status are less aware about how important breast feeding is and they do not exclusively breast feed their child for first 6 months. Insufficient milk secretion is also the reason given by such mothers (Mahmood, 2012). Khan et al. (2017) also revealed that low quality feeding practices are associated with lower socioeconomic class, maternal illiteracy and unemployment.

Table 4.7*Distribution of first time and second time mothers across districts*

Maternal experience	feeding	Nagpur		Mumbai		Sangli		Total	
		n	%	n	%	n	%	n	%
First time		17	25.8	30	44.8	20	29.4	67	70.5
Second time		13	46.4	5	17.8	10	35.8	28	29.5

The data in table 4.7 revealed that greater number of participants were first time mothers as reflected through the total number and the number across districts. Experience as a mother could also influence feeding practices. Second time mothers already have feeding experience of feeding their first infant. Hence, they tend to follow appropriate feeding practices as compared to the first time mothers with no experience. Walsh et al. (2015) also found that first time mothers introduced complementary feeding early because of lack of experience.

The results of the section III of the survey tool have been described and discussed under the following sections.

4.1 Breast feeding practices

4.1.1 History of breast feeding

The item one of the survey tool focused on extracting information regarding whether all the participants breast fed their babies or not. This item was included because some studies revealed that some mothers would provide formula feed as they had insufficient breast milk.

a. Comparison across districts and literacy levels: The results revealed that all the mothers in all the districts across all literacy levels breastfed their infants, that is 100% of the participants breast fed their infants. However, among these, 72 mothers (75.8%) exclusively carried out breast feeding and 23 mothers (24.2%) also introduced formula feed at various ages before 6 months, the details of which are provided in the next section. Among these, 14 mothers (60.8%) who introduced formula feed, introduced it right from day 1 after birth, since they had insufficient milk secretion.

For newborns, breastmilk is the best food. It contains antibodies that aid in preventing a number of prevalent paediatric ailments, and it is secure and hygienic. Breastmilk continues to supply up to half or more of a child's nutritional needs during the second half of the first year of life and up to one third during the second year of life, providing all the energy and nutrients that the infant need for the first few months of life as recommended by WHO. Very early skin-to-skin contact and suckling may have physical and emotional benefits as well (American Academy of Pediatrics, 2012).

The findings of the current study are not in agreement with the findings of the The Third National Family Health Survey (NFHS-3) of India, which found that overall, only 48.3 % of children aged 0 to 5 months were solely breastfed. However, a direct comparison of this data with the current study cannot be made as this represent the data for infants across the country.

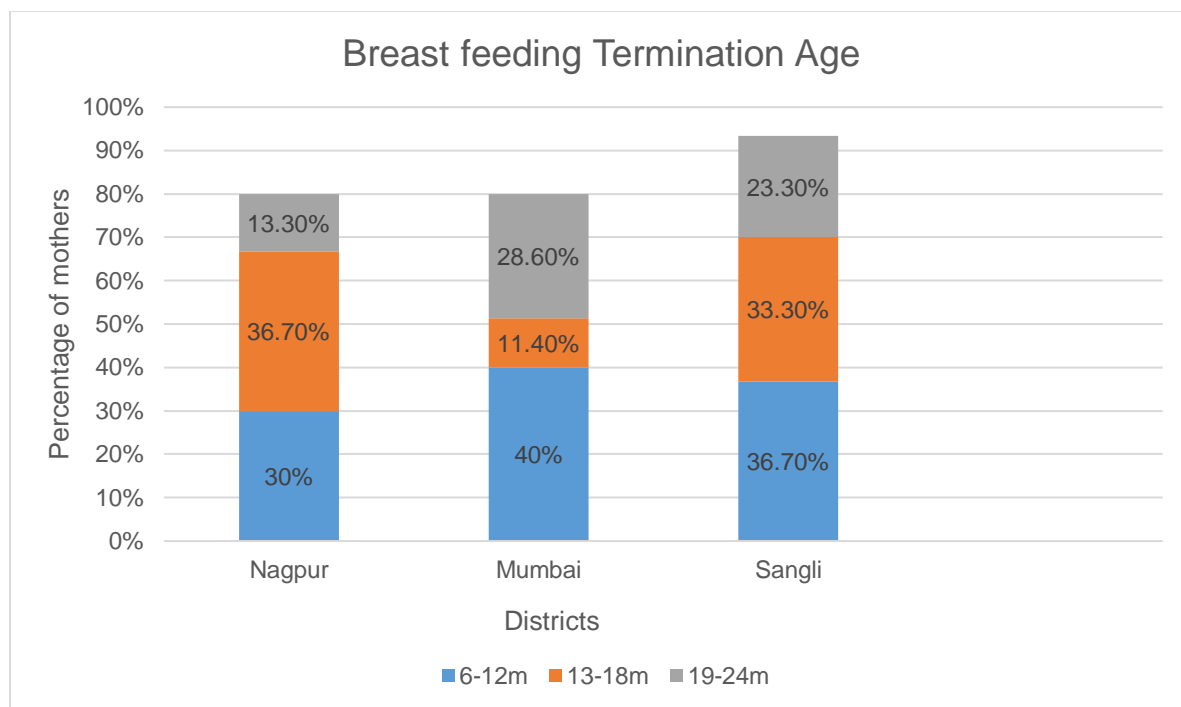
4.1.2 Breast feeding termination age

The second item on the survey tool extracted the information regarding the age at which breast feeding was terminated. The data revealed that 84.2% of participants had terminated breast feeding (Average age=17.9 months), whereas 15.8% continued to breastfeed. The data with regard to the age at which breastfeed was terminated was compared across districts and literacy levels. Among the total number of participants from all the districts, it was seen that 34 mothers (35.8%) out of 95 mothers terminated breast feeding between 6-12 months.

a. Comparison across districts: The breast feeding termination age across districts has been depicted in figure 4.1 below. As seen in the figure, among the participants from Nagpur, a majority (n=11, 36.70%) terminated breast feeding at 13-18 months, while 40% of mothers (n=14) from Mumbai and 36.70% (n=11) from Sangli terminated at 6-12 months. The results revealed that more mothers from Mumbai and Sangli terminated breast feeding at 6-12 months, which was earlier than the mothers from Nagpur. Thus, breast feeding termination age varied slightly across districts.

Figure 4.1

Breast feeding termination age across districts



In the current study, some mothers from Mumbai and Sangli terminated the breast feeding early at 6-12 months of age. This was probably because in Mumbai, more number of mothers were employed (n=12) and also more mothers from Mumbai and Sangli belonged to nuclear families (n=16, n=11).

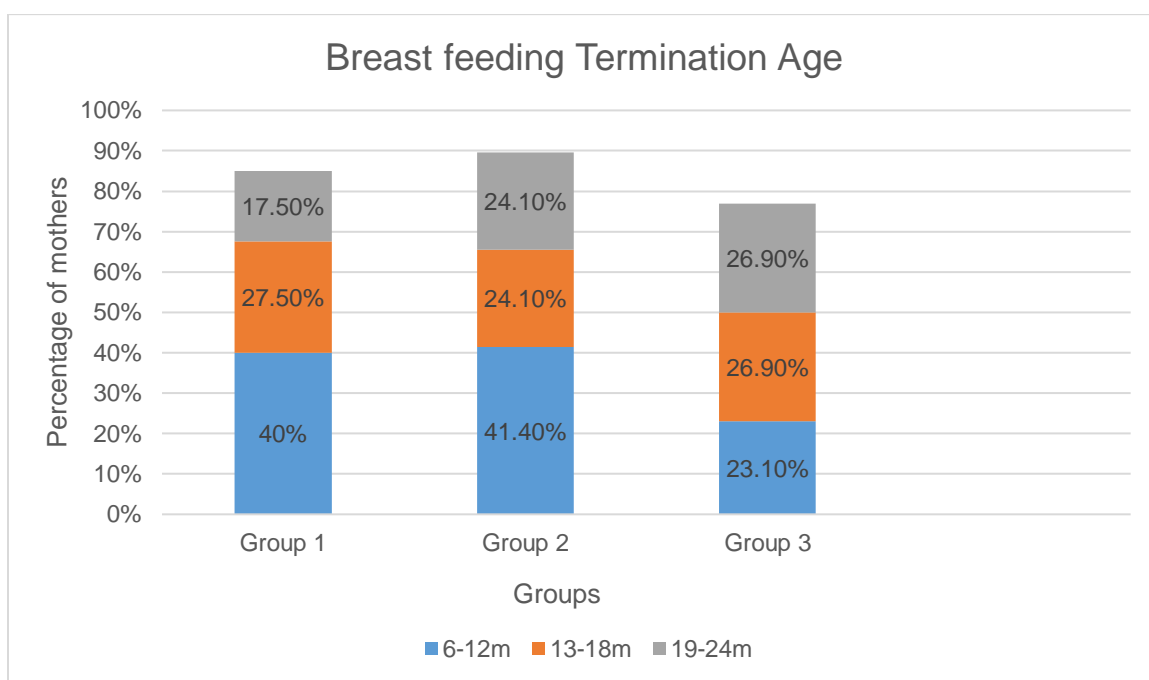
Swetha et al. (2014) also observed in their study that employment was significantly associated with duration of exclusive breast feeding. Also, Velusamy et al. (2017), observed that mothers in nuclear families, compared to mothers from joint families, were more likely to cease breast feeding early.

b. Comparison across literacy groups: To assess if literacy had an influence on termination of breast feeding, a comparison was made across the three literacy groups

identified. Greater percentage of participants from Group 1 (n=16, 40%) and 2 (n=12, 41.40%) terminated the breast feeding at 6-12 months of age compared to Group 3 (n=6, 23.10%). In Group 3, nearly equal percentage of mothers terminated breast feeding at each of the age groups mentioned. These results indicated that literacy had an influence on the breast feeding termination age. This has been depicted in the figure 4.2 below.

Figure 4.2

Breast feeding termination age across literacy groups



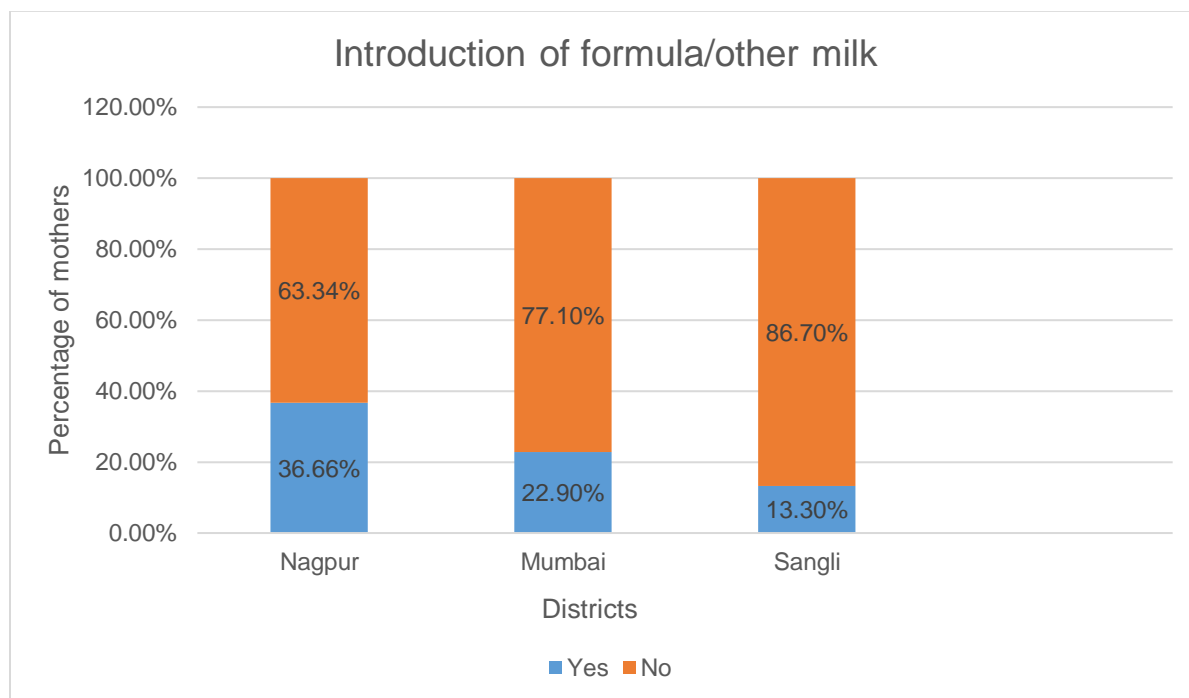
Mothers belonging to Group 1 and Group 2 terminated breast feeding early as more numbers from these groups were employed and they had to return to their work. Srikanth et al. (2017) also reported that the level of education and employment of the mothers appeared to be the influencing factors for breast feeding behaviours.

4.1.3 Introduction of formula/other milk

The third item in the survey tool extracted information about any formula/other milk provided to the infant from an external source in addition to the breast milk. The data revealed that among the total number of participants from all the districts, only 23 mothers (24.2%) introduced formula/other milk.

In many countries, breast feeding is the norm and formula feeding is the second option (Callaghan & Lazard, 2012). The findings of the current study are in contrast to the findings by Taye et al. (2021), who reported that the formula feeding prevalence in Ethiopia was 46.2 %. This could be attributed to geographical differences addressed in both studies. One of the prime reasons for early introduction of formula feed is the pain and discomfort that the mothers experience during breast feeding (Lee, 2009). However, such reasons for introducing formula milk were not reported by the mothers in the current study.

a. Comparison across districts: With respect to formula/other milk, more mothers from Nagpur (n=10, 36.66%) gave additional milk as compared to Mumbai (n=8, 22.90%) and Sangli (n=4, 13.30%). This information is depicted in the above figure 4.3 below. The results showed that the number of mothers who introduced formula feeds varied slightly across the districts.

Figure 4.3*Introduction of formula/other milk across districts*

The results could be attributed to insufficient milk secretion as reported by 72.73% of mothers (n=8) from Nagpur. Another possible reason could be that 27.27% of the mothers (n=3) from Nagpur reported that they had to introduce additional milk as their infants were unable to suck the milk, especially in the first few days after birth.

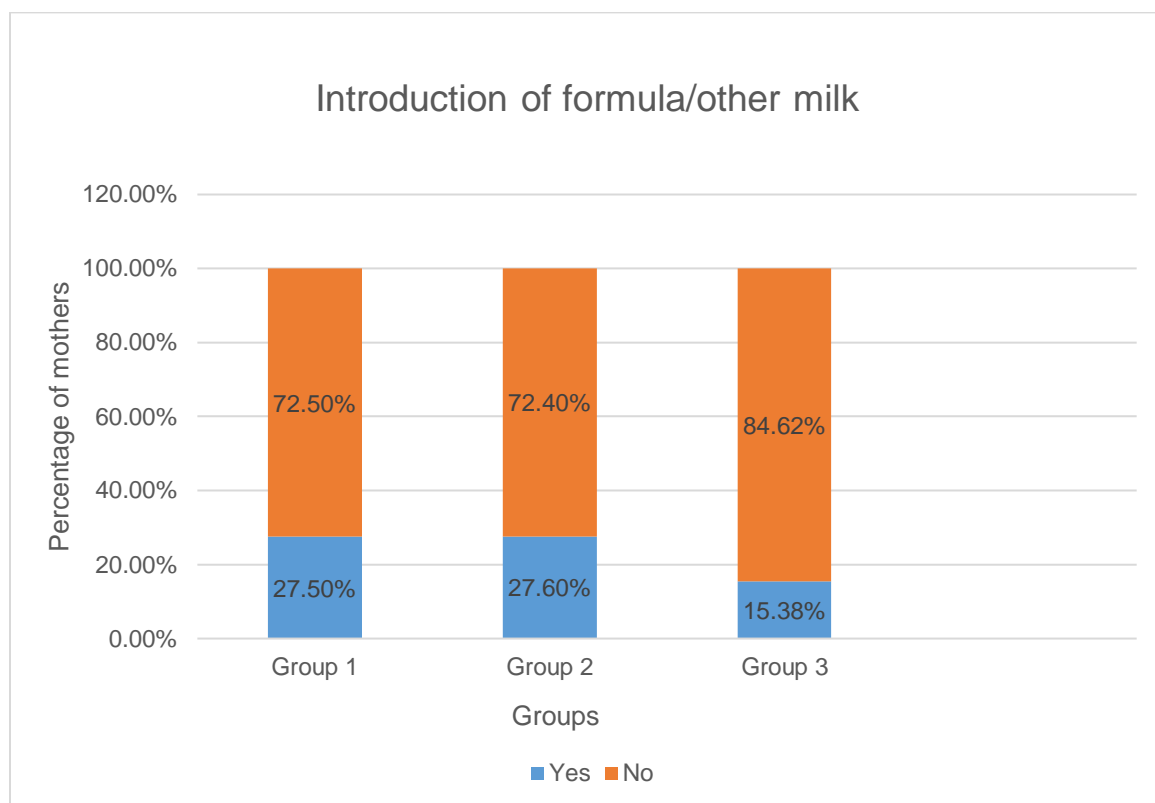
b. Comparison across literacy groups: To assess if literacy had an influence on introduction of formula feeds, a comparison was made across the three literacy groups identified.

More number of mothers from Group 1 (n=11, 27.50%) and Group 2 (n=8, 27.60%) as compared to Group 3 (n=4, 15.38%) fed the child formula/other milk. The distribution of number of participants who introduced formula/other milk across the three literacy

groups have been depicted in figure 4.4 below. The results showed that the number of mothers who introduced formula feeds varied slightly across the literacy levels.

Figure 4.4

Introduction of formula/other milk across literacy groups



Introduction of formula feeding could be attributed to the employment status of the mothers, as higher number of mothers from Group 1 and Group 2 were employed and had to return to their work. Similar results were found by Taye et al. (2021), who discovered that formula feeding is more likely to be practiced by mothers with a college graduation or higher for their infants than those with a primary education or less.

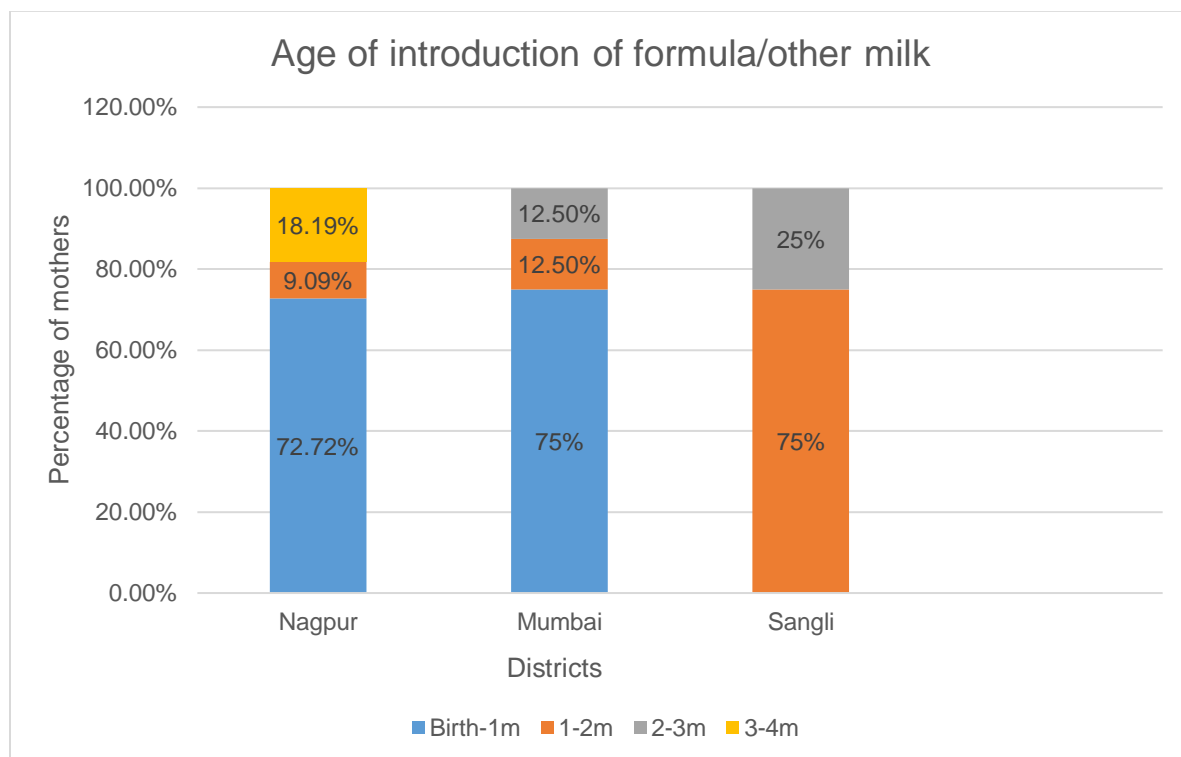
4.1.4 Age of introduction of formula/other milk

The fourth item in the survey tool extracted information about the age at which the mothers provided formula feed to their infants. The data revealed that among the total number of mothers who introduced formula feeds, it was seen that 14 mothers (60.8%) introduced other milk in their first month of life. The American Academy of Pediatrics (2019) recommends that formula feed can be started after the first week. Formula can be given to the baby in their first 12 months, which was also recommended by a national support and informational service (Pregnancy, Birth and Baby: <https://www.pregnancybirthbaby.org.au/>), especially if the milk production is inadequate.

a. Comparison across districts: In Nagpur (n=8, 72.72%) and Mumbai (n=6, 75%) majority of the mothers introduced additional milk in the first month itself, compared to the mothers of Sangli (n=3, 75%) who introduced at 1-2 months. Thus, the results revealed that the age of introduction of additional feeds differed across districts. This is depicted in the figure 4.5 below. This was because of their insufficient milk secretion from infant's birth, as reported by the mothers of Nagpur and Mumbai.

Figure 4.5

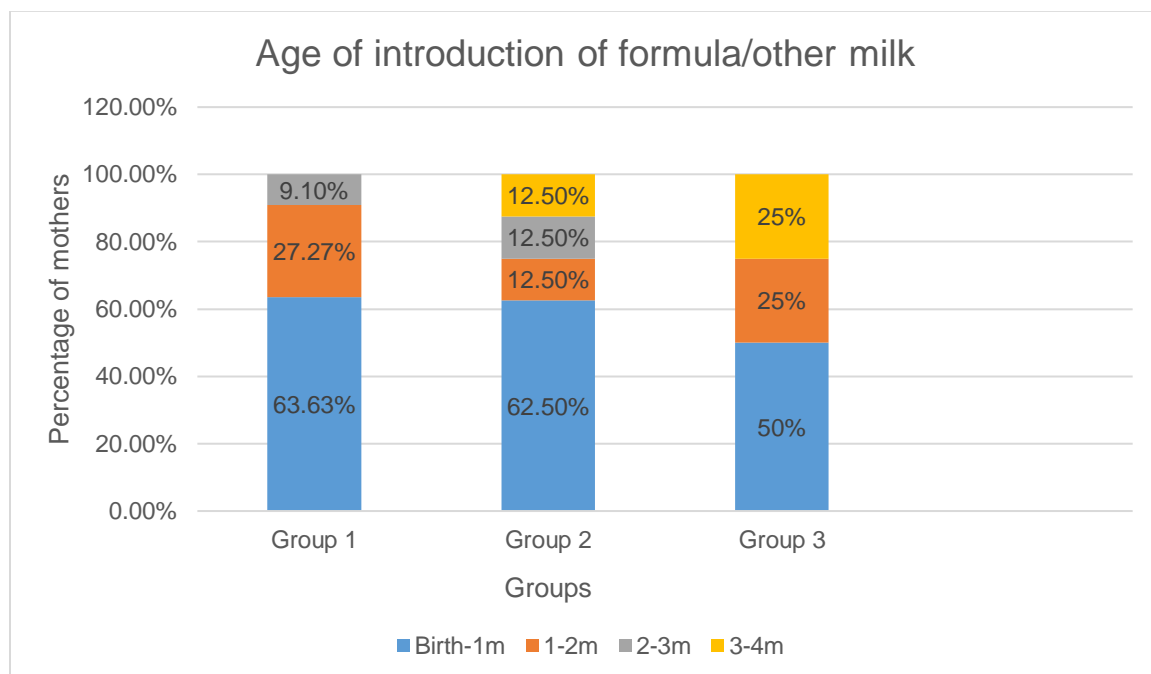
Age of introduction of formula/other milk across districts



b. Comparison across literacy groups: To assess if literacy had an influence on age of introduction of formula feeds, a comparison was made across the three literacy groups identified. Across all the literacy groups, mothers most commonly introduced other milk from birth to 1 month. When a comparison was made across the literacy levels, more percentage of mothers from Group 1 (n=7, 63.6%) introduced it from birth to 1 month as compared to Group 2 (n=5, 62.50%) and Group 3 (n=2, 50%). Thus, the results revealed that though there was a similar trend across literacy levels, the percentage of mothers who introduced other milk from birth to 1 month across varied. This is depicted in figure 4.6 below.

Figure 4.6

Age of introduction of formula/other milk across literacy groups



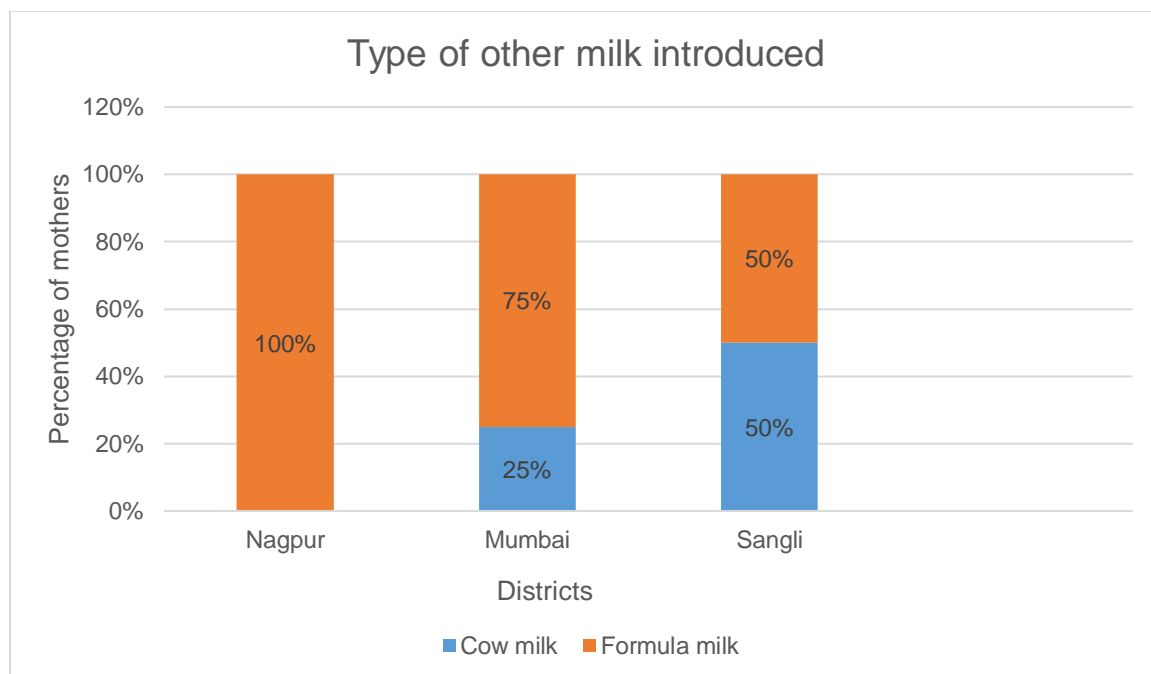
4.1.5 Type of other milk introduced

The fifth item in the survey tool extracted information about the type of milk provided to the infant in addition to the breast milk. The data revealed that out of the mothers who introduced other milk, 19 mothers (82.6%) preferred formula milk.

a. Comparison across districts: All the mothers from Nagpur (n= 11, 100%) who fed other milk, preferred formula milk. In Mumbai, 6 (n=6, 75%) mothers preferred formula milk and in Sangli, 2 mothers (n=2, 50%) preferred formula milk. This is depicted in figure 4.7 below. The results revealed that there was a difference in the type of additional feeds introduced across districts.

Figure 4.7

Type of other milk introduced across districts



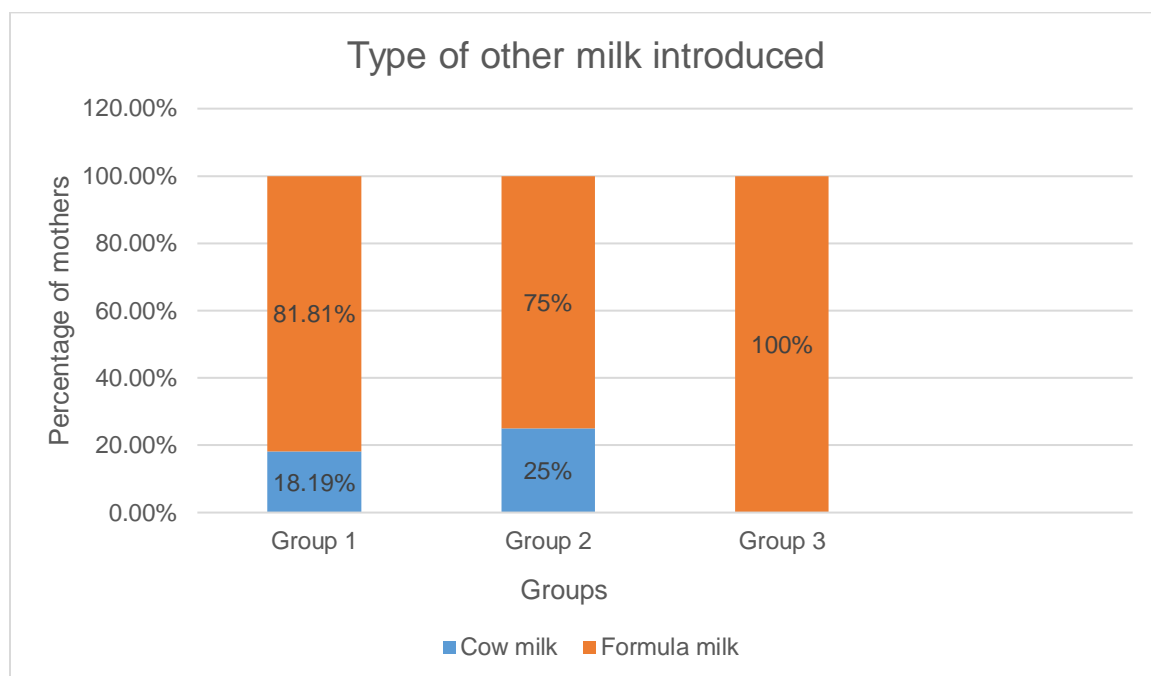
This finding is in consonance with the study by Roess (2018), who reported that in early and middle infancy, using cow milk instead of formula was uncommon. Rathaur et al. (2018) also reported that formula milk was most commonly used in the Himalayan region.

b. Comparison across literacy groups: To assess if literacy had an influence on type of formula feeds, a comparison was made across the three literacy groups identified. Among all the mothers across literacy groups, formula milk was most commonly provided to the infants by all the groups. 100% mothers (n=4) from Group 3, 81.81% of mothers (n=9) of Group 1 and 75% mothers (n=6) from Group 2 preferred formula milk. This is depicted in the figure 4.8 below. The results indicated that literacy had an influence on the type of

formula feeds provided. Mothers from Group 1 and Group 2 considered cow milk more natural as compared to the formula milk and thus, introduced it.

Figure 4.8

Type of other milk introduced across literacy groups



4.1.6 Utensils used for feeding other milk

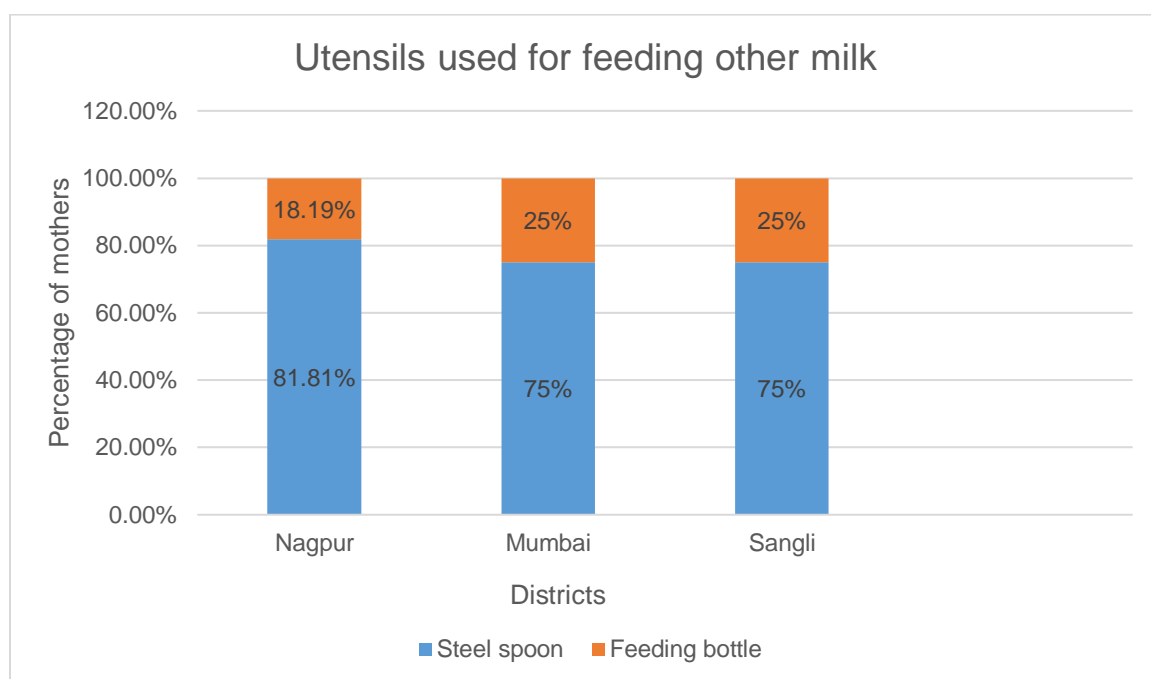
The next item in the survey tool extracted information about the utensils used for feeding other milk to the infant in addition to the breast milk. The data revealed that out of the mothers who introduced other milk, 18 mothers (78.2%) preferred steel spoon.

a. Comparison across districts: Across all the districts, among olle/paladai/nifty cup, spoon, feeding bottle with specific nipple size, syringe/dropper, steel spoon was used by a greater number of participants as compared to feeding bottle. This is depicted in figure 4.9 below. When the data was compared across districts, it was seen that mothers from Nagpur

(n=9, 81.81%) used steel spoon to a greater extent than mothers of Mumbai (n=6, 75%) and Sangli (n=3, 75%). The results revealed that although the trend of using steel spoon was similar across all the districts, there was a difference in the percentage of mothers using the steel spoon across districts.

Figure 4.9

Distribution of participants using different utensils for feeding other milk across districts



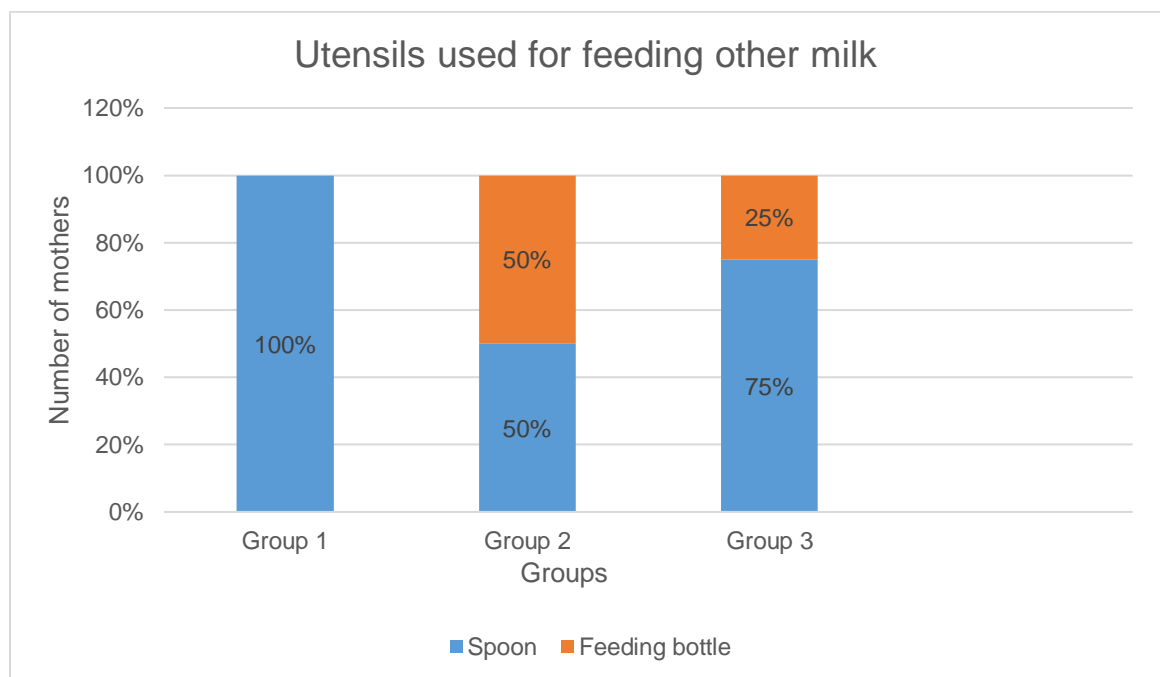
The findings with respect to Nagpur district are in consonance with the findings of study done by Zahiruddin et al., (2016) where he found that no mothers used feeding bottle to feed the child in the district of Wardha.

b. Across literacy groups: To assess if literacy had an influence on utensils used of formula feeds, a comparison was made across the three literacy groups identified. Across all the groups, all mothers used steel spoons. In Group 1, among olle/paladai/nifty cup,

spoon, feeding bottle with specific nipple size, syringe/dropper, all the mothers (n=11, 100%) used spoon. While in Group 2, equal number (n=4, 50%) of mothers used spoon and feeding bottle. In Group 3, 3 (75%) mothers used spoon and 1 (25%) mother used feeding bottle. The results revealed a difference in the type of utensil across literacy groups. This is depicted in figure 4.10 below.

Figure 4.10

Distribution of participants using different utensils for feeding other milk across literacy groups



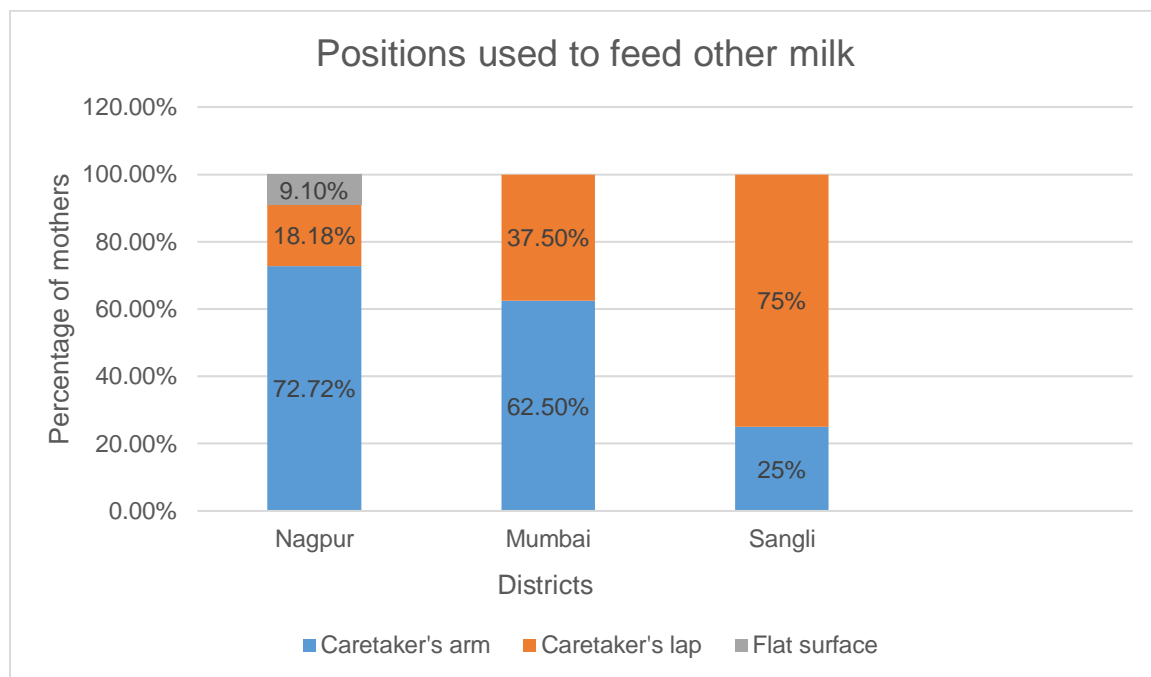
4.1.7. Position used to feed other milk

The seventh item in the survey tool extracted information about the position used to feed other milk to the infant in addition to the breast milk. The data revealed that out of the mothers who introduced other milk, 14 mothers (60.8%) in all held their infants in their arm to feed. This is in accordance to the recommendation by Connolly (2019) that infants should be held in arms for formula feeds.

a. Comparison across districts: Majority of the mothers from Nagpur (n=8, 72.7%) and Mumbai (n=5, 62.5%), fed the additional milk to their infants, holding them in their arms, whereas in Sangli (n=3, 75%), more mothers fed, while the infants were upright on their laps. A comparison across districts revealed that greater percentage of Nagpur mothers held their infants in their arms, while feeding the child. The results again revealed a difference across districts. This is depicted in figure 4.11 below.

Figure 4.11

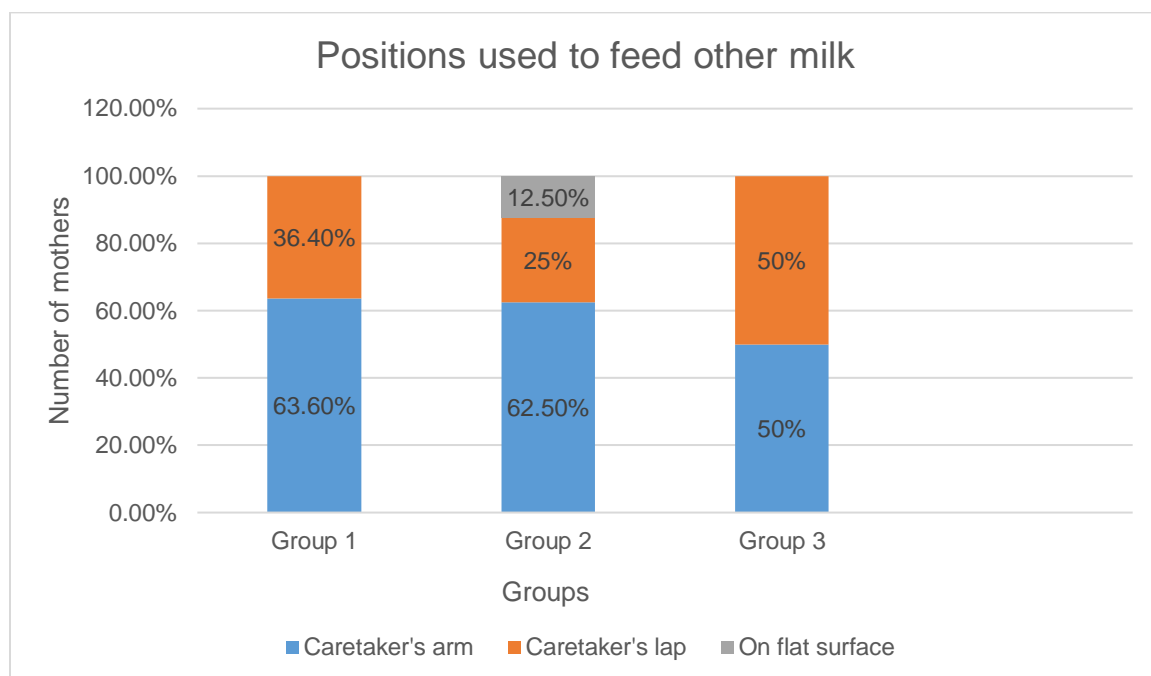
Distribution of participants using different positions for feeding other milk across districts



b. Comparison across literacy groups: To assess if literacy had an influence on positions used, comparison was made across the three literacy groups identified. Majority of the mothers from Group 1 (n=7, 63.60%) held their infants in arms and fed them, compared to the other groups. Also, 1 mother from Group 2 (n=1, 12.50%) fed the infant by making him/her lie on the flat surface, which was not reported by mothers of other groups. This is depicted in figure 4.12 below. The results revealed a difference across maternal literacy levels. All the mothers who fed their infants on their laps, were first time mothers who lacked experience in feeding.

Figure 4.12

Distribution of participants using different positions for feeding other milk across literacy groups



4.2 Introduction of Complementary Feeding

4.2.1 Age of introduction of complementary feeding

The first item under this section, extracted information about the age at which the complementary feeding was introduced. The data revealed that out of 95 mothers, 49 mothers (59.6%) introduced complementary feeding at 6-7 months.

a. Comparison across districts: Greater percentage of mothers from Nagpur (66.7%) introduced complementary feeding at 6-7 months as compared to Mumbai (45.7%) and Sangli (43.3%), who introduced complementary feed at 5-6 months. A few mothers from

Sangli (10%) and Mumbai (5.7%) started complementary feeding as early as 4-5 months. The data related to age of introduction of complementary feeding revealed differences across districts. This is depicted in table 4.8 below.

Table 4.8

Age of introduction of complementary feeding across districts

Age in months	Nagpur		Mumbai		Sangli		Total	
	n	%	n	%	n	%	n	%
4-5	0	0	2	5.7	3	10	5	5.3
5-6	8	26.7	17	48.6	14	46.7	39	41.1
6-7	20	66.7	16	45.7	13	43.3	49	51.6
After 7	2	6.7	0	0	0	0	2	2.1

The study observed that majority of mothers from Nagpur introduced complementary feeding at the appropriate time, i.e. between 6-7 months of time, which is as per the recommendation of WHO (2001). The National Guidelines on Infants and Young Child Feeding (2006) also states that it is crucial to supplement breast milk with solid or semi-solid foods once a child reaches the age of six months, because breast milk is no longer sufficient to meet the infant's nutritional needs after that age. Basnet et al. (2015) reported that 50% of the mothers began supplemental feeds at 6 months of age and NFHS-3 found that 53.8% of children aged six to nine months got introduced with complementary foods, which is consistent with current study's data. Similar results were obtained in a research conducted in West Bengal (Mondal, 2014). In a study by Rao et al.

(2011), it was reported that 77.5% of mothers in coastal South India had begun complementary feeding at the suggested time.

However, Kavitha et al. (2014)'s study found that 62% of infants were weaned too soon because of the maternal variables. This finding obtained in the current study is also not in agreement with the study conducted in Chandigarh, where it was reported that 81.7% of 300 women began complementary feeding for their infants between the ages of six and eight months (Pradhan, 2016). Gaddapa and Behera (2016) also reported that only 38% received complementary feeding between the ages of 6 and 9 months, compared to 48.8%, who began complementary feeding before the age of six months. The findings of this study only matches with the data from Mumbai and Sangli districts of Maharashtra obtained in the present study. The findings of the present study are also not in consensus with other studies, where only 36% of children in Kolkata and 6% mothers from six villages in Uttar Pradesh's Ghaziabad district who were given complementary foods with breast feeding at six months of age (Dasgupta et al., 2014; Garg, 2009).

b. Across literacy groups: To assess if literacy had an influence on age of introduction of complementary feeding, comparison was made across the three literacy groups identified. Greater percentage of mothers from Group 1 (30%) introduced complementary feeds at 6-7 months. More mothers from Group 3 (11.5%) as compared to Group 1 (2.5%) and 2 (3.4%) introduced complementary feeding as early as 4-5 months. Few mothers from Group 3 (7.7%) introduced after 7 months. The data related to age of introduction of complementary feeding revealed differences across maternal literacy levels. This is depicted in table 4.9 below.

Table 4.9*Age of introduction of complementary feeding across literacy groups*

Age in months	Group 1		Group 2		Group 3		Total	
	n	%	n	%	n	%	n	%
4-5	1	2.5	1	3.4	3	11.5	5	5.3
5-6	12	30	17	58.6	10	38.5	39	41.1
6-7	27	67.5	11	37.9	11	42.3	49	51.6
After 7	0	0	0	0	2	7.7	2	2.1

Aggarwal et al. (2008) demonstrated in a tertiary care hospital in Delhi, that only 17.5% of the children received complementary feeds at six months and that the knowledge about the correct timing of complementary feeding significantly correlated to maternal and paternal education. The most frequent reason for the late introduction of supplemental feeds was found to be mother's lack of awareness, which is also consistent with the findings of the study by Kalita and Borah (2016).

4.2.2 Type of food introduced during complementary feeding

The information about the food items introduced during complementary feeding was also extracted and compared across districts and literacy levels.

a. Comparison across districts: As depicted from the table 4.10 below, dal water, rice water and cerelac were the common food items in all the districts for introduced as complementary feeds. A combination of dal water and cerelac was the common

complementary feed in Nagpur, whereas the combination of dal water and rice water was the most common feed in Sangli. In Mumbai, equal percentage provided both of these combinations. However, in district of Mumbai, in addition to all kind of waters, mothers also started introducing mashed fruits and vegetables during this period. Fruit juice was also given in Nagpur and Mumbai. Thus, across districts though most commonly used food types were similar, but the exact combination of these slightly differed.

Table 4.10*Food items introduced for complementary feeding across districts*

Food Items	Districts					
	Nagpur		Mumbai		Sangli	
	n	%	n	%	n	%
Rice water	0	0.0%	0	0.0%	7	23.3%
Dal water	5	16.7%	6	17.1%	1	3.3%
Dal water & Cerelac	13	43.3%	7	20.0%	5	16.7%
Dal water & Rice water	6	20.0%	7	20.0%	7	23.3%
Rice water & Cerelac	0	0.0%	3	8.6%	5	16.7%
Mashed fruits & vegetables	2	6.7%	5	14.3%	1	3.3%
Fruit Juice	1	3.3%	2	5.7%	0	0.0%
Cerelac	3	10.0%	3	8.6%	0	0.0%
Fruit juice & Cerelac	0	0.0%	2	5.7%	4	13.3%

Dal water and rice water were the commonly used complementary liquids, which were also commonly provided to the infants in the study done by Kogade et al (2019). Also, Lodha (2013) found that rice water was given by 72% mothers of Madhya Pradesh. The mothers from Mumbai appropriately started mashed and pureed food items at this stage, which is also recommended by the IAP Parent Guideline Committee (2020). However, they also started giving fruit juice which is not recommended for children below 2 years of age (IAP, Parent Guideline Committee, 2020).

b. Comparison across literacy groups: To assess if literacy had an influence on type of food items introduced as a part of complementary feeding, a comparison was made across the three literacy groups identified. As depicted from the table 4.11 below, dal water, rice water and cerelac were the common food items across all the maternal literacy levels for complementary feeds. A combination of dal water and cerelac was the common complementary feed in Group 1 and Group 3. In Group 2, equal percentage provided both of these combinations. More mothers from Group 1 also introduced fruit juice along with mashed fruits and vegetables, which could be due to their higher literacy level.

Table 4.11*Food items introduced for complementary feeding across literacy groups*

Food items	Groups					
	Group 1		Group 2		Group 3	
	n	%	n	%	n	%
Rice water	1	2.5%	2	6.9%	4	15.4%
Dal water	6	15.0%	2	6.9%	4	15.4%
Dal water & Cerelac	10	25.0%	8	27.6%	7	26.9%
Dal water & Rice water	8	20.0%	8	27.6%	4	15.4%
Rice water & Cerelac	2	5.0%	3	10.3%	3	11.5%
Mashed fruits & vegetables	6	15.0%	2	6.9%	0	0.0%
Fruit Juice	2	5.0%	0	0.0%	1	3.8%
Cerelac	0	0.0%	3	10.3%	3	11.5%
Fruit juice & Cerelac	5	12.5%	1	3.4%	0	0.0%

In India, complementary feeding was typically initiated with liquid diets such as diluted bovine milk and rice water, followed by semi-solid meals such as dal, khichdi, rice, and other locally available foods in a study observing infants from 0-23 months (Mehlawat et al., 2020). This is in consensus with the findings of the present study.

4.2.3 Consistency of complementary feeds

Information about the consistency of the complementary feeds was also elicited and compared across districts and literacy levels. The data revealed that out of 95 mothers, 61 mothers (64.2%) used slightly thick consistency.

a. Comparison across districts: As depicted in the table 4.12 below, ‘slightly thick’ consistency was commonly used across all the districts. However, greater percentage of mothers from Sangli (80%) reported to use this consistency. Thus, the results revealed that the consistency used across districts were similar, however the percentage of mothers using this consistency differed across districts.

Table 4.12

Distribution of participants using different consistencies for complementary feeding across districts

Consistencies	Nagpur		Mumbai		Sangli		Total	
	n	%	n	%	n	%	n	%
Thin	3	10	7	20	3	10	13	13.7
Slightly thick	17	56.7	20	57.1	24	80	61	64.2
Mildly thick	9	30	6	17.1	2	6.7	17	17.9
Moderately thick	1	3.3	2	5.7	1	3.3	4	4.2

b. Comparison across literacy groups: To assess if literacy had an influence on consistency of complementary feeds, a comparison was made across the three literacy groups identified. Across all the literacy levels, slightly thick consistency was used most commonly used. This is depicted in table 4.13 below. The results are in consonance with WHO (2009) which states that a complementing food ought to be thick enough to remain on a spoon without dripping off.

Table 4.13

Distribution of participants using different consistencies for complementary feeding across literacy groups

Consistencies	Group 1		Group 2		Group 3		Total	
	n	%	n	%	n	%	n	%
Thin	4	10	5	17.2	4	15.4	13	13.7
Slightly thick	25	62.5	17	65.5	17	65.4	61	64.2
Mildly thick	9	22.5	3	10.3	5	19.2	17	17.9
Moderately thick	2	5	2	6.9	0	0	4	4.2

4.2.4 Utensils used for complementary feeding

The utensils used to introduce the complementary feeds were investigated. The data revealed that out of 95 mothers, 92 mothers (96.9%) used steel spoon.

a. Comparison across districts: Steel spoon was mostly used to feed the complementary foods to the infants in all the districts. However, few mothers (n=2, 5.7%) from Mumbai used special spoon and 1 mother (3.3%) from Nagpur used feeding bottle with spoon.

b. Comparison across literacy groups: To assess if literacy had an influence on utensils used to introduce complementary feeding, comparison was made across the three literacy groups identified. Steel spoon was most commonly used by mothers from all the groups. Few mothers from Group 1 (n=2, 5%) used special spoon.

Thus, the results revealed that though there was a similar trend of using the steel spoon across the districts and the maternal literacy levels, percentage of mothers using the steel spoon varied across districts and maternal literacy levels. The findings are similar to the findings of the study done by Esan et al (2022), where she found that among Nigerian mothers, bowl and spoon were the most often used feeding utensil, followed by the feeding bottle. However, there is no literature suggesting efficacy of special spoons for typically developing infants. The mothers from Group 1 may have bought special spoons because of their high socioeconomic status.

4.2.5 Position used for complementary feeding

The information about the position used for complementary feeding was elicited. The data revealed that out of 95 mothers, 66 mothers (69.5%) held their infants upright on their laps for complementary feeding.

a. Comparison across districts: Feeding the complementary foods on caretaker's lap was commonly used position, followed by holding the infant in caretaker's arm across all the districts. When a comparison was made across districts, it was seen that mothers from Sangli used the lap position to a greater extent (90%) compared to the other two districts. Thus, the results revealed that though feeding on lap was the most common position across all districts, there was a difference with respect to the percentage of participants using this position across districts. This is depicted in table 4.14 below.

Table 4.14

Distribution of participants using different positions for complementary feeding across districts

Positions	Nagpur		Mumbai		Sangli		Total	
	n	%	n	%	n	%	n	%
Caretaker's arm	11	36.7	6	17.1	2	6.7	19	20
Caretaker's lap	16	53.3	23	65.7	27	90	66	69.5
Lying on flat surface	1	3.3	2	5.7	1	3.3	4	4.2
Support from caretaker's trunk	2	6.7	0	0	0	0	2	2.1
Sitting on floor	0	0	4	11.4	0	0	4	4.2

b. Comparison across literacy groups: To assess if literacy had an influence on positions used to introduce complementary feeding, a comparison was made across the three literacy groups identified. Feeding the complementary foods on caretaker's lap was commonly used position, followed by holding in caretaker's arm across all groups. When a comparison was made across groups, it was seen that mothers from Group 2 used the lap position to a greater extent compared to the other two groups. Thus, the results revealed that though holding the infants in the laps is the most common position across all literacy levels, there was a difference with respect to the percentage of participants using this position. This is depicted in table 4.15 below.

Table 4.15

Distribution of participants using different positions for complementary feeding across literacy groups

Positions	Group 1		Group 2		Group 3		Total	
	n	%	n	%	n	%	n	%
Caretaker's arm	12	30	4	13.8	3	11.5	19	20
Caretaker's lap	21	52.5	24	82.8	21	80.8	66	69.5
Lying on flat surface	4	10	0	0	0	0	4	4.2
Support from caretaker's trunk	0	0	0	0	2	7.7	2	2.1
Sitting on floor	3	7.5	1	3.4	0	0	4	4.2

4.3 Introduction of next consistency

4.3.1 Age of introduction of next consistency

The first item under this section extracted information about the age at which the next consistency was introduced. The data revealed that out of 95 mothers, 51 mothers (53.7%) introduced the next consistency at 7-8 months.

a. Comparison across districts: As shown in table 4.16 below, across all districts, the age of introduction of the next consistency was 7-8 months, except Nagpur where nearly equal percentage of participants introduced at 7-8 (43.3%) and 8-9 (46.7) months. A comparison across districts revealed that greater percentage of mothers from Mumbai (60%) introduced

the next consistency at 7-8 months. Thus, the results revealed that there was a difference across districts with respect to the age of introduction of the next consistency.

Table 4.16

Age of introduction of the next consistency across districts

Age in months	Nagpur		Mumbai		Sangli		Total	
	n	%	n	%	n	%	n	%
7-8	13	43.3	21	60	17	56.7	51	53.7
8-9	14	46.7	13	37.1	13	43.3	40	42.1
After 9	3	10	1	2.9	0	0	4	4.2

According to Centers for Disease Control and Prevention (2021), around 6 months of age is when the baby can start eating solid foods. The infant can eat a variety of meals from several food groups by the time he or she is 7 or 8 months old. The current findings are similar to Dharmi's findings (2019) of wide range of prevalence of solid, semi-solid, or soft food introduction among infants aged 6–8 months throughout regional India, with the highest prevalence in the South (61%) and the lowest prevalence in the Central and Northern regions (38%).

b. Comparison cross literacy groups: To assess if literacy had an influence on age of introduction of the next consistency, a comparison was made across the three literacy groups identified. Greater percentage of mothers from Group 2 (62.1%) and Group 3 (53.8%) introduced the next consistency at 7-8 months. However, greater percentage of mothers from Group 1 (50%) introduced the next consistency from 8-9 months, compared

to other groups. Greater percentage of mothers from Group 3 (7.7%) as compared to other groups introduced the next consistency after 9 months. Thus, the results revealed a difference across literacy levels. This is depicted in table 4.17 below.

Table 4.17

Age of introduction of the next consistency across literacy groups

Age in months	Group 1		Group 2		Group 3		Total	
	n	%	n	%	n	%	n	%
7-8	19	47.5	18	62.1	14	53.8	51	53.7
8-9	20	50	10	34.5	10	38.5	40	42.1
After 9	1	2.5	1	3.4	2	7.7	4	4.2

Though the ideal age for introduction of next consistency is 7-8 months, the findings of the current study revealed that the 50 % of the mothers in Group 1 delayed the introduction of this consistency by a month. This could be attributed to the fact that most of the mothers from this group were employed and might not have paid close attention to the type of food their infants were eating.

4.3.2 Food items introduced as next consistency

The second part of the first question under this section also extracted information about the food items introduced as next consistency.

a. Comparison across districts: The table 4.18 below highlights that the most common combination of foods introduced as next consistency were dal, rice with porridge/khichdi

across all districts, however greater percentage of participants from Sangli provided this combination. Mashed fruits and boiled vegetables were introduced by 5 mothers (14.3%) of Mumbai. Thus, the results revealed a difference across districts.

Table 4.18*Food items introduced as next consistency across districts*

Food Items	Districts					
	Nagpur		Mumbai		Sangli	
	n	%	n	%	n	%
Dal Rice	3	10.0%	4	11.4%	7	23.3%
Dal Rice & Chapati	9	30.0%	5	14.3%	3	10.0%
Dal Rice with Porridge/Khichdi	9	30.0%	6	17.1%	12	40.0%
Chapati with Vegetable & Dal	3	10.0%	1	2.9%	0	0.0%
Dal Rice with Banana	1	3.3%	3	8.6%	4	13.3%
Dal & Chapati with Khichdi	2	6.7%	0	0.0%	0	0.0%
Porridge/Khichdi	2	6.7%	6	17.1%	1	3.3%
Mashed fruits & Boiled Vegetables	0	0.0%	5	14.3%	0	0.0%
Dal Rice & Mashed Fruits	1	3.3%	5	14.3%	3	10.0%

b. Comparison cross literacy groups: To assess if literacy had an influence on type of food items used for introducing the second consistency, a comparison was made across the three literacy groups identified. The participants from Groups 1 and 2 fed dal rice with porridge/ khichdi compared to Group 3 who fed dal rice and chapati. Thus, the results revealed a difference across literacy levels. This is depicted in the table 4.19 below.

Table 4.19*Food items introduced as next consistency across literacy groups*

Food items	Groups					
	Group 1		Group 2		Group 3	
	n	%	n	%	n	%
Dal Rice	4	10.0%	3	10.3%	7	26.9%
Dal Rice & Chapati	4	10.0%	5	17.2%	8	30.8%
Dal Rice with Porridge/Khichdi	12	30.0%	12	41.4%	3	11.5%
Chapati with Vegetable & Dal	3	7.5%	1	3.4%	0	0.0%
Dal Rice with Banana	3	7.5%	1	3.4%	4	15.4%
Dal & Chapati with Khichdi	0	0.0%	1	3.4%	1	3.8%
Porridge/Khichdi	7	17.5%	1	3.4%	1	3.8%
Mashed fruits & Boiled Vegetables	4	10.0%	1	3.4%	0	0.0%
Dal Rice & Mashed Fruits	3	7.5%	4	13.8%	2	7.7%

These findings are in line with the recommendations made by IAP Parent Guideline Committee. Additionally, these findings differ from recommended practices for infant and early child feeding issued by the World Health Organization (IYCF, 2008), which calls for ingestion of at least four food groups, at least one animal-source food, at least one vitamin A-rich fruit and vegetable, legumes and nuts, eggs, in addition to a staple food (grain, root or tuber) in a day for children at 6 to 23 months of age.

According to NFHS-3, maternal educational status was a key determinant of the child receiving optimal complementary feeding patterns and the variety of food items provided, i.e. illiterate mothers introduced less number of food groups as compared to literate mothers, which is similar to the findings of the present study.

4.3.3 Consistency used to introduced the next consistency

The second question under this section also extracted information about the consistency of food items introduced as next consistency. Mothers from all the districts and the literacy level used soft, minced and easy to chew consistency.

4.3.4 Utensils used to feed the next consistency

The third question under this section also extracted information about the utensil used to introduce the next consistency. The data revealed that out of 95 mothers, 49 mothers (51.6%) used steel spoon.

a. Comparison across districts: Table 4.20 below, depicts that in Nagpur (60%) and Mumbai (54.3%), steel spoon was more commonly used, whereas in Sangli (53.3%), mother's fingers were used more commonly. Few mothers from Mumbai (3.1%) and Sangli (6.7%) also used nibbler to feed the mashed fruits. Thus, a comparison across districts

revealed differences across districts. In Sangli, more mothers preferred using their fingers for feeding may be because they felt it easier and comfortable than by feeding the child with the spoon.

Table 4.20

Distribution of participants using different utensils to feed the next consistency across districts

Utensils	Nagpur		Mumbai		Sangli		Total	
	n	%	n	%	n	%	n	%
Mother's fingers	12	40	13	37.1	16	53.3	41	43.2
Spoon	18	60	19	54.3	12	40	49	51.6
Nibbler	0	0	3	3.1	2	6.7	5	5.2

b. Comparison across literacy groups: To assess if literacy had an influence on utensils used to introduce the next consistency, a comparison was made across the three literacy groups identified. Greater percentage of participants from Group 1 (50%) and 2 (58.6%) used spoon compared to the Group 3 (53.8%), who used their fingers to a greater extent to feed the child. Few mothers from Group 1 (10%) used nibblers to feed the mashed fruits. Nibblers were bought by mothers from Group 1 may be because of their better awareness through various sources. Thus, the results of comparison of utensil used across literacy levels revealed a difference. This is depicted in table 4.21 below.

Table 4.21

Distribution of participants using different utensils to feed the next consistency across literacy groups

Utensils	Group 1		Group 2		Group 3		Total	
	n	%	n	%	n	%	n	%
Mother's fingers	15	37.5	12	41.4	14	53.8	41	43.2
Spoon	20	50	17	58.6	12	46.2	49	51.6
Nibbler	5	5.5	0	0	0	0	5	5.2

4.3.5 Position used to feed the next consistency

The fourth question under this section also extracted information about the positions used to introduce the next consistency. The data revealed that out of 95 mothers, 76 mothers (80%) mothers fed their infants on their laps. The findings are in consonance with the recommendation made by kidshealth.org where it is stated that it is best to make the baby sit supported in the lap or in a high chair with a safety strap during feeding.

a. Comparison across districts: Feeding the infant in sitting position on mother's lap was the commonly used position in all the districts. However, few mothers of Mumbai (20%) and Sangli (10%) also used special seats. Making the infants sit on floor was also practiced

in Nagpur (20%) and Mumbai (8.6%). This is depicted in table 4.22 below. Thus, the results revealed that positions used to feed the next consistency varied across districts.

Table 4.22

Distribution of participants using different positions to feed the next consistency across districts

Positions	Nagpur		Mumbai		Sangli		Total	
	n	%	n	%	n	%	n	%
Caretaker's lap with infant in sitting position	24	80	25	71.4	27	90	76	80
Special seat	0	0	7	20	3	10	10	10.5
Sitting on floor	6	20	3	8.6	0	0	9	9.5

b. Comparison across literacy groups: To assess if literacy had an influence on position used to introduce the next consistency, comparison was made across the three literacy groups identified. Feeding the infant in sitting position on mother's lap was the commonly used position across all the groups. However, mothers from Group 3 used this position to a greater extent. Additionally, Group 1 (22.5%) and Group 2 (3.4%) mothers also used special seats. This is depicted below in table 4.23. Thus, the results revealed that positions used to feed the next consistency varied across the literacy levels.

Table 4.23

Distribution of participants using different participants to feed the next consistency across literacy groups

Positions	Group 1		Group 2		Group 3		Total	
	n	%	n	%	n	%	n	%
Caretaker's lap with infant in sitting position	28	70	23	79.3	25	96.2	76	80
Special seat (High chair)	9	22.5	1	3.4	0	0	10	10.5
Sitting on floor	3	7.5	5	17.2	1	3.8	9	9.5

4.4 Introduction of water

4.4.1 Age of introduction of water

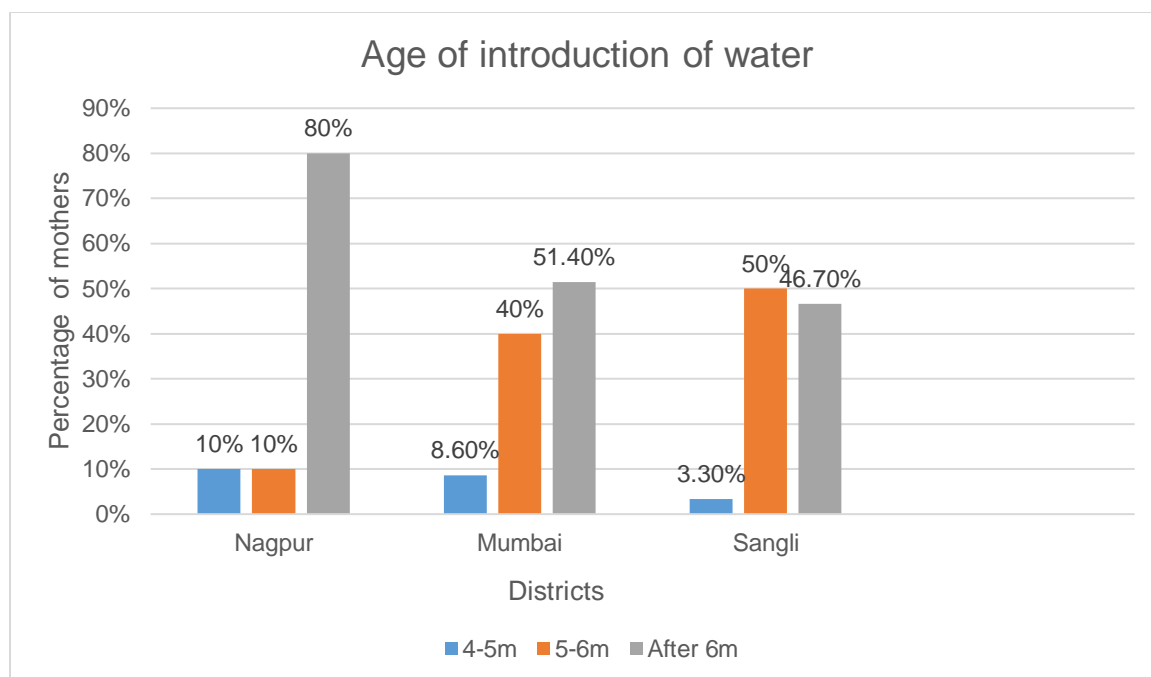
The first question under this section extracted information about the age at which water was introduced. The data revealed that out of 95 mothers, 56 mothers (58.9%) introduced water after 6 months.

a. Comparison across districts: Most mothers across all districts introduced water after 6 months, however near equal mothers from Sangli (n=15, 50%) and Mumbai (n=14, 40%) introduced water between 5-6 months. Water was introduced before 6 months by mothers from Mumbai and Sangli, which could be possibly attributed to the humid climate (<https://www.mumbai.org.uk/climate.html>, <https://en.climatedata.org/asia/india/maharashtra/sangli-2797/>). When a comparison was made across districts, it was seen that greater percentage of participants from Nagpur (n=24, 80%) introduced water after 6 months,

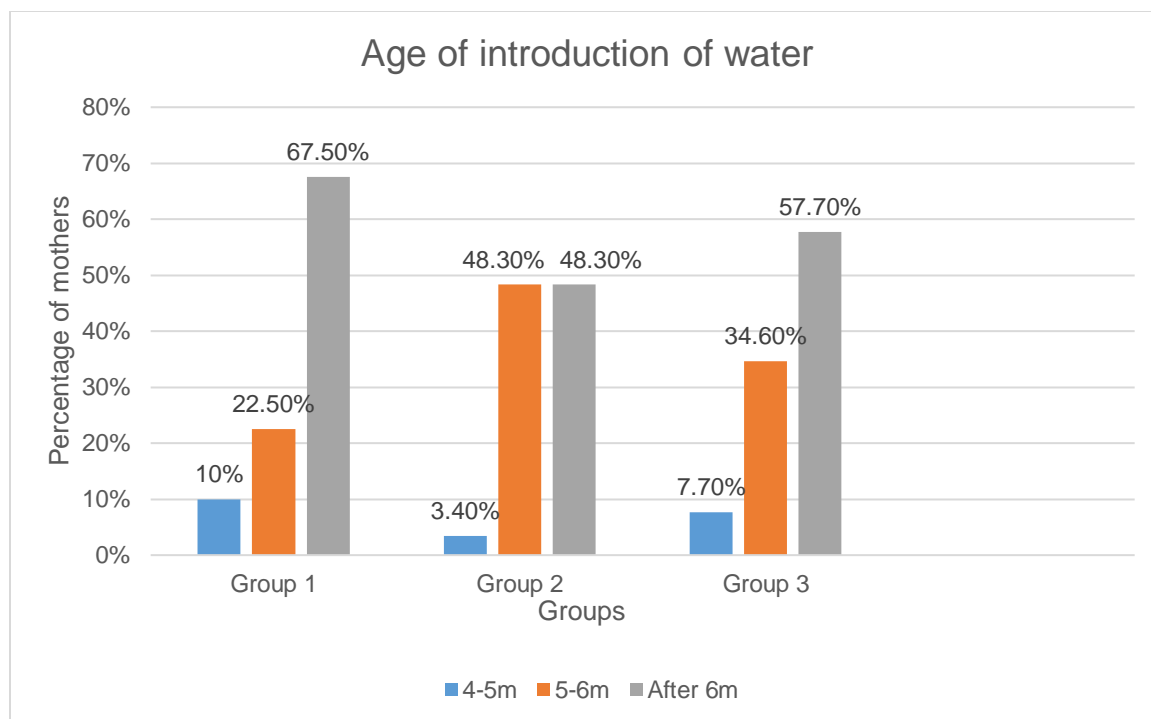
compared to other districts. Thus, the results revealed that there was a difference across districts with respect to the age of introduction of water. This is depicted in figure 4.13 below.

Figure 4.13

Age of introduction of water across districts



b. Comparison across literacy groups: To assess if literacy had an influence on age of introduction of water, a comparison was made across the three literacy groups identified. More mothers from Group 1 (67.50%) as compared to Group 2 (48.30%) and Group 3 (57.70%) introduced water after 6 months. Thus, across literacy groups, a difference was seen. This is depicted in figure 4.14 below. The recommendation by American Academy of Pediatrics (AAP) also indicate that water may be given to infants older than six months. In those with higher literacy levels, this trend was seen in the current study.

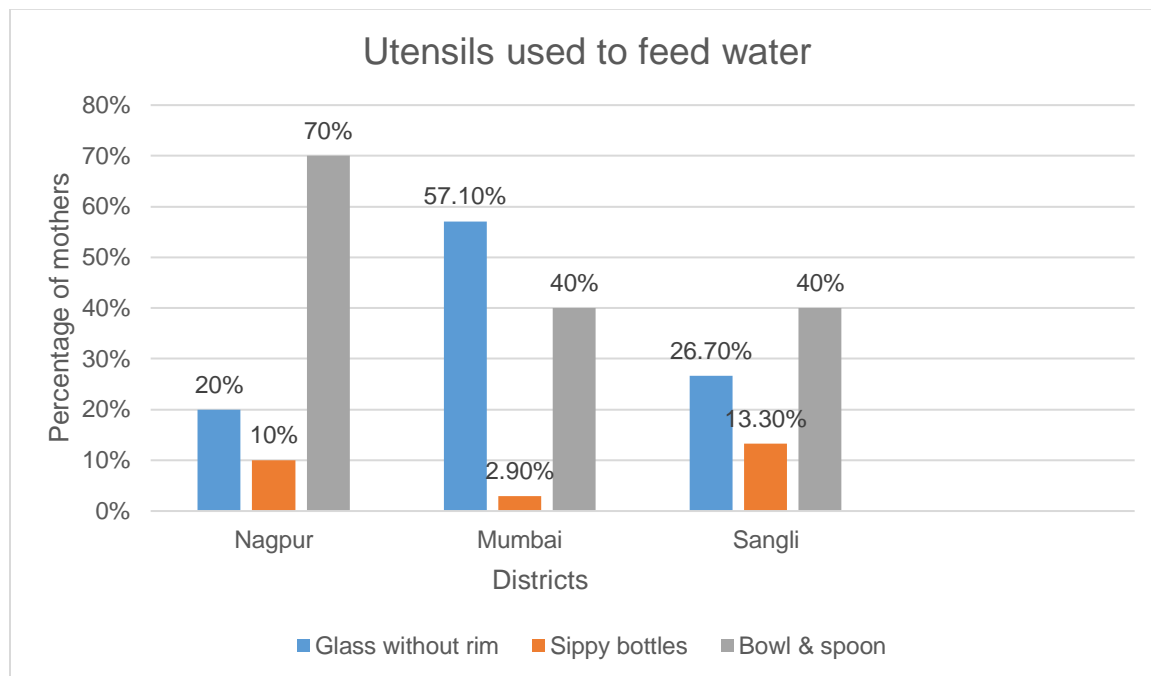
Figure 4.14*Age of introduction of water across literacy groups***4.4.2 Utensils used for giving water**

The second question under this section extracted information about the age at which water was introduced. The data revealed that out of 95 mothers, 53 mothers (55.80%) used bowl and spoon.

a. Comparison across districts: In Nagpur (n=21, 70%) and Sangli (n=18, 60%), bowl and spoon was commonly used. In Mumbai, steel glass without rim (n=20, 57.1%) was more commonly used than bowl and spoon. This is depicted in figure 4.15 below. Thus, comparison across districts revealed a difference in the type of utensils used to feed water. Bowl and spoon was most commonly used as the mothers might have felt that their children might find it difficult to drink water from a glass at such a young age.

Table 4.15

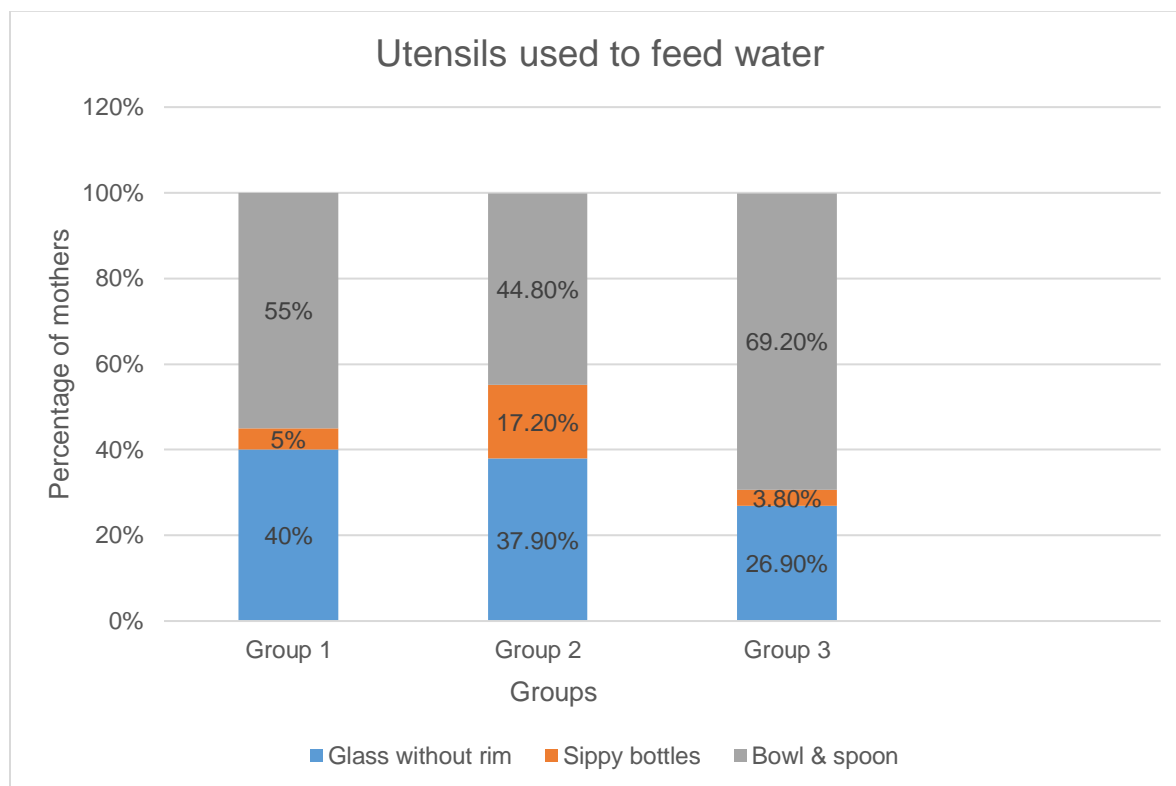
Distribution of participants using different utensils to feed water across districts



b. Comparison across literacy groups: To assess if literacy had an influence on utensil used for introduction of water, a comparison was made across the three literacy groups identified. As shown in the figure 4.16 below, bowl and spoon was commonly used in all the groups followed by glass without rim. Thus, the results revealed that the utensils used across literacy groups were the same for feeding water, however, the percentage reporting to use bowl and spoon was the greatest among the Group 3 (n=18, 69.2%) participants as compared to Group 1 (n= 22, 55%) and Group 2 (n=13, 44.8%).

Table 4.16

Distribution of participants using different utensils to feed water across literacy groups



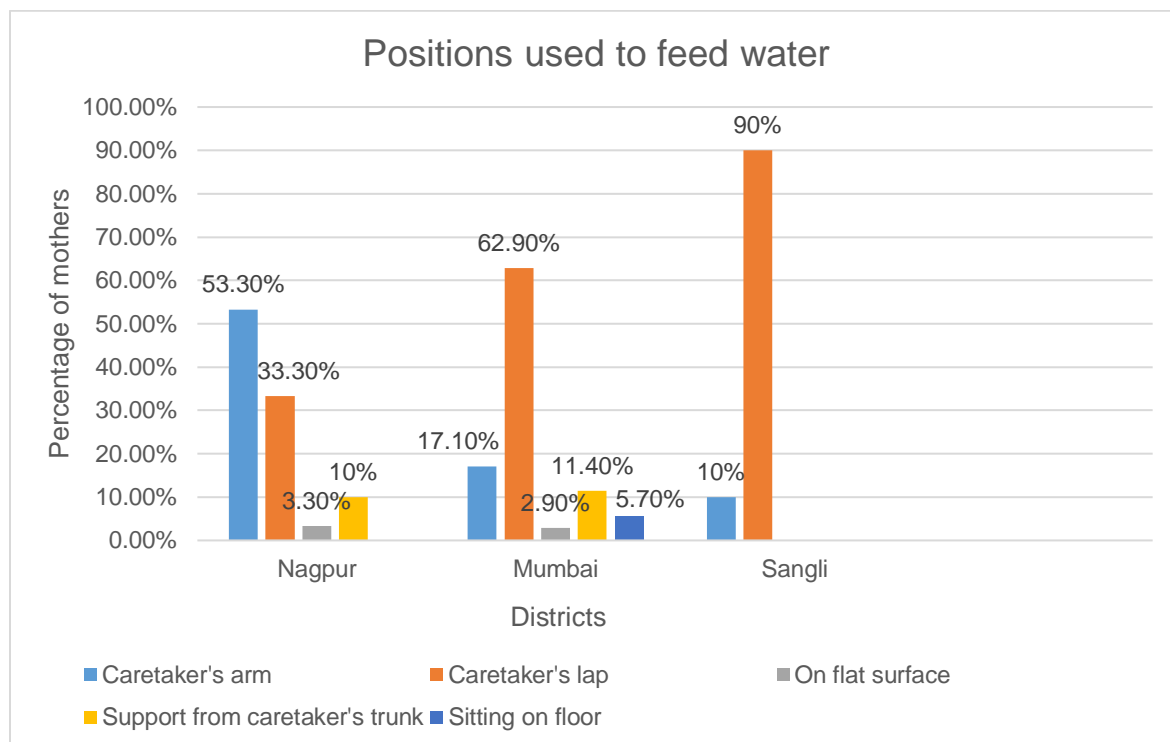
4.4.3 Position used for giving water

The third question under this section extracted information about the position used to introduce water. The data revealed that out of 95 mothers, 59 mothers (62.1%) fed water to their infants on their laps.

a. Comparison across districts: As depicted in figure 4.17 below, ‘on caretaker’s lap’ was the most commonly used position in Sangli (n=27, 90%) and Mumbai (n=22, 62.90%). In Nagpur, ‘caretaker’s arm’ (n=16, 53.30%) was the commonly used position followed by ‘caretaker’s lap’ (n=10, 33.30%). Thus, the results revealed a difference across districts in the position used for feeding water.

Table 4.17

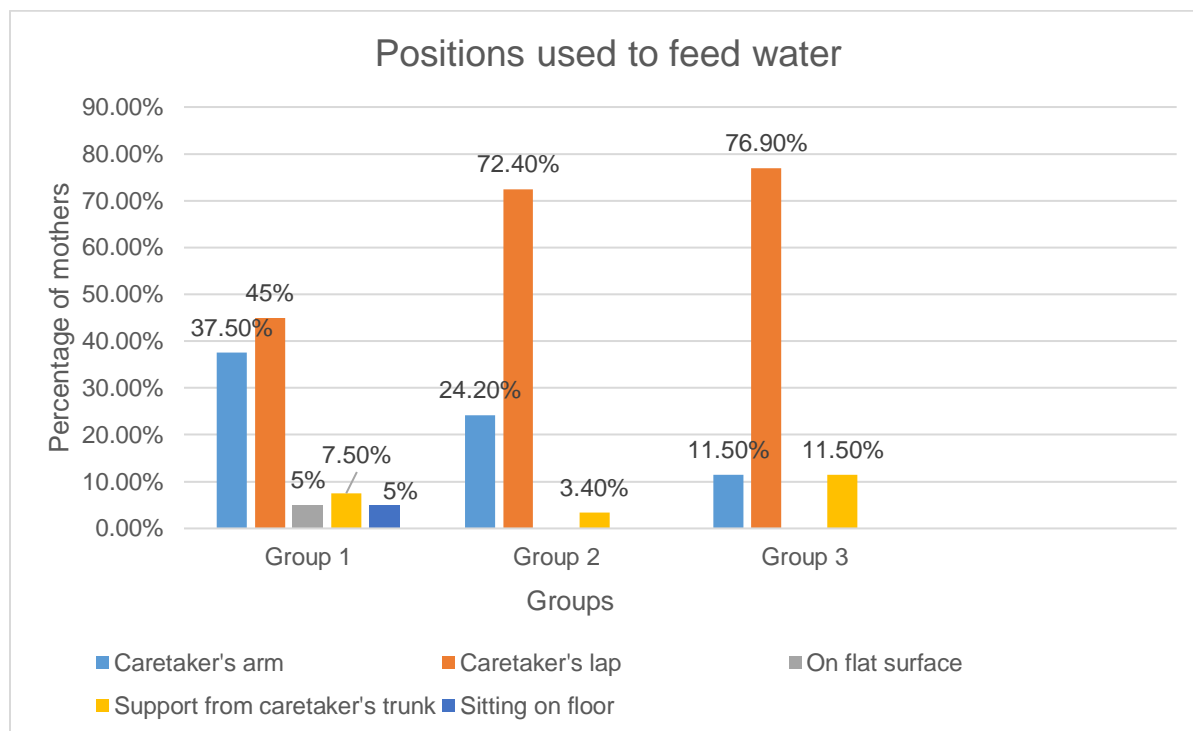
Distribution of participants using different positions to feed water across districts



b. Comparison across literacy groups: To assess if literacy had an influence on position used for introduction of water, a comparison was made across the three literacy groups identified. The most commonly used position across all the literacy groups was feeding on the caretaker's lap. A few mothers from Group 1 (n=15, 37.50%) also used the arm position. Thus, the results revealed that the position used across literacy groups were the same for feeding water, however, the percentage reporting to use the lap position was the greatest among the Group 3 (n=20, 76.90%) participants as compared to Group 2 (n=21, 72.40%) and Group 1 (n=18, 37.50%). This is depicted in figure 4.18 below.

Figure 4.18

Distribution of participants using different positions to feed water across literacy groups



4.5 Age of introduction of various tastes

4.5.1 Age of introduction of sweet taste

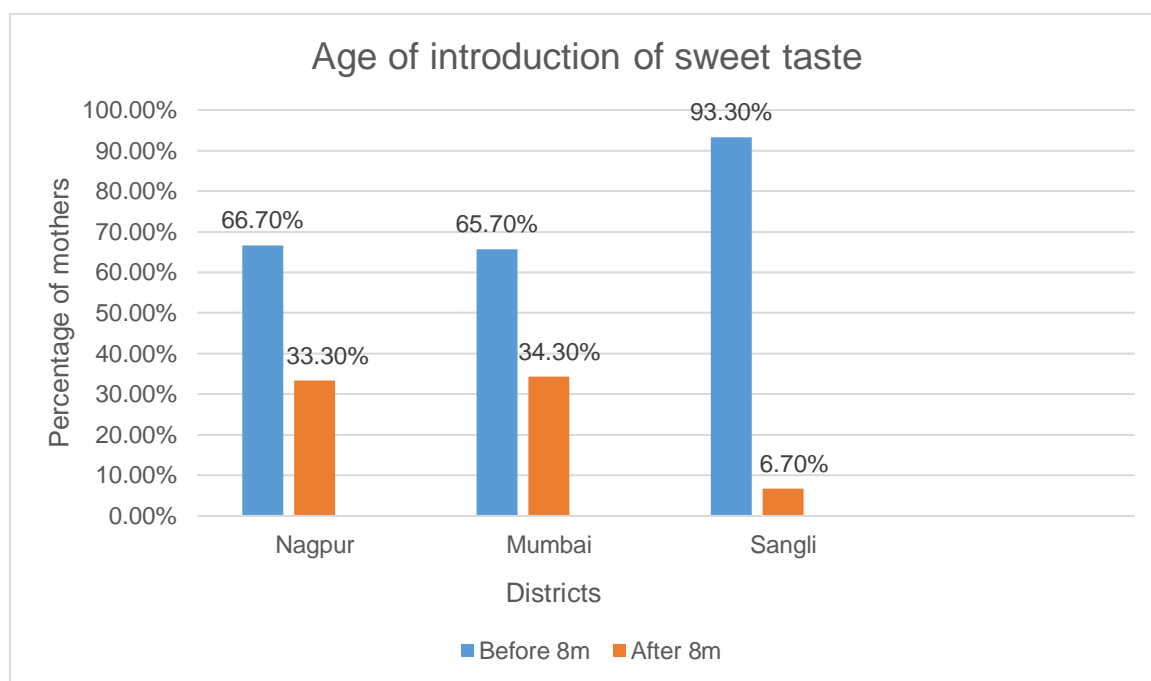
The first question under this section extracted information about the age at which sweet taste was introduced. The data revealed that out of 95 mothers, 71 mothers (74.7%) introduced sweet taste before 8 months.

a. Comparison across districts: As depicted in figure 4.19 below, sweet taste was introduced to the infants mostly before 8 months by mothers across all the districts. However, few mothers from Nagpur (n=10, 33.30%) and Sangli (n=2, 6.70%) introduced

sweet taste after 8 months, probably because they were the first time mothers and believed that sugar might be harmful for their infants. When a comparison across districts was made, it was seen that greater percentage of mothers from Sangli (n=28, 93.30%) as compared to Mumbai (n=23, 65.70%) and Nagpur (n=20, 66.70%) introduced this taste before 8 months. This is depicted in figure 4.19 below. Sweet taste was introduced mostly through porridge, fruit juice and cerelac in all the districts.

Figure 4.19

Age of introduction of sweet taste across districts

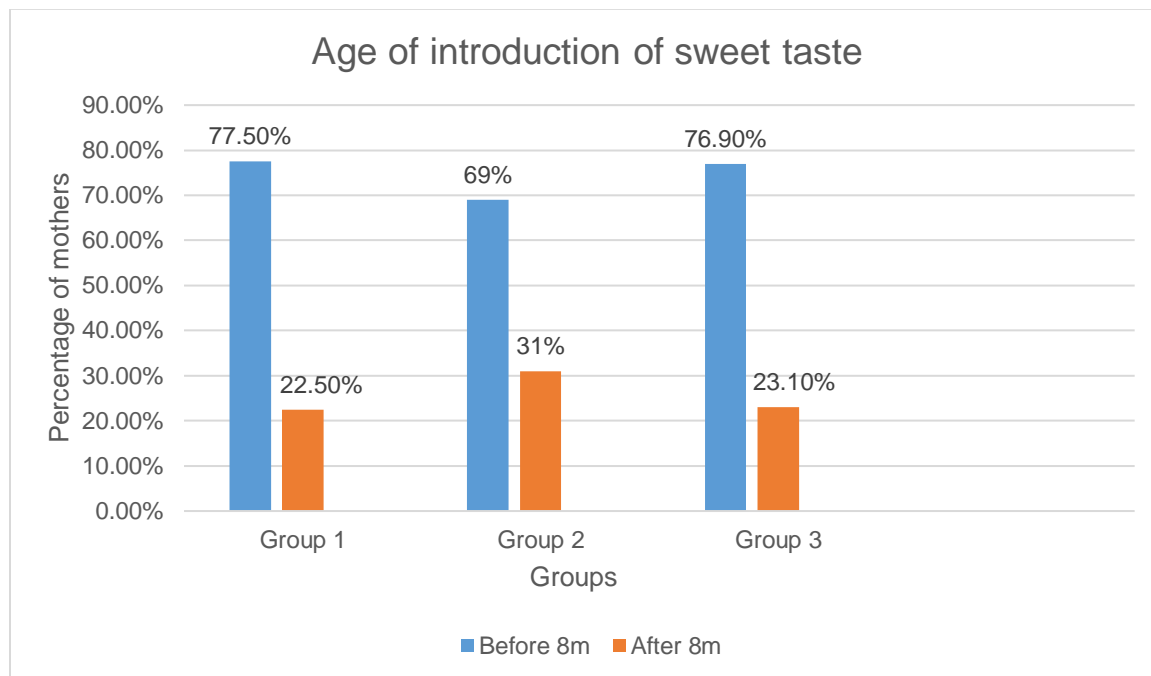


The results are supported by the evidence that though infant can discriminate between sweet and bitter tastes throughout the first three months of life, however they favour sweet tastes (Dasher, 2022). Thus, the results revealed that that though the similar trend of introducing the sweet taste before 8 months was seen across all the districts, the percentage of mothers who did it, varied across the districts.

b. Comparison across literacy groups: To assess if literacy had an influence on age of introduction of sweet taste, a comparison was made across the three literacy groups identified. Most mothers from all the literacy groups introduced sweet taste before 8 months. However, greater percentage of mothers from Group 1 (n=31, 77.50%) introduced sweet taste before 8 months, which indicates that this aspect could vary with literacy. Most commonly, all the groups used porridge and cerelac, however, Group 1 mothers also used fruit juice. This is depicted in figure 4.20 below. Thus, the results revealed that though the similar trend of introducing the sweet taste before 8 months was seen across all the literacy groups, the percentage of mothers who did it, varied.

Figure 4.20

Age of introduction of sweet taste across literacy groups



4.5.2 Age of introduction of savoury taste

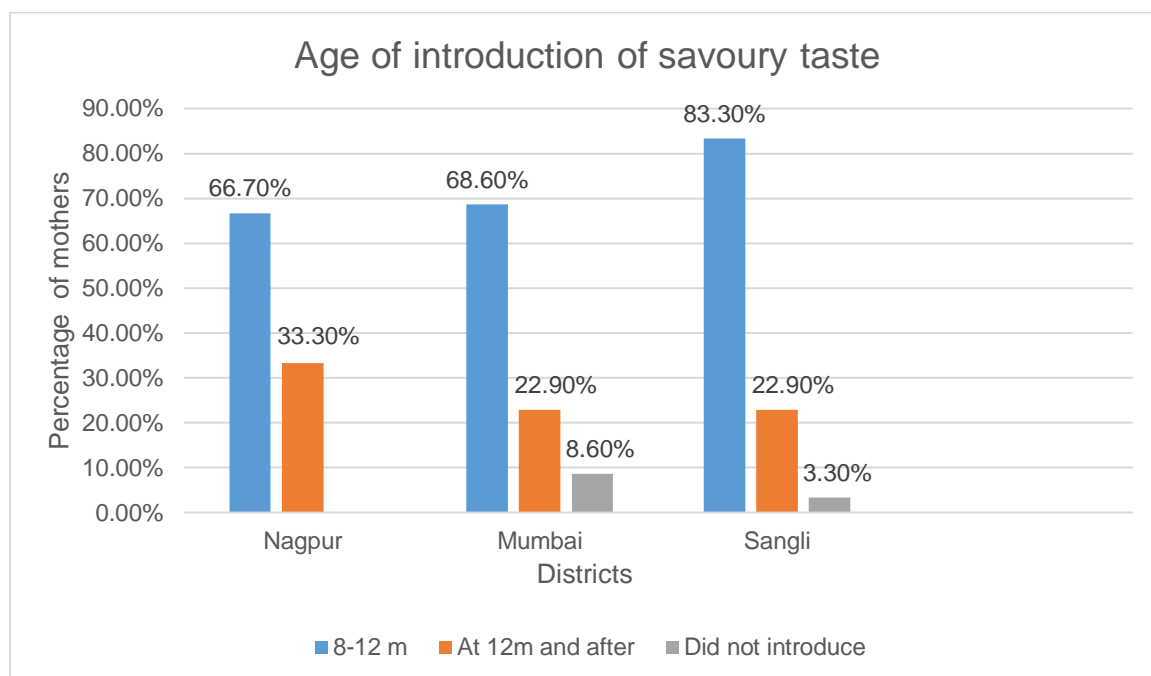
The second question under this section extracted information about the age at which savoury taste was introduced. The data revealed that out of 95 mothers, 69 mothers (72.6%) introduced savoury taste before 12 months.

a. Comparison across districts: Savoury taste was introduced by participants across all districts at 8-12 months. However, greater percentage of mothers from Sangli (n=25, 83.30%) introduced this taste at 8-12 months compared to mothers of other districts. Few mothers from Mumbai (n=3, 8.60%) and Sangli (n=1, 3.30%) did not introduce this taste. This is depicted in figure 4.21 below. Dal and Khichdi were the commonly used items to introduce savoury taste across all the districts. Thus, the results reveal that though all the

districts followed the same trend of introducing the savoury taste at 8-12 months, the percentage of mothers doing this, varied.

Figure 4.21

Age of introduction of savoury taste across districts



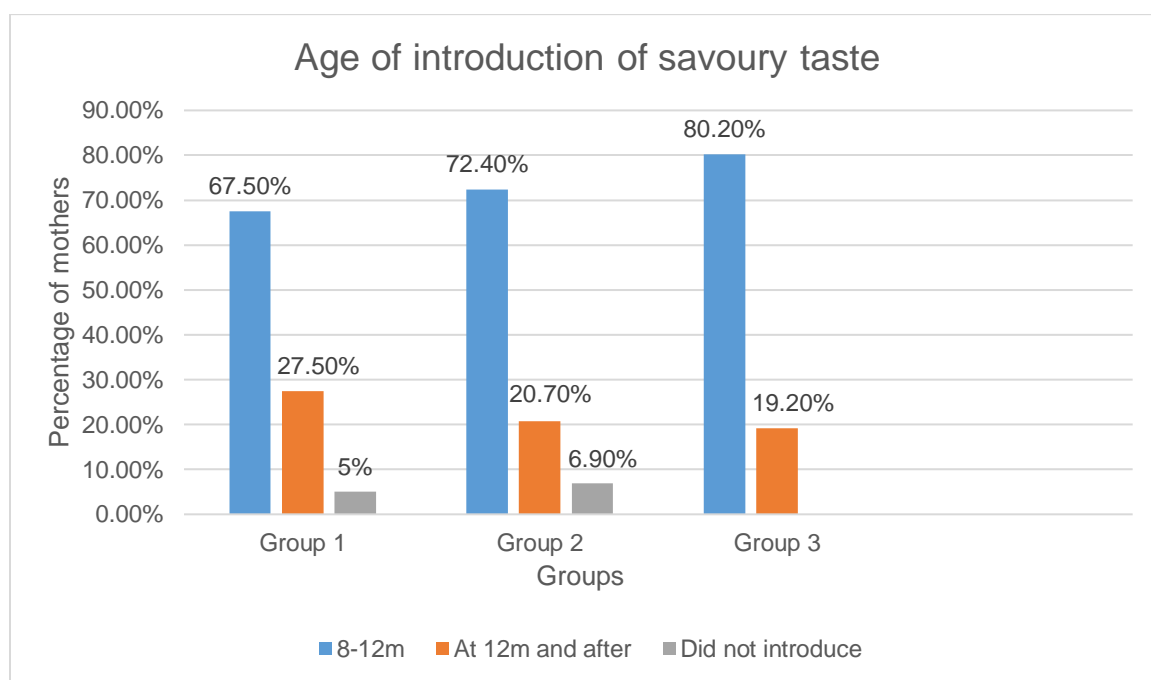
The findings are in line with the recommendation made by Lake (2022) that infants can be introduced to spices and herbs around 8-10 months. Few mothers from Mumbai, Sangli did not introduce savoury food because of the notion that spices might be harmful for their infants. These were the first time mothers and thus were lacking the knowledge and experience.

b. Comparison across literacy groups: To assess if literacy had an influence on age of introduction of savoury taste, a comparison was made across the three literacy groups identified. As depicted in figure 4.22 below, most mothers from all the groups introduced

savoury food at 8-12 months. More mothers from Group 1 (n=11, 27.50%) as compared to Group 2 (n=6, 20.70%) and Group 3 (n=5, 19.20%) introduced the spicy taste at/after 12 months. Thus, the results revealed that though all the literacy groups followed the same trend of introducing the savoury taste at 8-12 months, the percentage of mothers doing this, varied.

Figure 4.22

Age of introduction of savoury taste across literacy groups



4.5.3 Age of introduction of sour taste

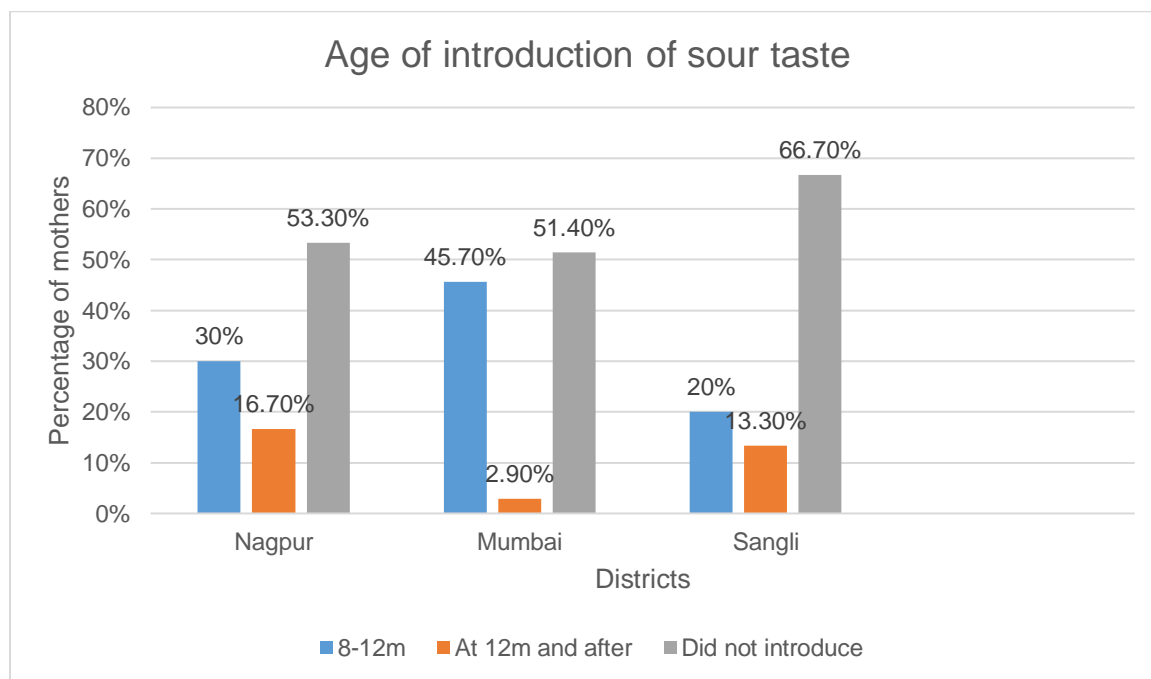
The third question under this section extracted information about the age at which sour taste was introduced. The data revealed that out of 95 mothers, only 41 mothers (33.3%) introduced sour taste.

a. Comparison across districts: More mothers from Mumbai (n=16, 45.70%) as compared to Nagpur (n=9, 30%) and Sangli (n=6, 20%) introduced sour taste at 8-12 months of age. However, greater percentage of mothers across all districts did not introduce sour taste. The results revealed that though there was a similar trend observed, percentage of mothers following the trend differed across the districts. This is depicted in figure 4.23 below.

Most commonly used food items were lemon and orange to introduce sour taste across all the districts.

Figure 4.23

Age of introduction of sour taste across districts

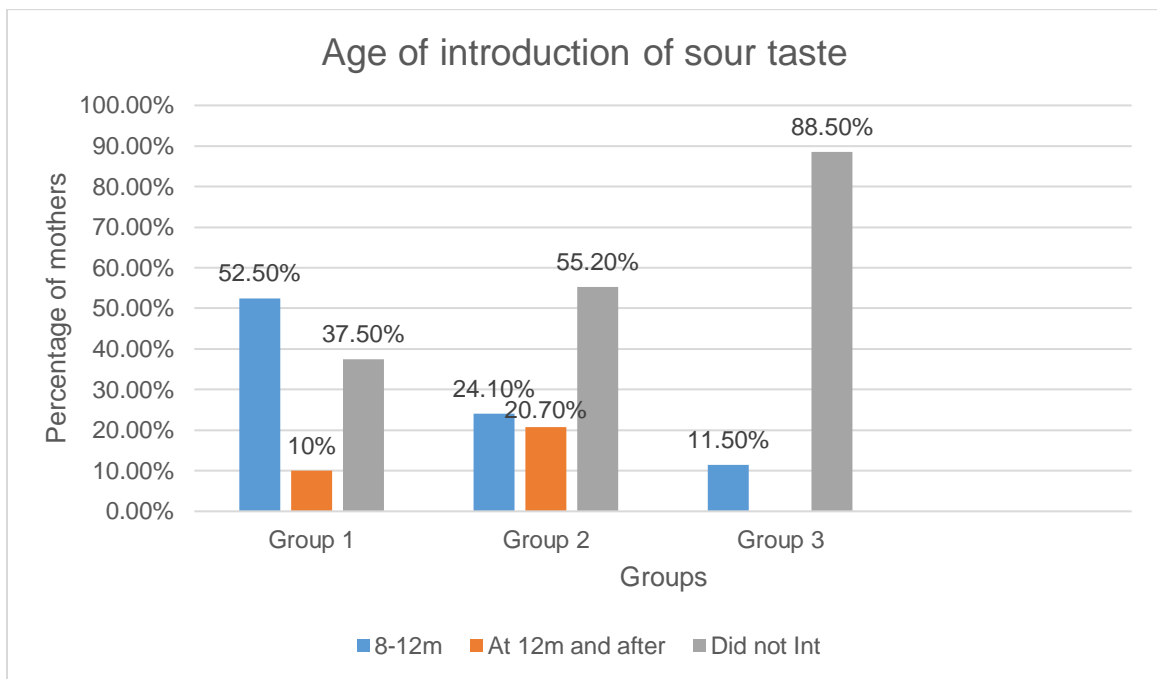


b. Comparison across literacy groups: To assess if literacy had an influence on age of introduction of spicy taste, a comparison was made across the three literacy groups

identified. As depicted in figure 4.24 below, more mothers from Group 1 (n=21, 52.50%) as compared to Group 2 (n=7, 24.10%) and Group 3 (n=3, 11.50%) introduced sour taste at 8-12 months. Thus, age of introduction of sour taste varied across maternal literacy levels. The findings are in contrast to the suggestion made by Dasher (2022) that sour taste can be introduced as early as 3 months.

Figure 4.24

Age of introduction of sour taste across groups



4.5.4 Introduction of the bitter taste

None of the mothers from any districts or literacy groups introduced bitter taste.

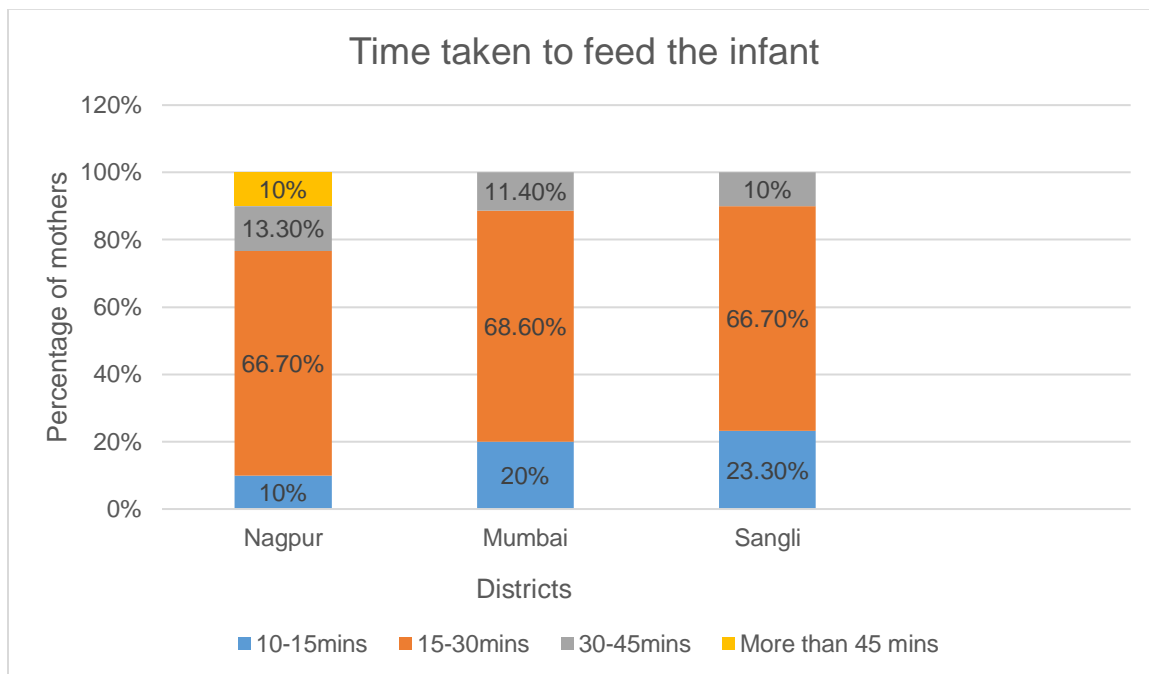
4.6 Time taken to feed the child

The last question of this section extracted information on time taken for infant's meal. The data revealed that out of 95 mothers, 64 mothers (67.4%) took around 15-30 minutes to feed the meal to their infants. The findings correlate with suggestion made by Nationwide Children's Hospital (2011). It suggests that infants' meals should last upto 20-30 minutes.

a. Comparison across districts: As shown in the figure 4.25 below, the average feeding time was 15-30 minutes across all districts, however, greater percentage of mothers from Mumbai (n=24, 68.5%) as compared to the other two districts (n=20, 66.6%) took around 15-30 minutes to feed the meals to their infants. Also, in Nagpur a few mothers (n=3, 10%) took more than 45 mins to feed their infants, which they attributed to the difficulty they had in feeding their child and the joint family system that they were in, wherein the household chores were distributed across the family members. Thus, the results revealed that though a similar trend was observed in time taken to feed the child, the percentage of mothers varied across the districts.

Figure 4.25

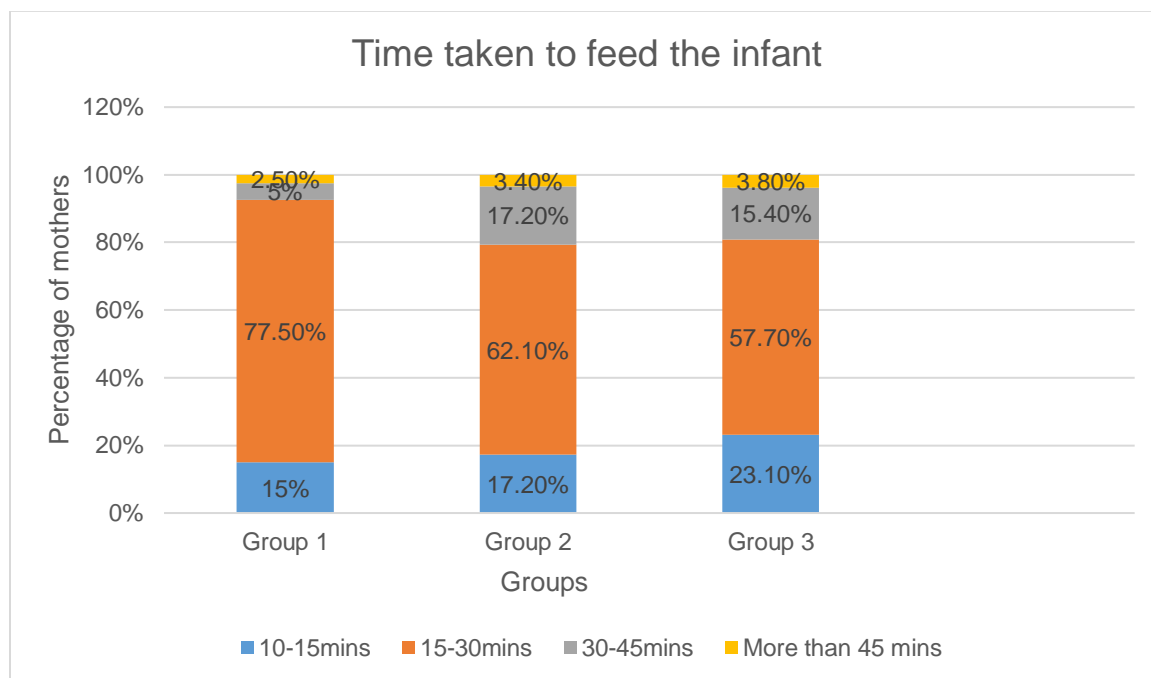
Time taken to feed the infants across various districts



b. Comparison across literacy groups: To assess if literacy had an influence on time taken to feed the infant, comparison was made across the three literacy groups identified. As shown in the figure 4.26 below, majority of the mothers from all the literacy level groups took 15-30 minutes to feed their infants however, more number of mothers from Group 1 (n=31, 77.50%) followed this. More numbers of mother from Group 2 (n=5, 17.20%) and Group 3 (n=4, 15.40%) as compared to Group 1 (n=2, 5%) took 30-45 minutes to feed their infants. Thus, the results revealed that though a similar trend was observed in time taken to feed the child, the percentage of mothers taking 15 to 30 minutes to feed varied across the groups.

Figure 4.26

Time taken to feed the infants across literacy groups



To summarize, there were many findings of interest that were revealed through the current study. Though it was found that 100% of the mothers breastfed their infants from birth, only 75.8% of them carried out breast feeding exclusively, as the remaining 24.2% of mothers introduced formula feeds, majority of whom were from Nagpur district. The introduction of formula feeds was also found to be more prevalent among the higher literacy groups. Those who introduced formula feeds, did so between birth-1month because of their insufficient milk secretion and their infant's inability to suck the milk which was seen among the mothers of Nagpur and Mumbai districts. Thus, the age of introduction of formula milk differed across districts, but was similar across literacy levels however, across literacy levels, the percentage of mothers following the trend, differed. The most prevalent type of feed introduced was formula milk rather than cow milk. Thus,

the type of feed used varied across districts and literacy. Steel spoon was the most prevalent utensil used to feed the formula milk among all districts and literacy levels, however, across literacy levels, the percentage of mothers using it varied. The position used to feed the formula milk differed across districts, but remained same across literacy levels. Mothers from Nagpur and Mumbai preferred to hold their infants in arms, whereas mothers from Sangli held their infants upright on their laps. Also, it was evident that breast feeding termination age varied across districts and across maternal literacy levels (Average age=17.9 months).

The age of introduction of complementary feeding varied across districts and literacy levels. Slightly thick consistency of food such as dal water, rice water and cerelac were introduced to the infants across all the districts and literacy levels. Also, few mothers from Mumbai and Group 1 also introduced mashed fruits and vegetables along with fruit juice. Thus, variety of food items differed slightly across districts and literacy levels. The most common utensil used for complementary feeding was steel spoon, but the percentage of mothers using this varied across districts and literacy levels. Majority of the mothers from all the districts and literacy levels fed their infants by holding them upright on their laps, but percentage of mothers using this position varied.

The age of introduction of the next consistency was different across the districts and the literacy levels, wherein mothers from Mumbai, Sangli, Group 2 and Group 3 introduced the next consistency around 7 to 8 months. Dal rice, porridge and khichdi which were of soft, minced and easy to chew consistency were commonly used food items across all the districts. Across literacy levels, dal rice, porridge/khichdi was commonly fed by Groups 1 and 2 whereas, in Group 3, dal rice and chapati was commonly fed. Variety of

mashed fruits and boiled vegetables were also introduced by mothers from Mumbai and Group 1. All these food items were fed with spoon in Mumbai, Nagpur, Group 1 and Group 2. Whereas, in Sangli and Group 3, mothers commonly used their fingers to feed their infants. Thus, there was a difference observed in usage of feeding utensils. Feeding the child on the mother's lap was the commonly used position across the districts and the literacy groups, but percentage of mothers using this position varied. However, special seats were also used by few of the higher literacy mothers.

Age of introduction of water was mostly after 6 months in Nagpur and Mumbai, however, in Sangli and Mumbai, mothers introduced water before 6 months because of the climatic conditions. This did not differ across literacy levels, however, the percentage of mothers varied. Mothers from Mumbai used glass without rim and mothers from Nagpur and Sangli used bowl and spoon. Utensils used to feed water also varied across the districts, however, same trend of using bowl and spoon was observed across literacy levels with differences in the percentage of mothers using it. With respect to position used, mothers from Mumbai and Sangli, made their infants sit on their laps as compared to Nagpur mothers who fed their infants holding them in arms. Thus, the trend differed across districts. The trend of making the infants sit on their laps was same across the literacy levels, with differences seen in the percentage of mothers using the position.

With respect to taste introduction, most mothers introduced sweet taste before 8 months and savoury taste at 8-12 months. Similar trend was seen but percentage of mothers following that trend varied across districts and maternal literacy levels with differences in the percentage of mothers following the trend. Most mothers did not introduce sour taste. However, mothers from Group 1 introduced it. Thus, the trend of introducing the sour taste

varied across literacy levels but not across districts. None of the mothers introduced bitter taste. The trend of time taken to feed meals to the infants was same (15- 30 minutes) across the districts and the literacy levels, however percentage of mothers varied across literacy levels.

Thus, breast feeding termination age, age of introduction of formula feed, type of formula feed, position used for formula feed, age of introduction of complementary feeding and next consistency, utensil used to feed next consistency, age of introduction of water, utensil used, position used varied across districts. Other feeding aspects like utensil used for formula feeds, the consistency and type of food introduced for that consistency, utensils and positions used to feed the first consistency, the next consistency and type of food introduced for that consistency, position used to feed the next consistency, age of introduction of sweet, savoury, sour taste and time taken to feed the child followed the same trend across districts. Though, similar trend was found in feeding practices, variations were seen in the percentage of mothers with respect to the introduction of formula feed, consistency and position used for complementary feeding and introduction of sweet, savoury and sour tastes. Thus, across the districts, though the number of similarities and differences in feeding practices were equally seen, there were variations in the percentage of mothers for a few feeding aspects.

Across literacy levels, breast feeding termination age, type of formula feed, age of introduction of complementary feeding, age of introduction of the next consistency, type of food items to introduce next consistency, utensil used to introduce next consistency, and age of introduction of sour taste varied. However, other feeding aspects like introduction of formula feeds, age of introduction of formula feeds, utensils and positions used for

formula feeds, the first consistency and type of food used, utensils and positions used to introduce first consistency, the next consistency, position used to feed the next consistency, age of introduction of water, utensil and position used to feed water, age of introduction of sweet and savoury taste, time taken to feed the child were similar across the literacy levels. Though, similar trend was found in feeding practices, variations were seen in the percentage of mothers with respect to age of introduction of formula feed, utensils and positions used for formula feed, position used for complementary feeding and second consistency feeding, age of introduction of water, utensils and positions used for feeding water and age of introduction of sweet and sour taste. Thus, across the literacy groups, though greater similarities in feeding practices were seen, there were variations observed in the percentage of mothers following a similar trend. It can be concluded that both, the geographical location of the districts across Maharashtra and maternal literacy levels had an influence on feeding practices.

CHAPTER V

SUMMARY AND CONCLUSIONS

Parental feeding and child eating are essential components of family life and are deeply ingrained in culture and tradition. Indian food style is diverse and unique from that seen across the world and is highly influenced by these factors. Given the diversity, what, when and how food is given to infants could differ across different states and districts of India. There are higher opportunities of detailed variations in the utensils, the type of food introduced at each age, its consistency etc. Given the complexity and variation of feeding practices, such studies in a country like India are vital. Studies examining the existing feeding practices in the Indian context are limited.

The culinary culture of Maharashtra is also unique from other states of India. With 35 districts, it is the third-largest state in India. Each district has its own distinct culture, traditions, and beliefs. The landscape of this state is home to a mosaic of culinary traditions that range from the rustic flavours of the inner mainland to the salty flavours of the coast. The following regional formations make up Maharashtra: Konkan, Desh, Khandesh, Marathwada, and Vidarbha. Each region's cuisine reflects the climatic and cultural diversity in its ingredients and flavour profiles. Hence it is highly likely that the parental feeding practices and beliefs vary from district to district. Keeping this in view, this study was designed to investigate the parental feeding practices in Maharashtra. The objectives were to compare the parental feeding practices across three districts of Maharashtra and across maternal literacy levels.

This was a cross sectional survey. A survey tool was developed to assess the parental feeding practices among the mothers in Maharashtra. The survey tool was created

using a google literature search and books about the development of feeding. After considering the items under each domain of interest, item pools for each section were developed. It was carefully maintained that the items were appropriate for the Indian environment. The items in the survey tool focused on the termination of breast feeding, age of introduction of different food items and tastes, its consistency, utensils used and the position used to feed the infants.

Three Speech-Language Pathologists (SLPs) with at least ten years of clinical expertise in the field of feeding and associated disorders received the survey tool that had been created for validation purpose. The SLPs were asked to judge the clarity, simplicity, relevance, framing, applicability and appropriateness of the items as well as clarity, simplicity, relevance, color, appearance and iconicity of the pictures included using a Likert rating scale from 1 to 5 wherein 1 indicated 'poor', 2 indicated 'fair', 3 indicated 'good', 4 indicated 'very good' and 5 indicated 'excellent'. The modifications suggested by the SLPs were incorporated in the survey tool. The options under the items related to position were expanded. A few questions were reframed to resolve their ambiguity. A few questions were added based on the suggestions provided by the judges. A few pictures were replaced with other pictures better clarity. A pilot study was conducted on six participants (two from each district) after which a few age ranges in the options were modified.

Ninety-five mothers of children in the age range of 1-3 years (30 mothers from each of the two districts- Nagpur, Sangli and 35 participants from Mumbai) were included as participants. The participants of all the districts were divided into three groups based on their literacy levels: Group 1 consisted of graduate as well as post-graduate mothers, Group 2 consisted of mothers who completed either Secondary School Certificate Exam or Higher

Secondary School Certificate Exam (10th or 12th grades) and Group 3 consisted of mothers who studied till primary or secondary grades of school (till 4th or 9th grades) as well as illiterate mothers. The mothers were between the ages of 25 and 35. The average age of newborns in all the districts was 2.3 years, and there were 44 males and 51 females among them. The majority of the mothers was from the middle class and lived in urban areas. 80 mothers were homemakers and the rest were employed. Most of the mothers were of the Hindu religion. Most of the mothers were first time mothers. 58 mothers resided in a joint family and rest belonged to nuclear family. Half the number of total participants were vegetarians and half were non vegetarians. The survey tool was administered via online mode. Before the survey, an informed consent was obtained for participation in the survey.

The current investigation revealed several interesting findings. Although it was found that all mothers breastfed their babies exclusively from birth, only 75.8% of them did so exclusively, since the remaining 24.2% of mothers introduced formula feeds, the majority of whom were from Nagpur district. Additionally, it was found that higher literacy groups had a higher prevalence of the introduction of formula feeds (Groups 1 and 2). Those who introduced, did so at birth-1 month because of their insufficient milk secretion or their infant's inability to suck the milk, which was seen among the mothers of Nagpur and Mumbai districts. Thus, the age of introduction of formula milk differed across districts, but was similar across literacy levels, but was similar across literacy levels however, across literacy levels, the percentage of mothers following the trend, differed. The most prevalent type of feed introduced was formula milk rather than cow milk. Thus, the type of feed used varied across districts and literacy. Across all areas and literacy levels, the steel spoon was the most frequently used utensil for consuming formula milk, however,

across literacy levels, the percentage of mothers using it, varied. The position used to feed the formula milk differed across districts but remained same across literacy levels. Mothers from Nagpur and Mumbai preferred to hold their infants in arms, whereas mothers from Sangli held their infants upright on their laps. Across all areas and literacy levels, the steel spoon was the most frequently used utensil for consuming formula milk. The position used to feed the formula milk differed across districts but remained same across literacy levels. Mothers from Sangli positioned their children upright on their laps, but mothers from Nagpur and Mumbai preferred to hold their infants in their arms. Additionally, it was clear that the average age at which breast feeding ends (which is 17.9 months) varied across districts and maternal literacy levels.

The age of introduction of complementary feeding varied across districts and literacy levels. Infants were typically introduced to complementary foods with a slightly thick consistency, such as dal water, rice water, and cerelac, across all districts and literacy levels. Along with fruit juice, a few women from Mumbai and Group 1 also introduced mashed fruits and vegetables. As a result, the diversity of food items varied little between districts and levels of literacy. Steel spoons were most frequently used for supplemental feeding, but the proportion of mothers who did so varied depending on the districts and level of literacy. Majority of the mothers from all the districts and literacy levels fed their infants by holding them upright on their laps, but the percentage of mothers using this position, varied.

Mothers from Mumbai, Sangli, Group 2 and Group 3 introduced the next consistency at roughly 7 to 8 months, whereas the age of introduction varied depending on the districts and literacy levels. Dal rice, porridge and khichdi which were of soft, minced

and easy to chew consistency were commonly used food items across all the districts. Across literacy levels, dal rice, porridge/khichdi was commonly fed by Groups 1 and 2 whereas, in Group 3, dal rice and chapati was commonly fed. Mothers from Mumbai and Group 1 also introduced a variety of mashed fruits and boiled vegetables. In Mumbai, Nagpur, Group 1 and Group 2, all of these foods were served with spoons. In contrast, women in Group 3 and Sangli frequently fed their newborns with their fingers. As a result, there was a variation in the way that feeding utensils were used. Feeding the child on the mother's lap was the commonly used position across the districts and the literacy groups, but percentage of mothers using this position, varied. However, special seats were also used by few of the higher literacy mothers.

In Nagpur and Mumbai, mothers often introduced water after 6 months; but due to the local climate, mothers in Sangli and few from Mumbai often did so before 6 months. This was consistent across all levels of literacy. Mothers from Nagpur and Sangli used a bowl and a spoon, whereas mothers from Mumbai used a glass without a rim. The utensils used to feed water differed throughout the districts, but the spoon and bowl usage remained consistent across literacy levels, with the difference in the percentage of mothers. Mothers from Nagpur fed their infants while holding them in their arms, whereas mothers from Mumbai and Sangli made their infants sit on their laps. As a result, the trend varied amongst districts. The trend of making the infants sit on their laps was same across the literacy levels, with differences seen in the percentage of mothers using this position.

Most mothers introduce sweet taste before 8 months and savoury flavour between 8 and 12 months when it comes to taste introduction. Similar trends were seen, although the percentage of mothers who followed them differed depending on the district and the

literacy level of the mothers. Sour taste was generally not introduced by moms. Mothers from Group 1 introduced it, though. Thus, the trend of introducing the sour taste varied across literacy levels but not across districts. None of the mothers introduced bitter taste. In general, regardless of districts or literacy levels, it took 15 to 30 minutes to feed an infant a meal, however, percentage of mothers varied across literacy levels.

A few clear differences as well as some areas of similarity in feeding practices emerged through the current research across districts and literacy levels. Breast feeding termination age, age of introduction of formula feed, type of formula feed, position used for formula feed, age of introduction of complementary feeding and next consistency, utensil used to feed next consistency, age of introduction of water, utensil used, position used varied across districts. Other feeding parameters like utensil used for formula feeds, the consistency and type of food introduced for that consistency, utensils and positions used to feed the first consistency, the next consistency and type of food introduced for that consistency, position used to feed the next consistency, age of introduction of sweet, savoury, sour taste and time taken to feed the child were similar across districts. Though, similar trend was found in feeding practices, variations were seen in the percentage of mothers with respect to the introduction of formula feed, consistency and position used for complementary feeding and introduction of sweet, savoury and sour tastes. Thus, across the districts, though the number of similarities and differences in feeding practices were equally seen, there were variations in the percentage of mothers for a few feeding aspects.

Across literacy levels, breast feeding termination age, type of formula feed, age of introduction of complementary feeding, age of introduction of the next consistency, type of food items to introduce next consistency, utensil used to introduce next consistency, and

age of introduction of sour taste varied. However, other feeding parameters like introduction of formula feeds, age of introduction of formula feeds, utensils and positions used for formula feeds, the first consistency and type of food used, utensils and positions used to introduce first consistency, the next consistency, position used to feed the next consistency, age of introduction of water, utensil and position used to feed water, age of introduction of sweet and savoury taste, time taken to feed the child were all similar across the literacy levels. Though, similar trend was found in feeding practices, variations were seen in the percentage of mothers with respect to age of introduction of formula feed, utensils and positions used for formula feed, position used for complementary feeding and second consistency feeding, age of introduction of water, utensils and positions used for feeding water and age of introduction of sweet and sour taste. Thus, across the literacy groups, though greater similarities in feeding practices were seen, there were variations observed in the percentage of mothers following a similar trend. It can be concluded that both, the geographical location of the districts across Maharashtra and maternal literacy levels had an influence on feeding practices.

5.1 Implications of the study

This study tried to profile the feeding practices including the specifics of the food type, consistency, utensil used, posture used with young children in the districts of Mumbai Suburban, Nagpur, and Sangli. The results revealed differences in feeding practices across districts and maternal literacy levels. The findings of this study will facilitate an open approach for ethno cultural inclusivity/ sensitivity during assessing and intervening the young children with feeding issues from these districts among the practicing speech-language pathologists (SLPs). The SLPs will be aware of the changes in feeding practices

between different districts, therefore while evaluating the young infants, the SLP can take into account these variances before deciding if a particular behaviour or food type is appropriate. The findings of this study will help the SLP understand the type of food offered in a certain district and recommend the most appropriate type of food based on the district's staple meal. For young children from these districts, a reference chart of food kind, consistency, utensils and positions used to feed, can be created, which can be used during feeding assessment and management.

5.2 Limitations of the study

One potential flaw is the study's small, restricted population and geographic confinement. The findings of this study cannot be generalized to the full state of Maharashtra. It was difficult to establish a cause-and-effect relationship between events because of the study's cross-sectional methodology. Recall and social desirability biases may represent additional study limitations because data were collected from the mother's perspective and self-reports rather than the practice being observed.

5.3 Future Directions

Future research should thus attempt to expand on the current study using a sample that is more typical of the entire population of the state in terms of the characteristics of both the parents and the children. Similar research that sheds light on typical newborn feeding and care practices should be conducted across the other states of India. A longitudinal study can also be carried out to track the changes in feeding practices. Further research with a broader emphasis, larger sample size, and better statistical techniques is required to show the impact of variables such as socioeconomic status, type of family,

feeding experience of the mother and maternal employment on the nature of the prevalent feeding practices.

REFERENCES

- Aggarwal, A., Verma, S., Faridi, M. M. A., & Dayachand. (2008). Complementary feeding —Reasons for inappropriateness in timing, quantity and consistency. *The Indian Journal of Pediatrics*, 75(1), 49–53. <https://doi.org/10.1007/s12098-008-0006-9>
- All India Institute of Speech and Hearing. (2009). *Ethical guidelines for Bio-behavioral research involving human subjects*. <http://www.aiishmysore.in/en/pdf/ethical-guidelines.pdf>.
- American Academy of Pediatrics Section on Breast feeding. (2008). Sample Hospital Breast feeding Policy for Newborns. Elk Grove Village, IL: American Academy of Pediatrics.
- American Speech-Language-Hearing Association. (n.d.). *Pediatric Feeding and Swallowing*. ASHA. <https://www.asha.org/practice-portal/clinical-topics/pediatric-feeding-and-swallowing/>
- Introduction to Water | Articles | Gerber Medical*. (2016). Gerber. <https://medical.gerber.com/tools/spotlight-on-nutrition/articles/an-introduction-to-water>
- Annie, J. R. (2017). Breast feeding, Cognitive and Non-Cognitive Development in Early Childhood: A Population Study. *MCN, The American Journal of Maternal Child Nursing*, 42(5), 302.
- Arvedson, J. C., & Lefton-Greif, M. A. (1996, November). *Anatomy, physiology, and development of feeding*. In *Seminars in Speech and Language* (Vol. 17, No. 04, pp.

261-268). © 1996 by Thieme Medical Publishers, Inc. <https://doi.org/10.1055/s-2008-1064103>

Arvedson, J. & Brodsky, L. (1993). *Pediatric swallowing and Feeding: Assessment and management*. San Diego: Singular Publishing Group.

Arvedson, J. C., & Brodsky, L. (2008). *Pediatric swallowing and feeding: Assessment and management*. San Diego, Calif: Singular Pub. Group.

Bahr, D., & Johanson, N. (2013). A Family-Centered Approach to Feeding Disorders in Children (Birth to 5-Years). *Perspectives on Swallowing and Swallowing Disorders (Dysphagia)*, 22(4), 161–171. <https://doi.org/10.1044/sasd22.4.161>

Basnet, S., Sathian, B., Malla, K., & Koirala, D. P. (2015). Reasons for early or late initiation of complementary feeding: a study in Pokhara. *American Journal of Public Health Research*, 3(4A), 69-75.

Behera, D., & Pillai, A. K. (2016). Intention toward optimal breast feeding among expecting mothers in Angul district of Odisha, India. *Indian Journal of Public Health*, 60(1), 81–85. <https://doi.org/10.4103/0019-557X.177350>

Behera, S., Maroof, K. A., & Tiwari, P. K. (2020). Complementary Feeding Status of Children Residing in Urban Slum of East Delhi. *International Journal of Medicine and Public Health*, 10(3).

Birch, L. L. (2006). Child feeding practices and the etiology of obesity. *Obesity* (Silver Spring, Md.), 14(3), 343–344. <https://doi.org/10.1038/oby.2006.45>

Blissett, J. (2011). Relationships between parenting style, feeding style and feeding practices and fruit and vegetable consumption in early childhood. *Appetite*, 57(3), 826–831. <https://doi.org/10.1016/j.appet.2011.05.318>

- Bloom, K., Goldbloom, R. & Stevens, F. (2008). Factors affecting the mother's choice of infant feeding method. *Acta Paediatrica*, 71, 3 - 8. [10.1111/j.1651-2227.1982.tb09632.x](https://doi.org/10.1111/j.1651-2227.1982.tb09632.x).
- Bosma, J. F. (1986). *Development of feeding*. *Clinical Nutrition*, 5(5), 210-218.
- Breast feeding*. (2019, November 11). WHO. https://www.who.int/health-topics/breast-feeding#tab=tab_1
- Callaghan, J. E., & Lazard, L. (2012). 'Please don't put the whole dang thing out there!': A discursive analysis of internet discussions around infant feeding. *Psychology & Health*, 27(8), 938-955.
- Carper, J. L., Orlet Fisher, J., & Birch, L. L. (2000). Young girls' emerging dietary restraint and disinhibition are related to parental control in child feeding. *Appetite*, 35(2), 121–129. <https://doi.org/10.1006/appe.2000.0343>
- Chatoor, I., & Egan, J. (1984). Non-organic failure to thrive: a developmental perspective. *Pediatric Annals*, 13(11), 829.
- Cichero, J. A., & Murdoch, B. E. (Eds.). (2006). *Dysphagia: foundation, theory and practice*. John Wiley & Sons.
- Cichero, J. A., Lam, P., Steele, C. M., Hanson, B., Chen, J., Dantas, R. O., Duivesteyn, J., Kayashita, J., Lecko, C., Murray, J., Pillay, M., Riquelme, L., & Stanschus, S. (2017). Development of International Terminology and Definitions for Texture-Modified Foods and Thickened Fluids Used in Dysphagia Management: The IDDSI Framework. *Dysphagia*, 32(2), 293–314. <https://doi.org/10.1007/s00455-016-9758-y>

- Cohen, R. J., Brown, K. H., Canahuati, J., Rivera, L. L., & Dewey, K. G. (1994). Effects of age of introduction of complementary foods on infant breast milk intake, total energy intake, and growth: A randomised intervention study in Honduras. *Lancet (London, England)*, *344*(8918), 288–293. [https://doi.org/10.1016/s0140-6736\(94\)91337-4](https://doi.org/10.1016/s0140-6736(94)91337-4)
- Collins, C., Duncanson, K., and Burrows, T. (2014). A systematic review investigating associations between parenting style and child feeding behaviours. *The Journal of Human Nutrition and Dietetics*, *27*, 557–568. doi: 10.1111/jhn.12192
- Confused Parent. (2018). *Baby food chart 0–6 months*. <https://confusedparent.in/baby-food-chart-0-6-months/>
- Connolly. (2021, May 24). *How to correctly hold your baby during a formula feeding*. Bundo. <https://www.bundo.com/articles/correct-position-for-formula-feeding-babies/#:%7E:text=Your%20bottle%2Dfeeding%20position%20should,of%20the%20body%20during%20feeding>
- Dar, N., Egan, J., Edgar, F., & Harkins, C. (2012). *What shapes future infant feeding choices? The views of young people from three cultural backgrounds*. Glasgow Centre for Population Health. http://www.gcph.co.uk/assets/0000/3623/Infant_feeding_choices_cultural_FINAL_2012.pdf
- Dasgupta, A., Naiya, S., Ray, S., Ghosal, A., Pravakar, R., & Ram, P. (2014). Assessment of infant and young child feeding practices among the mothers in a slum area of Kolkata: A cross-sectional study. *International Journal Biological and Medical Research*, *5*(1), 3855-3861.

- Dasher. (2022). Babycenter. https://www.babycenter.com/baby/baby-development/baby-sensory-development-taste_10401107
- Delaney, A. L., & Arvedson, J. C. (2008). Development of swallowing and feeding: Prenatal through first year of life. *Developmental Disabilities Research Reviews*, 14(2), 105-117. doi:10.1002/ddrr.16
- Dellow, P. G. (1976). *The general physiological background of chewing and swallowing. In Mastication and Swallowing: Biological and Clinical Correlates* (ed. B. J. Sessle and A. G. Hannam), pp. 6–9. Toronto: University of Toronto Press.
- Dhami, M. V., Ogbo, F. A., Osuagwu, U. L., & Agho, K. E. (2019). Prevalence and factors associated with complementary feeding practices among children aged 6–23 months in India: A regional analysis. *BMC Public Health*, 19(1), 1-16.
- Dodrill, P. (2014). Feeding problems and oropharyngeal dysphagia in children. *Journal of Gastroenterology and Hepatology Research*, 3(5).
- Esan, D. T., Adegbilero-Iwari, O. E., Hussaini, A., & Adetunji, A. J. (2022). Complementary feeding pattern and its determinants among mothers in selected primary health centers in the urban metropolis of Ekiti State, Nigeria. *Scientific Reports*, 12(1), 1-9.
- Faith, M. S., Scanlon, K. S., Birch, L. L., Francis, L. A., & Sherry, B. (2004). Parent-child feeding strategies and their relationships to child eating and weight status. *Obesity Research*, 12(11), 1711–1722. <https://doi.org/10.1038/oby.2004.212>
- Fewtrell, M., Bronsky, J., Campoy, C., Domellöf, M., Embleton, N., Fidler Mis, N., Hojsak, I., Hulst, J. M., Indrio, F., Lapillonne, A., & Molgaard, C. (2017). Complementary Feeding: A Position Paper by the European Society for Paediatric

Gastroenterology, Hepatology, and Nutrition (ESPGHAN) Committee on Nutrition. *Journal of Pediatric Gastroenterology and Nutrition*, 64(1), 119–132.
<https://doi.org/10.1097/MPG.0000000000001454>

Gadappa, S. M., & Behera, M. K. (2016). Nutritional status and feeding practices in relation to IYCN policy among children under 2 years of age in tertiary care centre. *Original Research*, 3(6), 1650-2.

Galloway, A. T., Lee, Y., & Birch, L. L. (2003). Predictors and consequences of food neophobia and pickiness in children. *Journal of the American Dietetic Association*, 103, 692–698.

Garg, A., & Chadha, R. (2009). Index for measuring the quality of complementary feeding practices in rural India. *Journal of Health, Population, and Nutrition*, 27(6), 763.

Gavin. (2021). *Feeding Your 4- to 7-Month-Old (for Parents) - Inova Fairfax Hospital*. Kidshealth. <https://kidshealth.org/Inova/en/parents/feed47m.html>

Global strategy for infant and young child feeding. (2003, December 22). WHO. <https://www.who.int/publications/i/item/9241562218>

Government of India. Guidelines for enhancing optimal infant and young child feeding practices. New Delhi; Ministry of health and Family Welfare, Government of India. 2013;5-6

Greenspan, S., & Lourie, R. S. (1981). Developmental structuralist approach to the classification of adaptive and pathologic personality organizations: infancy and early childhood. *The American Journal of Psychiatry*, 138(6), 725–735.
<https://doi.org/10.1176/ajp.138.6.725>

Indian Culture. (n.d.). Indian Culture. <https://www.indianculture.gov.in/>

- International Institute for Population Sciences (IIPS) and Macro International. National Family Health Survey (NFHS-3), 2005–06: India: Volume I and II. Mumbai: IIPS; 2007.
- International Institute for Population Sciences (IIPS). National Family Health Survey (NFHS-4), 2015-16: Mumbai 2017
- Issaka, A., Agho, K., Burns, P., Page, A., & Dibley, M. (2015). Determinants of inadequate complementary feeding practices among children aged 6–23 months in Ghana. *Public Health Nutrition*, 18(4), 669-678. doi:10.1017/S1368980014000834
- Jansen, E., Williams, K. E., Mallan, K. M., Nicholson, J. M., & Daniels, L. A. (2018). Bidirectional associations between mothers' feeding practices and child eating behaviours. *The International Journal of Behavioral Nutrition and Physical Activity*, 15(1), 3. <https://doi.org/10.1186/s12966-018-0644-x>
- Kalita, D., & Borah, M. (2016). Current practices on infant feeding in rural areas of Assam, India: A community based cross sectional study. *International Journal of Community Medicine and Public Health*, 3(6), 1454-1460.
- Kamble, B. D., Kaur, R., Acharya, B. P., Gupta, M., & 2015 Batch B (2020). Infant and young child feeding practices among mothers of children aged 6 months -2 years in a rural area of Haryana: A qualitative study. *Journal of Family Medicine and Primary Care*, 9(7), 3392–3398. https://doi.org/10.4103/jfmpe.jfmpe_164_20
- Kavitha, S., Nadhiya, C., & Parimalavalli, R. (2014). Study of Complementary feeding practices among mothers of infants aged six months to one year. *Healthline*, 5(2), 29-35.

- Khan, A. M., Kayina, P., Agrawal, P., Gupta, A., & Kannan, A. T. (2012). A study on infant and young child feeding practices among mothers attending an urban health center in East Delhi. *Indian Journal of Public Health*, 56(4), 301.
- Khan, G. N., Ariff, S., Khan, U., Habib, A., Umer, M., Suhag, Z., Hussain, I., Bhatti, Z., Ullah, A., Turab, A., Khan, A. A., Garzon, A. C., Khan, M. I., & Soofi, S. (2017). Determinants of infant and young child feeding practices by mothers in two rural districts of Sindh, Pakistan: a cross-sectional survey. *International Breast Feeding Journal*, 12, 40. <https://doi.org/10.1186/s13006-017-0131-z>
- Kremers, S. P., Brug, J., de Vries, H., & Engels, R. C. (2003). Parenting style and adolescent fruit consumption. *Appetite*, 41(1), 43–50. [https://doi.org/10.1016/s0195-6663\(03\)00038-2](https://doi.org/10.1016/s0195-6663(03)00038-2)
- Kruger, R., & Gericke, G. J. (2003). A qualitative exploration of rural feeding and weaning practices, knowledge and attitudes on nutrition. *Public Health Nutrition*, 6(2), 217–223. <https://doi.org/10.1079/PHN2002419>
- Kummer, A. (2008). *Cleft palate & craniofacial anomalies: Effects on speech and resonance* (2nd edition). New York, NY: Cengage Learning.
- Lake. (2022). Babycenter. https://www.babycenter.com/baby/solids-finger-foods/when-can-my-baby-eat-spicy-foods_1368539#:~:text=You%20can%20introduce%20herbs%20and,or%20sugar%20to%20their%20food
- Laroia, N., & Sharma, D. (2006). The religious and cultural bases for breast feeding practices among the Hindus. *Breast Feeding Medicine: The Official Journal of the*

Academy of Breast feeding Medicine, 1(2), 94–98.

<https://doi.org/10.1089/bfm.2006.1.94>

Larsen, J. K., Hermans, R. C., Sleddens, E. F., Engels, R. C., Fisher, J. O., and Kremers, S. S. (2015). How parental dietary behavior and food parenting practices affect children's dietary behavior. Interacting sources of influence? *Appetite* 89, 246–257. doi: 10.1016/j.appet.2015.02.012

Lee, Ellie & Furedi, Frank. (2009). *Follow-on Formula milk: literature review*. 10.13140/2.1.2833.0885.

Liaquathali, F., Maruthupandian, J., & Govindasamy, R. (2020). An assessment of age-appropriate infant and young child feeding practices among children in Kancheepuram district, Tamil Nadu, India. *Journal of Family Medicine and Primary Care*, 9(9), 4692–4698. <https://doi.org/10.4103/jfmpe.jfmpe.668.20>

Lodha, S., & Bharti, V. (2013). Assessment of complementary feeding practices and misconceptions regarding foods in young mothers. *International Journal of Food and Nutritional Sciences*, 2(3), 85.

Logemann, J.A. (1998) *The Evaluation and Treatment of Swallowing Disorders*. 2nd Edition, Pro-EdInc., Austin. <http://dx.doi.org/10.1097/00020840-199812000-00008>

Lorenz, K. (1965). *Evolution and modification of behavior*. Chicago: Univ. Chicago Press, 1(2), 1.

Mahmood, S. E., Srivastava, A., Shrotriya, V. P., & Mishra, P. (2012). Infant feeding practices in the rural population of north India. *Journal of Family & Community Medicine*, 19(2), 130–135. <https://doi.org/10.4103/2230-8229.98305>

- Mallan, K. M., Jansen, E., Harris, H., Llewellyn, C., Fildes, A., & Daniels, L. A. (2018). Feeding a fussy eater: Examining longitudinal bidirectional relationships between child fussy eating and maternal feeding practices. *Journal of Pediatric Psychology, 43*(10), 1138-1146.
- Mealtime Routines and Tips*. (2021, July 23). Centers for Disease Control and Prevention. <https://www.cdc.gov/nutrition/infantandtoddlernutrition/mealtime/mealtime-routines-and-tips.html>
- Mehlawat, U., Puri, S., & Rekhi, T. K. (2020). Breast feeding practices among mothers at birth and at 6 months in urban areas of Delhi-Ncr, India. *Jurnal Gizi dan Pangan, 15*(2), 101-108.
- Mennella, J. A., Jagnow, C. P., & Beauchamp, G. K. (2001). Prenatal and postnatal flavor learning by human infants. *Pediatrics, 107*(6), E88. <https://doi.org/10.1542/peds.107.6.e88>
- Mondal, T., Sarkar, A. P., Shivam, S., & Thakur, R. P. (2014). Assessment of infant and young child feeding practice among tribal women in Bhatar block of Burdwan district in West Bengal, India. *International Journal of Medicine Science and Public Health, 3*(1), 324-6.
- Monte, Cristina & Giugliani, Elsa. (2004). Recommendations for the complementary feeding of the breastfed child. *Jornal de Pediatria. 80*. S131-S141. 10.2223/JPED.1245.
- Morris, S. E., & Klein, M. D. (2000). *Pre-Feeding Skills: A comprehensive resource for mealtime development (2nd edition)*. Tucson, Arizona: Therapy Skill Builders.

- Morris, S., & Klein, M. (1987) *Pre-feeding skills: A comprehensive resource for feeding development*. United States: Therapy Skill Builders.
- Mumbai Weather - Climate, Temperature, Rainfall in Mumbai*. (n.d.). Mumbai: Mumbai weather. <https://www.mumbai.org.uk/climate.html>
- Nawaz-Khan, G., Ariff, S., Khan, U., Habib, A., Umer, M., & Suhag, Z. & Soofi, S.(2017). Determinants of infant and young child feeding practices by mothers in two rural districts of Sindh, Pakistan: A cross-sectional survey. *International Breast Feeding Journal*, 12, 40.
- Olatona, F. A., Adenihun, J. O., Aderibigbe, S. A., & Adeniyi, O. F. (2017). Complementary Feeding Knowledge, Practices, and Dietary Diversity among Mothers of Under-Five Children in an Urban Community in Lagos State, Nigeria. *International Journal of MCH and AIDS*, 6(1), 46–59. <https://doi.org/10.21106/ijma.203>
- Patel, A., Pusdekar, Y., Badhoniya, N., Borkar, J., Agho, K. E., & Dibley, M. J. (2012). Determinants of inappropriate complementary feeding practices in young children in India: secondary analysis of National Family Health Survey 2005-2006. *Maternal & Child Nutrition*, 8 Suppl 1(Suppl 1), 28–44. <https://doi.org/10.1111/j.1740-8709.2011.00385.x>
- Paul, I. M., Bartok, C. J., Downs, D. S., Stifter, C. A., Ventura, A. K., & Birch, L. L. (2009). Opportunities for the primary prevention of obesity during infancy. *Advances in Pediatrics*, 56(1), 107–133. <https://doi.org/10.1016/j.yapd.2009.08.012>

- Pradhan, R., Arora, A., & Pradhan, R. (2016). Infant and young child feeding (IYCF) practices amongst mothers in Chandigarh, India. *Journal of Indian Dietetic Association, 39*, 41-50.
- Pregnancy, Birth and Baby*. (n.d.-b). *Pregnancy Birth and Baby*.
<https://www.pregnancybirthbaby.org.au/>
- Priti Kogade, Abhay Gaidhane, Sonali Choudhari, Mahalaqua Nazli Khatib, Umesh Kawalkar, Shilpa Gaidhane, Quazi Syed Zahiruddin. (2019). Socio-cultural determinants of infant and young child feeding practices in rural India. *Medical Science, 23*(100), 1015-1022
- Rao, S., Swathi, P. M., Unnikrishnan, B., & Hegde, A. (2011). Study of complementary feeding practices among mothers of children aged six months to two years-A study from coastal south India. *The Australasian Medical Journal, 4*(5), 252.
- Rathaur, V. K., Pathania, M., Pannu, C., Jain, A., Dhar, M., Pathania, N., & Goel, R. (2018). Prevalent infant feeding practices among the mothers presenting at a tertiary care hospital in Garhwal Himalayan region, Uttarakhand, India. *Journal of Family Medicine and Primary Care, 7*(1), 45.
- Roess, A. A., Jacquier, E. F., Catellier, D. J., Carvalho, R., Lutes, A. C., Anater, A. S., & Dietz, W. H. (2018). Food consumption patterns of infants and toddlers: findings from the Feeding Infants and Toddlers Study (FITS) 2016. *The Journal of Nutrition, 148*(suppl_3), 1525S-1535S.
- Rosenkranz, R. R., & Dzewaltowski, D. A. (2008). Model of the home food environment pertaining to childhood obesity. *Nutrition Reviews, 66*(3), 123–140.
<https://doi.org/10.1111/j.1753-4887.2008.00017.x>

- Ross, M. G., & Nijland, M. J. (1998). Development of ingestive behavior. *American Journal of Physiology-Regulatory, Integrative and Comparative Physiology*, 274(4), R879-R893.
- Sangli. (n.d.). Climate-Data.org. <https://en.climate-data.org/asia/india/maharashtra/sangli-2797/>
- Sapra, D., Ray, S., Jindal, A. K., & Patrikar, S. (2015). Infant and young child feeding practices amongst children referred to the paediatric outpatient department. *Medical Journal Armed Forces india*, 71(4), 359-362.
- Scaglioni, S., Salvioni, M., & Galimberti, C. (2008). Influence of parental attitudes in the development of children eating behaviour. *British Journal of Nutrition*, 99(S1), S22-S25. doi:10.1017/S0007114508892471
- Schwartz, C., Scholtens, P. A., Lalanne, A., Weenen, H., & Nicklaus, S. (2011). Development of healthy eating habits early in life. Review of recent evidence and selected guidelines. *Appetite*, 57(3), 796–807. <https://doi.org/10.1016/j.appet.2011.05.316>
- Selzam S, McAdams TA, Coleman JRI, Carnell S, O'Reilly PF, Plomin R, et al. (2018) Evidence for gene-environment correlation in child feeding: Links between common genetic variation for BMI in children and parental feeding practices. *Public Library of Science Genetics* 14(11): e1007757. <https://doi.org/10.1371/journal.pgen.1007757>
- Semahegn, A., Tesfaye, G., & Bogale, A. (2014). Complementary feeding practice of mothers and associated factors in Hiwot Fana Specialized Hospital, Eastern

Ethiopia. *The Pan African Medical Journal*, 18, 143.
<https://doi.org/10.11604/pamj.2014.18.143.3496>

Sheikh & Jan, Shah Sumaya. (2021). Modified Kuppuswamy socioeconomic scale updated for the year 2021. *Indian Journal of Forensic and Community Medicine*. 8. 1-3. 10.18231/j.ijfcm.2021.001.

Srikanth, L., Subbiah, K., & Srinivasan, S. (2017). Beliefs and practices of newborn feeding in tribal areas of India: a decennary review. *International Journal of Community Medicine and Public Health*, 4(2), 281-5.

Stang, J., and Loth, K. A. (2011). Parenting style and child feeding practices: potential mitigating factors in the etiology of childhood obesity. *Journal of the American Dietetic Association* 111, 1301–1305. doi: 10.1016/j.jada.2011.06.010

Sullivan, S. A., & Birch, L. L. (1994). Infant dietary experience and acceptance of solid foods. *Pediatrics*, 93(2), 271–277. <https://pubmed.ncbi.nlm.nih.gov/8121740/>

Swetha, R., Ravikumar, J., & Rao, R. N. (2014). Study of breast feeding practices in coastal region of South India: a cross sectional study. *International Journal of Contemporary Pediatrics*, 1, 74-8.

Taye, A. A., Asegidew, W., Taderegew, M. M., Bizuwork, Y. G., & Zegeye, B. (2021). Formula feeding practice and associated factors among mothers with infants 0–6 months of age in Addis Ababa, Ethiopia: a community-based cross-sectional study. *Italian Journal of Pediatrics*, 47(1), 1-9.

Törölä, H., Lehtihalmes, M., Yliherva, A., & Olsén, P. (2012). Feeding skill milestones of preterm infants born with extremely low birth weight (ELBW). *Infant behavior & Development*, 35(2), 187–194. <https://doi.org/10.1016/j.infbeh.2012.01.005>

- United States Department of Agriculture (USDA). (2009). Complementary feeding. In: U. S. (USDA), editor. *Infant Nutrition and Feeding*. Washington, DC: United States Department of Agriculture (USDA). p. 101–28.
- Vaughn, A. E., Ward, D. S., Fisher, J. O., Faith, M. S., Hughes, S. O., Kremers, S. P., Musher-Eizenman, D. R., O'Connor, T. M., Patrick, H., & Power, T. G. (2016). Fundamental constructs in food parenting practices: a content map to guide future research. *Nutrition Reviews*, 74(2), 98–117. <https://doi.org/10.1093/nutrit/nuv061>
- Velusamy, V., Premkumar, P. S., & Kang, G. (2017). Exclusive breast feeding practices among mothers in urban slum settlements: pooled analysis from three prospective birth cohort studies in South India. *International Breast Feeding Journal*, 12, 35. <https://doi.org/10.1186/s13006-017-0127-8>
- Ventura, A. K., & Birch, L. L. (2008). Does parenting affect children's eating and weight status?. *The International Journal of Behavioral Nutrition and Physical Activity*, 5, 15. <https://doi.org/10.1186/1479-5868-5-15>
- Walsh, A., Kearney, L., & Dennis, N. (2015). Factors influencing first-time mothers' introduction of complementary foods: a qualitative exploration. *BMC Public Health*, 15(1), 1-11.
- Webber, L., Cooke, L., Hill, C., & Wardle, J. (2010). Associations between Children's Appetitive Traits and Maternal Feeding Practices. *Journal of the American Dietetic Association*, 110(11), 1718-1722.
- World Health Organization & United Nations Children's Fund (UNICEF). (2003). Global Strategy for Infant and Young Child Feeding. World Health Organization. <https://apps.who.int/iris/handle/10665/42590>

- World Health Organization. Guiding Principles for Complementary Feeding of the Breastfed Child. Geneva: WHO Press (2001). Available from: http://www.who.int/nutrition/publications/guiding_principles_compfeeding_breastfed. Pdf
- Yadavannavar, M. C., & Patil, S. S. (2011). Socio-cultural factors affecting breast feeding practices and decisions in rural women. *International Journal of Plant, Animal and Environmental Sciences*, 1(2), 46-50.
- Yu, C., Binns, C. W., & Lee, A. H. (2019). The Early Introduction of Complementary (Solid) Foods: A Prospective Cohort Study of Infants in Chengdu, China. *Nutrients*, 11(4), 760. <https://doi.org/10.3390/nu11040760>
- Zahiruddin, Q. S., Kogade, P., Kawalkar, U., Khatib, N., & Gaidhane, S. (2016). Challenges and Patterns of Complementary Feeding for Women In Employment: A Qualita-tive Study from Rural India. *Current Research in Nutrition and Food Science Journal*, 4(1), 48-53.

APPENDIX I

SURVEY TOOL TO ASSESS FEEDING PRACTICES

Section I- Demographic Data

Name of the child: Age/Gender:
Date of Birth: Date of evaluation:
Present address: Permanent address:
District:
Mobile no: Email id:
Mother's Name: Mother's Age:
Mother's Education: Employment:
Father's Name: Father's Age:
Father's Education: Employment:
Socioeconomic Status

Modified Kuppuswamy socioeconomic scale updated for the year 2021

Sl. No.	Occupation of the Head	Score
1	Legislators, Senior Officials & Managers	10
2	Professionals	9
3	Technicians and Associate Professionals	8
4	Clerks	7
5	Skilled Workers and Shop & Market Sales Workers	6
6	Skilled Agricultural & Fishery Workers	5
7	Craft & Related Trade Workers	4
8	Plant & Machine Operators and Assemblers	3
9	Elementary Occupation	2
10	Unemployed	1

Sl. No.	Education of the Head	Score
1	Profession or Honours	7
2	Graduate	6
3	Intermediate or diploma	5

4	High school certificate	4
5	Middle school certificate	3
6	Primary school certificate	2
7	Illiterate	1

Sl. No.	Updated Monthly Family Income in Rupees (2021)	Score
1	>123322	12
2	61663-123321	10
3	46129-61662	6
4	30831-46128	4
5	18497-30830	3
6	6175-18496	2
7	<6174	1

Sl. No.	Socioeconomic Class	Score
1	Upper (I)	26-29
2	Upper Middle (II)	16-25
3	Lower Middle (III)	11-15
4	Upper Lower (IV)	5-10
5	Lower (V)	<5

Religion:

Caste:

Mother tongue:

Rural/Urban:

No. of children in the family:

First time mother/ second time mother:

Type of family: Nuclear/Joint

No. of persons in the family:

No. of elders in the family:

Type of diet:

- Vegan (No milk and milk products. Includes fruits, vegetables, cereals and pulses)
- Vegetarian (Includes milk and milk products, fruits, vegetables, cereals and pulses)
- Vegetarian (Include eggs, milk and milk products, fruits, vegetables, cereals and pulses)
- Non-veg. (Include eggs, fish, meat, milk and milk products, fruits, vegetables, cereals & pulses)

- e. Jain (Completely lacto-vegetarian, no roots and underground vegetables such as onion, potato, garlic etc)

Who is the main feeder?

- Mother
- Father
- Grandmother
- Guardian
- Maid

How often does the main feeder feed the child?

- Always
- Often
- Sometimes

How often do you let the child feed him/her?

- Always
- Often
- Sometimes

What is the time taken by the caregiver to feed the child?

- 10-15 mins
- 15-30 mins
- 30-45 mins
- More than 45 mins

Section II- General Health, Behaviour and Feeding Behaviour

1. How would you rate your child's health?

- My child seems to be less healthy than other children I know
- My child has never been seriously ill
- When there is something going around my child usually catches it; I expect my child will have a very healthy life
- I worry about my child's health more than other people worry about their children's health

2. Considering your child's age and abilities, has he/she been limited in any of the following because of health or learning problems?

Sr.No		YES	NO
1	Feeding		

2	Eating		
3	Sleeping		
4	Grasping		
5	Rolling over		
6	Playing		
7	Taking steps		
8	Understanding and talking		

3. How much bodily pain or discomfort (due to gas, teething, injury, illness) has your child had anywhere in his/her body?

4. How much do you agree/disagree with each statement about your child's general behaviour?

Sr.No		AGREE	DISAGREE
1	My child's behaviour is sometimes difficult to manage		
2	My child seems to misbehave more often than other children I know		
3	People have complimented me on my child's behaviour		
4	Others have complained about my child's behaviour		

5. How much do you agree/disagree with each statement about your child's eating behaviour?

Sr.No		AGREE	DISAGREE
1	My child is easy to feed, compared to children of similar age		
2	My child is not a picky or a fussy eater		

Does the child have any food allergy? If yes specify

Section III- Particulars Regarding Introduction of Food

A) Breast feeding

1. Was the child breastfed?

Yes / No

2. At what age was breast feeding terminated?

B) Introduction to Formula milk/ any other source of milk

1. Was any kind of milk other than breast milk introduced to the child within the first 3-4 months of life? Yes/ No

2. If yes, what was it?

- a. Cow milk
- b. Formula milk

3. What was the reason for introducing other type of milk?

- a. insufficient milk secretion
- b. inability to suck during breast feeding
- c. any other

4. At what age was the other type of milk introduced to the child?

- a. Birth to 1 month
- b. 1-2 months
- c. 2-3 months
- d. 3-4 months
- e. Any other

5. Which type of utensil was mostly used to feed the child?

a. Olle/paladai/nifty cup



b. Spoon



c. Feeding Bottle with specific nipple size



d. Syringe/Dropper



d. Any other

6. In which position was the child was fed during feeding the other type of milk most of the times?

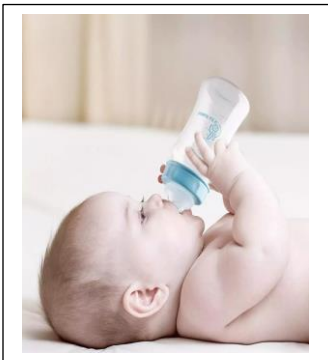
a. Held in caretaker's arms



b. On caretaker's lap



c. On flat surface



d. Sitting with support from caregiver's trunk



e. Any other

C) Introduction to Complementary feeding

1. When was the next type of food?

(e.g., pureed food like ragi porridge, cerelac etc.) Introduced? (Specify food given)

a. 4-5 months

- b. 5-6 months
- c. 6-7 months
- d. Any other

2. What was the consistency of the food introduced?

a. 0- Thin

b. 1- Slightly Thick



c. 2- Mildly Thick

d. 3- Moderately Thick



e. 4-Extremely Thick



3. What utensil was used to introduce the food?

a. Spoon

b. Feeding bottle with spoon attached



c. Sippy cup or open cup



d. Nifty cup



e. Special spoons



f. Any other

4. In which position was the child was fed?

- a. Held in caretaker's arms
- b. On caretaker's lap
- c. On flat surface
- d. Sitting with support from care giver's trunk
- e. Any other

D) Transition to other food consistencies

1. When was the next type of food consistency introduced? (Specify food items given)

- a. 6-7 months
- b. 7-8 months
- c. 8-9 months
- d. Any Other

2. What was the consistency of the food?

a. Soft and minced



b. Soft and bite sized



c. Easy to chew



d. Any other

3. How was this consistency fed to the child?

a. Mother's fingers

b. Spoon

c. Nibbler



d. Any other

4. In which posture the child was usually fed?

a. Caretaker's lap with infant in sitting position

b. Special seat/high chair



c. Any other

E) Introduction of water in child's diet

1. When was water first given to the child?

a. 4-5 months

b. 5-6 months

c. After 6 months

d. Any other

2. What was usually used to feed water?

a. Glass with or without rim



b. Steel glass with attached straw



c. Sippy cup or open cup

d. Bowl and spoon

e. Olle/ nifty cup

f. Any other

3. Which posture was used usually to feed water?

a. Held in caretaker's arm

b. On caretaker's lap

c. On flat surface

d. Sitting with support from care giver's trunk

e. Any other

F) Textures introduced in the child's diet

1. What other foods were provided? Specify under each the type of texture/consistency and age at which it was introduced along with utensils used.

Type of food	Age of Introduction	Through which food item
Cereals		
Pulses		
Eggs		
Any other		

G) Flavours introduced to the child**1. What tastes have been exposed to the child and at what age?**

Taste	Age of introduction	Through what food
Sweet		
Spicy		
Sour		
Bitter		

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