

Knowledge and Practice Regarding Infant Feeding of Mothers Attending PHCCs in Abha City, Saudi Arabia

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Abstract

Objectives: To study infant-feeding knowledge and practice and factors that affect infant-feeding among mothers of infants attending PHCCs in Abha, KSA.

Material and Methods: An interviewer- administered questionnaire was used to interview 280 mothers who attended well baby clinic in PHCCs, who had a child aged less than one year during 2015.

Results: Among 280 mothers; (75.7%) of them were aged 25-35 years, (49.3%) of them had a university level of education and (66.4%) of them were not working. In prenatal planning of infant feeding, (44.3%) of them planned to breastfeed their infants while (41.1%) of them planned to give both artificial milk and breastfeeding. Only (53.6%) of mothers received prenatal health education on infant feeding. The first type of feeding given to the index infants was breastfeeding alone (46.4%) or both breastfeeding and artificial milk feeding (45%). Start of weaning was at 4-6 months in (46.4%) of them. Most of the additional feeding was artificial milk feeding among children who are on breastfeeding (43.6%).

Conclusions: This study explores some of the factors related to knowledge and practice of infant feeding which are: mother's age and her level of education, father's age and his educational level and occupational status, family size and monthly income, prenatal plan and prenatal health education of infant feeding and practice of breastfeeding with the previous child.

Key Words: infant-feeding, knowledge, practice, mothers of infants

Introduction

Background

The World Health Organization (WHO) recommends that infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. Thereafter, to meet their evolving nutritional requirements, infants should receive nutritionally adequate and safe complementary foods while breastfeeding continues for up to two years of age or beyond (WHO/UNICEF, 2003) [1].

Infants who are not breastfed require a suitable breast-milk substitute or Replacement Feeding, for example, an infant formula prepared in accordance with the present guidelines. The amount of guidelines and publications provided by leading health care authorities either internationally by WHO, UNICEF, or Nationally by the Ministry of Health in Saudi Arabia regarding artificial milk feeding in comparison or combined with Breast feeding is enormous and will give the health care promoter an indication about the importance of such a topic. In 2009 the WHO published the acceptable medical reasons for use of replacement feeding [2], and it included many reasons to start such a practice.

Powdered infant formula (PIF) has been associated with serious illness and death in infants due to infections. During the preparation of PIF, inappropriate handling practices can exacerbate the problem. In 2005 the World Health Assembly (WHA) of WHO requested the Organization to develop a guideline in order to minimize this risk to infants, and indeed the guidelines were published in 2007 [3].

Literature Review

Infant nutrition (i.e. nutrition in the first year of life) is one of the important infant well being issues for mothers and health care providers. Its impact on child growth and development is crucial. Mother's source of knowledge, choices and practice of infant feeding are influenced by many factors which have been the area of several studies and this present paper.

A study was done in KSA in 2006, on 4,872 mothers about infant feeding practice [4]. The study found that age, nationality and educational level were the major factors related to infant feeding. The study also found that about four-fifths of the mothers had received health education about breastfeeding, most often from medical staff; younger mothers tended to be better informed. Approximately 92% fed colostrum to the newborn, but 76.1% had introduced bottle-feeding by 3 months (48.3% cited insufficient milk as the reason for introducing the bottle).

In 2009, another study in KSA was aimed to measure the compliance to WHO recommendation of exclusive breastfeeding in the first 6 months of life [5]. The study included 5,339 children and found 4,889 of them (91.6%) received breast milk at birth indicating a prevalence of initiation. The high prevalence of breastfeeding initiation at birth indicated the willingness of Saudi mothers to breastfeed. Bottle feeding was introduced by 1 month of age in (51.4%) and to (90%) of them by 6 months of age. The majority of infants (80.8%) were introduced to "solid foods" between 4 to 6 months of age.

In order to assess mother's knowledge about breastfeeding, another study was done in 2009 on three hospitals in Riyadh [6]. Among 848 women, (61.5%) of them fell within the age groups between 21-30 years. Most women (49.8%) have a college or higher level of education. Only (55.8%) of women had previously received prenatal breastfeeding education, and approximately (54.2%) of women received breastfeeding education when they were in the hospital for delivery.

Another similar study was done in shopping centers in Riyadh in 2013 [7]. Eighty six percent of interviewed mothers believed that the best way to start feeding the newborn is solely breastfeeding. Forty one percent attended breast feeding health education. Availability of formula milks, limited availability, duration of maternity leave and lack of awareness were factors believed to limit breast-feeding.

A systematic review done in KSA in 2014, including seventeen cross-sectional studies about breastfeeding [8]. It reported that breastfeeding initiation rates were high (mostly above 90%), but a few studies reported low rates of timely initiation (within the first hour). The partial (mixed) feeding method was common and the category of 'any breastfeeding' has generally high rates. The mean duration of breastfeeding has shown a progressive decline over time from 13.4 months in 1987 to 8.5 months in 2010. Factors associated with a high prevalence of breastfeeding and longer duration include increased maternal age, low educational levels, rural residence, low income, multiparity and avoiding contraceptives. The most common reason for breastfeeding cessation was insufficient breast milk. Other reasons include sickness, new pregnancy and breastfeeding problems.

Studies were done by Dr. ALBinAli [9],[10] in Abha city in 2010 and 2011 on breastfeeding among female health care workers in tertiary care hospitals and female school teachers.

The study on female health workers, reported that Saudi nationals were 83 (55%). Forty seven (31%) started breast-feeding within half an hour of delivery, twenty four (15.9%) breast fed up to 6 months. Work-related problems were the main reason for stopping breast-feeding in 69 of them (45.7%). The intention to breast-feed and to attend workshops addressing breast-feeding issues were (86.1%) and (97.7%) respectively.

The other study on female school teachers showed different results. A total of 384 women made up of 246 (61.1%) primary, 89 (23.2%) intermediate and 49 (12.8%) high school teachers participated in the study. One hundred and nineteen participants (31%) started breastfeeding their children within one hour of delivery, while exclusive breastfeeding for 6 months was reported only by 32 (8.3%) participants. Insufficient breast milk and work related problems were the main reasons given by 169 (44%) and 148 (38.5%) of participants, respectively, for stopping breastfeeding before two years. Only 33 participants (8.6%) had attended classes related to breastfeeding. However, 261 participants (68%) indicated the willingness to attend such classes, if available, in future pregnancies.

A recent study was done in Abha city in 2014[11] to assess the knowledge, practice and attitude of exclusive breastfeeding among mothers attending PHCCs. Of a total of 600 mothers, their ages ranged between 18 and 47 years with a mean of 31.4±5 years. Most of them were Saudi (88.2%) and university graduated (78.7%). Overall mothers' breastfeeding knowledge was good among more than half of them (55.3%) and excellent among 30.7% of them while it was unsatisfactory among 14% of the mothers. Positive attitude towards breastfeeding was reported among 62.2% of the participants while negative attitude was reported among more than one-third of them (37.8%). Breastfeeding in the first 6 months was practiced by 24.7% of the participating mothers. Of them, only 7.3% practiced exclusive breast feeding.

Methodology

Study design

Cross sectional design.

Study setting and population:

This study was conducted in Abha City, which is the capital of Aseer Region in Saudi Arabia.

The study population was mothers of infants (i.e. age of less than 1 year old) who were attending four primary health care centers in Abha (AlQabel PHCC, Shamasan PHCC, Almowadhafeen PHCC and AlManhal PHCC) during the year of 2015.

Sampling and sample size determination:

The sample size was calculated by using the

$$N = Z^2 * (p*1-p)/d^2 \text{ equation [12] :}$$

Where: n = sample size

Z = Z statistic for a level of confidence (95% level of confidence used, therefore Z value is 1.96)

P = expected prevalence of proportion (taken from a study done before) [4]

d = precision

$$N = (1.96)^2 * (0.76 * 1 - 0.76) / (0.05)^2$$

$$= 3.8416 * 0.1824 / 0.0025 = 280$$

The required sample size is 280 mothers. A simple Random sampling method was used for selecting PHCCs located in center of Abha. The sample size was estimated to be 280 mothers.

Data collection tool:

Infant feeding questionnaire was used. It was based on selected questions of " The National Infant Feeding

Survey 2008, University of Dublin, Ireland" [13] which is available online and doesn't have required permission. The researcher translated the questionnaire to Arabic language and it was approved by the discovery for certified translation and educational services centers in Abha. A pilot study (n = 28) was conducted to test the data collection procedures and the questionnaire reading clarity level and comprehensiveness.

Statistical analysis:

Collected data were verified and coded prior to computerized data entry. The researcher utilized the IBM Statistical Package for Social Sciences (IBM® SPSS® Statistics V22.0) for data entry and analysis. Percentages, means and standard deviations were used as descriptive statistics. Chi square test was used to determine whether there is a significant difference between the expected frequencies and the observed frequencies in one or more categories. A p-value of less than 0.05 was considered as statistically significant.

Results**Part I : Background Characteristics and Knowledge About Advantages of Breastfeeding**

Table 1 (opposite page) shows that most participant mothers (75.7%) were aged 25-35 years, while most of their husbands' ages (65.4%) were 30-40 years old. About half of the mothers' families (52.5%) had 2-5 children, and the family size of most of them (61.1%) was 4-8 members. Almost half of mothers (49.3%) had a university level of education, while almost half of their husbands (48.9%) had a secondary level of education. Most participant mothers 186 (66.4%) were not working, while 94 (36.6%) were working, and almost all participant fathers 260 (92.9%) were working, with just 6 (2.1%) not working, and 14 (5.0%) retired. The majority of participant's monthly income (69.3%) ranged between 3000 and 15,000 SR, with the monthly income of 13.9% being below 3000 SR while that of 16.8% was above 15,000 SR.

Table 2: Characteristics of index infants:

| Infant characteristics | No. | % |
|------------------------|-----|------|
| Birth Order | | |
| First | 81 | 28.9 |
| Second | 56 | 20.0 |
| Third | 38 | 13.6 |
| Fourth | 41 | 14.6 |
| More than Fourth | 64 | 22.9 |
| Child Gender | | |
| Male | 150 | 53.6 |
| Female | 130 | 46.4 |
| Child Age | | |
| < 4 months | 49 | 17.5 |
| 4-6 months | 85 | 30.4 |
| 7-9 months | 88 | 31.4 |
| > 9 months | 58 | 20.7 |

Table 2 shows that 28.6% of participants' children were first born, 20.4% were second, 13.6% were third, 14.6% were fourth while 22.9% were after the fourth. About half of children (53.6%) were males. Age of most children ranged from 1 to 18 months.

Table 1: Personal characteristics of respondents

| Personal characteristics | No. | % |
|-------------------------------|-----|------|
| Mother's age | | |
| <25 years | 45 | 16.1 |
| 25-35 years | 212 | 75.7 |
| >35 years | 23 | 8.2 |
| Father's age | | |
| <30 years | 45 | 16.1 |
| 30-40 years | 183 | 65.4 |
| > 40 years | 52 | 18.6 |
| No. of children | | |
| One child | 81 | 28.9 |
| 2-5 children | 147 | 52.5 |
| > 5 children | 52 | 18.6 |
| Family Size | | |
| <4 | 81 | 28.9 |
| 4-8 | 171 | 61.1 |
| >8 | 28 | 10.0 |
| Mother's education | | |
| Illiterate | 17 | 6.1 |
| Primary | 23 | 8.2 |
| Intermediate | 16 | 5.7 |
| Secondary | 86 | 30.7 |
| University | 138 | 49.3 |
| Father's education | | |
| Illiterate | 7 | 2.5 |
| Primary | 17 | 6.1 |
| Intermediate | 14 | 5.0 |
| Secondary | 137 | 48.9 |
| University | 105 | 37.5 |
| Mother's Occupation | | |
| Working | 94 | 36.6 |
| Not working | 186 | 66.4 |
| Father's Occupation | | |
| Working | 260 | 92.9 |
| Not working | 6 | 2.1 |
| Retired | 14 | 5.0 |
| Monthly income (in SR) | | |
| <3000 | 39 | 13.9 |
| 3000-8999 | 110 | 39.3 |
| 9000-14999 | 84 | 30.0 |
| 15000+ | 47 | 16.8 |

Table 3: Knowledge about the benefits of breastfeeding for the mother

| Stated Benefits | No. | % |
|--|-----|------|
| It bonds the child with the mother | 171 | 61.1 |
| It helps in losing weight and returning my body shape to its original form | 147 | 52.5 |
| It decreases the chances of ovarian cancer and cervical cancer | 137 | 48.9 |
| It prevents pregnancy | 115 | 41.1 |
| It doesn't cost me anything | 82 | 29.3 |
| It doesn't need preparation like artificial milk | 68 | 24.3 |
| It prevents osteoporosis | 57 | 20.4 |
| It makes me feel comfortable and helps me to sleep | 46 | 16.4 |
| Nothing | 17 | 6.1 |

*Multiple Answers

Table 3 shows that “bonding the child with the mother” was the most frequently stated benefit of breastfeeding to mothers (61.1%), followed by “it helps in postpartum return of weight and body to their original forms” (52.5%), cancer prevention (48.9%) and natural contraception (41.1%).

Table 4: Knowledge about the benefits of breastfeeding for the baby

| Stated benefits | No. | % |
|---|-----|------|
| It strengthens the immune system and reduces infections | 175 | 62.5 |
| It emotionally bonds the child with the mother | 149 | 53.2 |
| It provides better development for the child | 134 | 47.9 |
| It increases the child's IQ | 120 | 42.9 |
| It prevents colic and is easy to be absorbed | 110 | 39.3 |
| It prevents obesity and diabetes | 79 | 28.2 |
| It prevents allergy and bronchial asthma | 74 | 26.4 |
| Nothing | 18 | 6.4 |

*Multiple Answers

Table 4 shows that “strengthens the immune system and reduces infections” was the most frequently stated benefit of breastfeeding to babies (62.5%), followed by “it emotionally bonds the child with the mother” (53.2%) and for child development (47.9%).

Part II: Prenatal Planning for Infant Feeding

Table 5: Participants' prenatal plans for feeding their children

| Prenatal plans for feeding the baby | No. | % |
|-------------------------------------|-----|------|
| Breastfeeding | 124 | 44.3 |
| Artificial feeding | 14 | 5.0 |
| Mixed breast and artificial feeding | 115 | 41.1 |
| Did not have any plan | 27 | 9.6 |

Table 5 shows that prenatally, 44.3% of participants planned to breastfeed their babies, while 5% planned for artificial feeding. Moreover, 41.1% of participants planned to give mixed feeding while 9.6% did not have any plans.

Table 6: Participants' reasons for planning to breastfeed their babies

| Reasons for planning to breastfeed | No. | % |
|---|-----|------|
| Breastfeeding is the best for the baby | 183 | 65.4 |
| Breastfeeding is beneficial for both the baby and the mother | 98 | 35.0 |
| Breastfeeding is easier and more convenient than artificial feeding | 83 | 29.6 |
| Because I did so with my previous child | 56 | 20.0 |
| Because it's a natural method and God gifted | 43 | 15.4 |
| Because my mother and sisters breastfeed | 30 | 10.7 |
| Because I want to give it a try | 12 | 4.3 |

*Multiple Answers

Table 6 shows that the main reason for planning to breastfeed was breastfeeding is considered the best for the child (65.4%), followed by that breastfeeding is beneficial to both the baby and the mother (35%), and breastfeeding is easier and more convenient to the mother than artificial feeding (29.6%).

Table 7: Participants' reasons for planning to feed their babies artificially

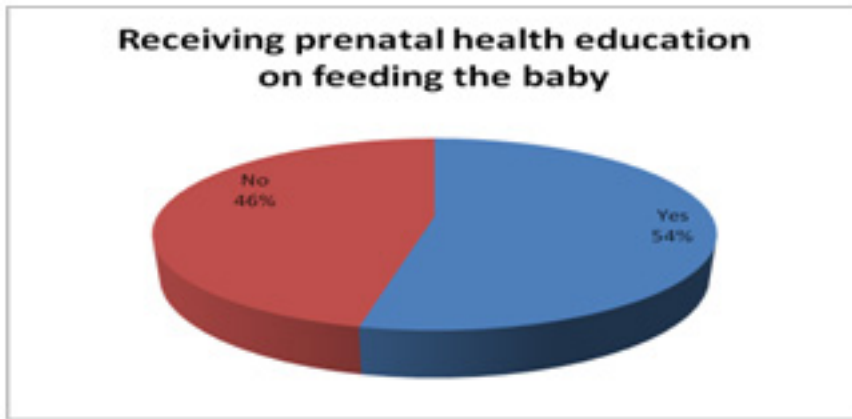
| Reasons to artificially fed the baby | No. | % |
|---|-----|------|
| Because I did so with my previous baby | 59 | 21.1 |
| Because I am busy with a job / no time | 52 | 18.6 |
| Because there are other children I am caring for | 32 | 11.4 |
| Due to the ease of preparation of the artificial milk | 20 | 7.1 |
| Due to health reasons (medications or breast disease) | 17 | 6.1 |
| Because I could not breastfeed before | 10 | 3.6 |
| Because I feel shy about breastfeeding | 9 | 3.2 |
| Because my mother or sisters do so | 8 | 2.9 |
| So I would know how much milk my child consumes | 6 | 2.1 |
| To let my husband participate with me in feeding our child | 5 | 1.8 |
| Because one of the physicians or health care providers did not advise to breastfeed | 5 | 1.8 |

*Multiple Answers

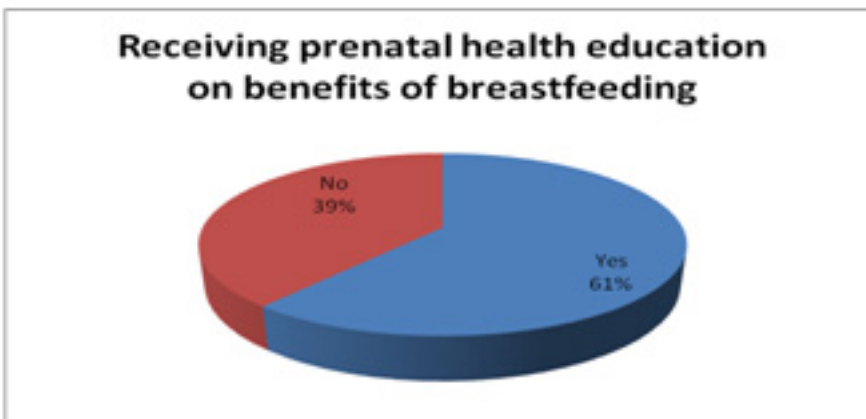
Table 7 shows that the main reasons for planning to artificially feed was she did so with her previous baby (21.1%), followed by being busy with her work (18.6%) and the presence of other children to care for (11.4%).

Tables and Pie charts (8 - next page) shows that only 53.6% of mothers received prenatal health education on feeding the baby. The main person who provided health education was gynecologists (33.9%) followed by others outside medical field (13.6%). Moreover, only 61.1% of mothers received prenatal health education on benefits of breastfeeding. The main source for health education was the gynecologist (31.8%) followed by others outside medical field (17.9) and by the nurse (14.3%).

Table 8: Prenatal health education regarding the method of feeding the baby.



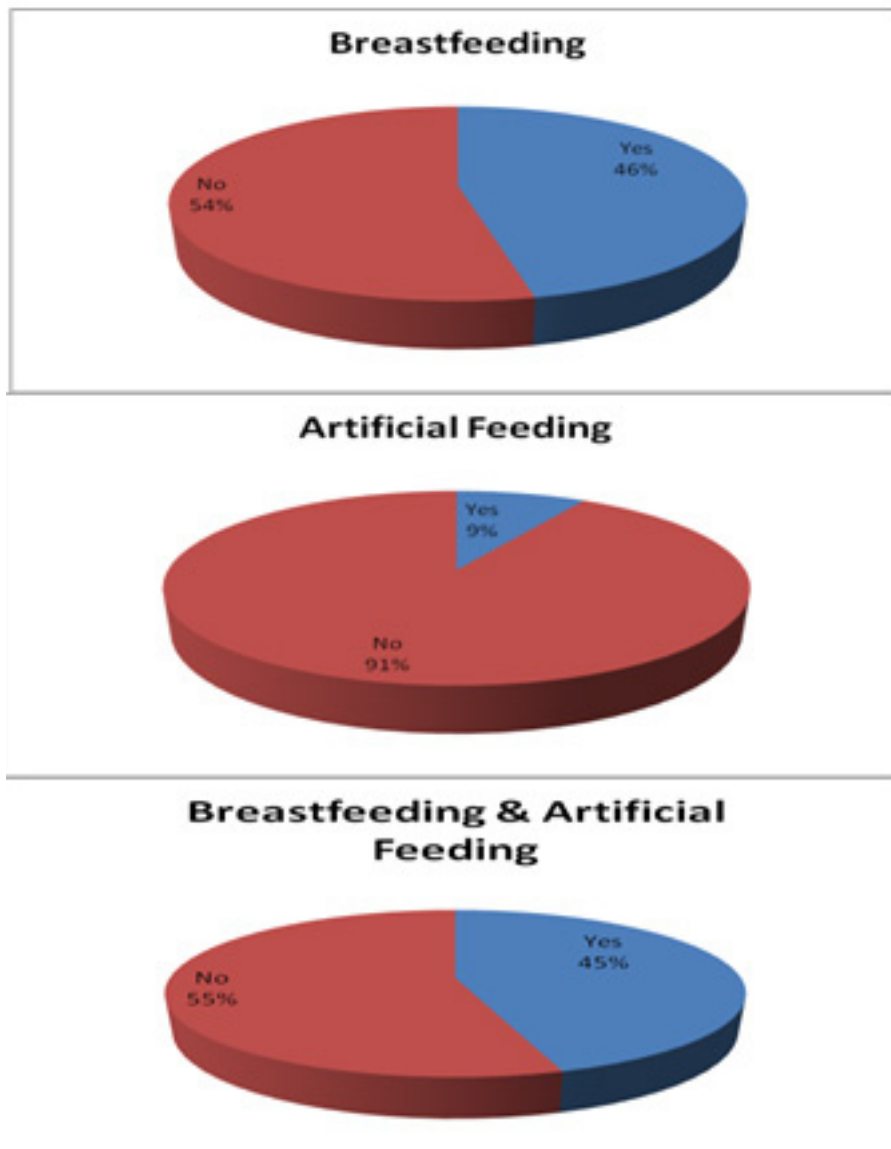
| Prenatal health education on feeding the baby | No. | % |
|---|-----|------|
| - Person who provided health education on feeding the baby: | | |
| Gynecologist | 95 | 33.9 |
| Nurse | 23 | 8.2 |
| Midwife | 10 | 3.6 |
| General practitioner | 7 | 2.5 |
| Other person | 38 | 13.6 |



| Source of health education on benefits of breastfeeding: | No. | % |
|--|-----|------|
| Gynecologist | 89 | 31.8 |
| Nurse | 40 | 14.3 |
| Magazines and booklets | 26 | 9.3 |
| Midwife | 19 | 6.8 |
| Television and radio | 14 | 5.0 |
| General practitioner | 3 | 1.1 |
| Other sources | 50 | 17.9 |

Part III: Practice of infant feeding for studied infant

Figure 9 Pie charts : The first type of feeding given to the baby after birth



Pie charts (9) show that the first type of feeding given to participants' babies at birth was mainly breastfeeding alone (46.4%) or both breastfeeding and artificial feeding (45%).

Table 10: Reasons for breastfeeding discontinuation for infant

| Reasons | No. | % |
|---|-----|------|
| Because breast milk was inadequate and the child was often hungry | 61 | 21.8 |
| Being busy with household work or other children | 58 | 20.7 |
| Having to return to work | 51 | 18.2 |
| Breast-related problems | 31 | 11.1 |
| Being uncomfortable with breastfeeding in public | 19 | 6.8 |
| Desire to let others to participate in feeding the child | 16 | 5.7 |

*Multiple Answers

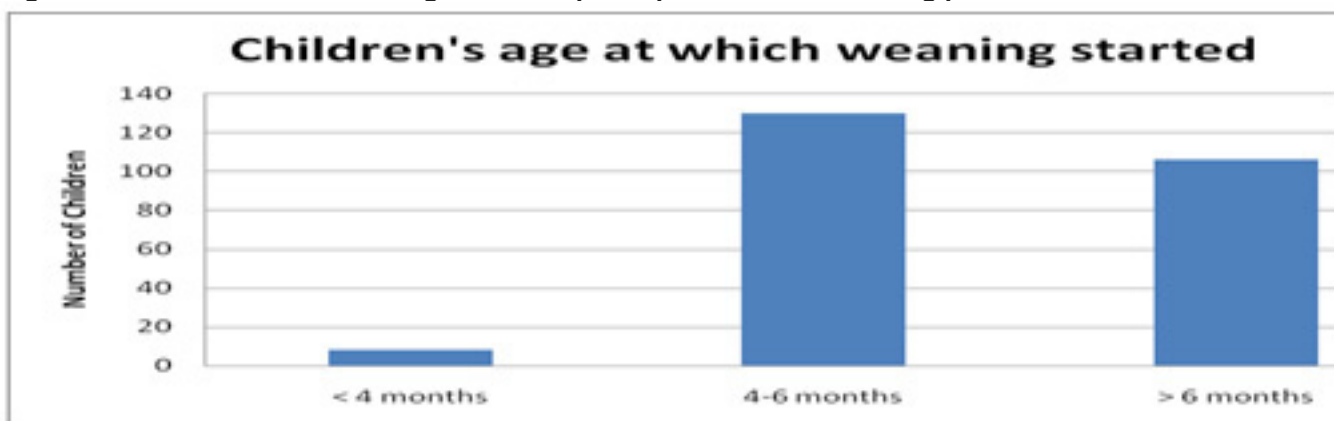
Table 10 shows most frequent reasons for breastfeeding discontinuation were "Because breast milk was inadequate amount for the child" (21.8%), followed by "Being busy with household work or other children" (20.7%) and "having to return to work" (18.2%).

Table 11: Participants' reasons for adding artificial feeding to the infants

| Reasons | No. | % |
|---|-----|------|
| To provide the child with more nutrition | 78 | 27.9 |
| For extra sources of milk / child is often hungry | 61 | 21.8 |
| Due to the complexity of commitments to breastfeeding | 50 | 17.9 |
| Because I had house work or another child to look after | 42 | 15.0 |
| Because the child's feeding is complete when breastfed | 27 | 9.6 |
| To allow the child to be accepting to the change of type of feeding | 24 | 8.6 |
| Because of the night feeding | 19 | 6.8 |
| To take some rest from breastfeeding | 15 | 5.4 |

*Multiple Answers

Table 11 shows most frequent reasons for participants' for adding artificial feeding to their babies were "to provide the child with more nutrition" (27.9%), followed by "for extra sources of milk / child is often hungry" (21.8%) and (17.9%) found difficulties in commitment to breastfeeding.

Figure 12 Bar Chart : Children's age at which participants started weaning practices

Bar chart (12) shows that about half of mothers (46.4%) started weaning their children early at 4-6 months, while (4-6%) of mothers started weaning in early infant's age and (37.9%) of mothers delayed weaning after the age of 6 months.

Table 13: Weaning practice at 6 months

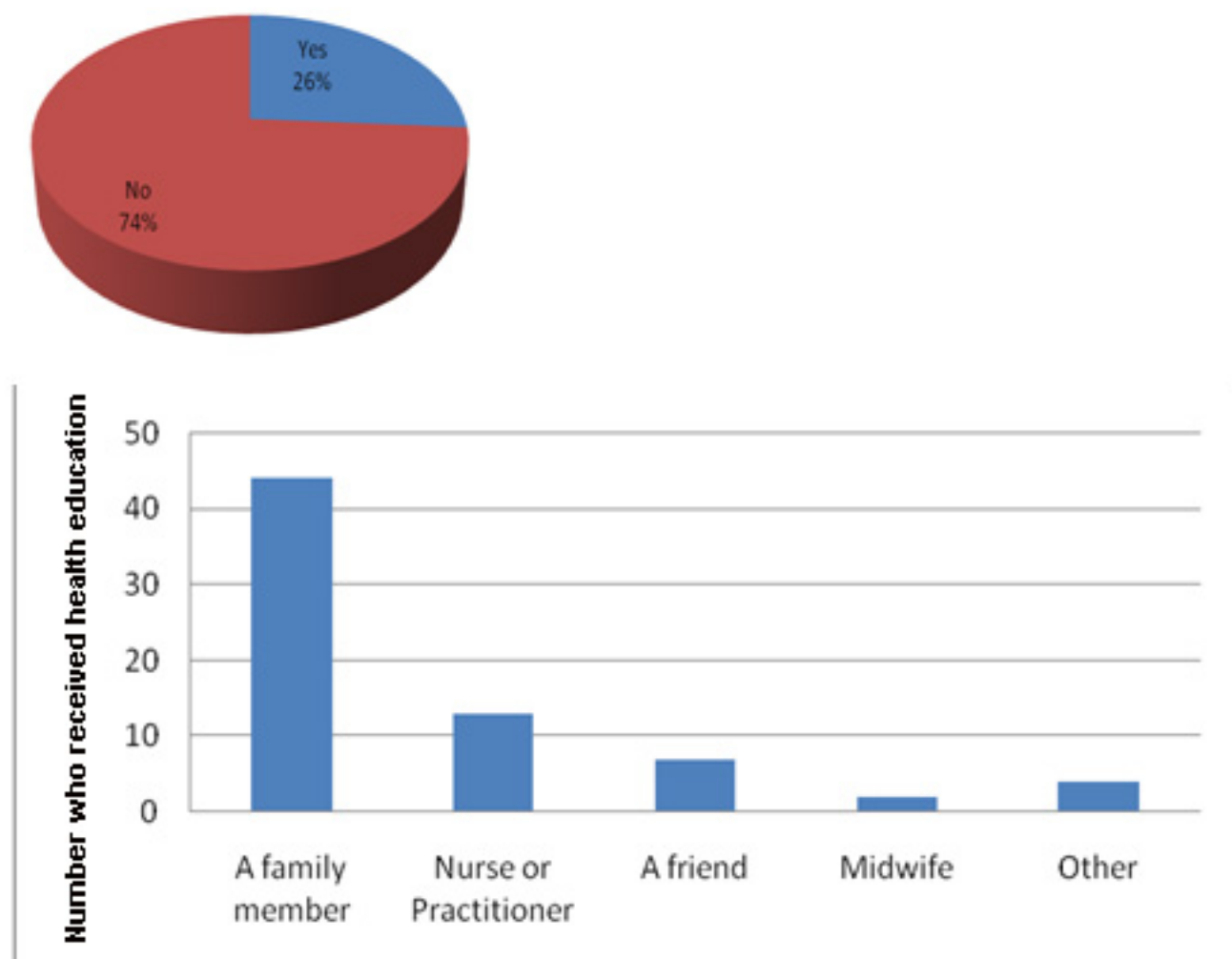
| Weaning practice | No. | % |
|--|-----|------|
| Mixed breast and artificial milk with other liquids and mashed food | 155 | 55.4 |
| Artificial milk with other liquids and mashed food | 53 | 18.9 |
| Breast milk only without any food or liquids like water or juice | 25 | 8.9 |
| Artificial milk only without any food or liquids like water or juice | 11 | 3.9 |

Table 13 shows that at the age of 6 months, most mothers (55.4%) gave their children mixed breast and artificial milk with other liquids and mashed food while (18.9%) gave their children artificial milk with other liquids and mashed food.

Table 14: Participants' practices regarding artificial feeding of their children

| Practices | No. | % |
|---|-----|------|
| Prepare one feeding in each session | 187 | 66.8 |
| Prepare several feedings to be stored in the refrigerator | 40 | 14.3 |
| Use readymade milk for feeding | 13 | 4.6 |
| Used water for the artificial milk: | | |
| Boiled water directly | 65 | 23.2 |
| Boiled water after being left for about 30 minutes to cool | 112 | 40.0 |
| Boiled water after being left for more than 30 minutes to cool | 41 | 14.6 |
| Bottled water | 12 | 4.3 |
| Direct tap water | 1 | 0.4 |
| Other method | 7 | 2.5 |
| Frequency of using artificial milk feeding for children who are on breastfeeding: | | |
| Most of the feedings | 122 | 43.6 |
| Half of the feeding | 53 | 18.9 |
| Once or twice | 51 | 18.2 |
| A few times during one week or several weeks | 10 | 3.6 |

Table 14 shows that most participant mothers (66.8%) prepare one artificial feeding in each session, (14.3%) of mothers prepare several feedings to be stored in the refrigerator. (40%) mothers used boiled water after being left for about 30 minutes to cool down and (23.2%) used boiled water directly (23.2%). Most of the feedings were artificial milk feeding among children who are on breastfeeding (43.6%).

Figure 15: Pie and Bar Charts : Receiving health education on artificial milk preparation

Pie and Bar charts (15) show that only 26.1% of participant mothers received health education on artificial milk feeding. Family members were the main sources for health education on weaning (15.7%), followed by nurses or practitioners (4.6%).

Table 16: Previous Practice of Infant Feeding

| Feeding practices | No. | % |
|-------------------------------|-----|------|
| Feeding of previous children | | |
| Breast and artificial feeding | 135 | 48.2 |
| Breastfeeding only | 51 | 18.2 |
| Artificial feeding only | 17 | 6.1 |
| No previous children | 77 | 27.5 |

Table 16 shows that feeding of previous children of almost half of mothers (48.2%) was mixed breast and artificial milk feeding. Only 18.2% of mothers provided breastfeeding only to their children.

Part IV: Factors affecting practice of infant feeding for infant

Table 17 (opposite page) shows statistically significant differences regarding infants' feeding patterns at birth according to mothers' age ($p=0.002$) with younger mothers (<25 years) offering breastfeeding to their infants significantly more than others (71.1%).

In addition, the proportion of mothers with only one child who breastfed their infants (51.9%) was significantly higher than those who had more than one child ($p<0.001$). Similarly, the proportion of mothers within a smaller family size (<4) who breastfed their infants (50.6%) was significantly higher than those of mothers with bigger family size ($p<0.001$).

Type of infant' feeding was significantly different according to mothers' educational level ($p=0.012$), with those who had university level of education having the highest proportion of breastfeeding their infants (61.9%).

Moreover, type of infant' feeding was significantly different according to fathers' educational level ($p=0.014$), with those who had primary level of education having the highest proportion of breastfeeding their infants (60.9%).

In addition, type of infant' feeding was significantly different according to fathers' occupational status ($p=0.008$), with those who had retired and working occupational status having the highest proportion of breastfeeding their infants (50.0% & 46.5%).

Type of infant' feeding was significantly different according to family's monthly income ($p<0.001$), with those who had <3000 SR monthly income having the highest proportion of breastfeeding their infants (61.5%).

Type of infant' feeding did not differ significantly according to fathers' age nor with mothers' occupational status.

Table 17 : Background Characteristics Factors

| Personal Characteristics | Breastfeeding | | Artificial Feeding | | Both | | P value |
|-------------------------------|---------------|------|--------------------|------|------|------|---------|
| | No. | % | No. | % | No. | % | |
| Mother's age | | | | | | | |
| <25 years | 32 | 71.1 | 3 | 6.7 | 10 | 22.2 | 0.002 |
| 25-35 years | 84 | 39.6 | 20 | 9.4 | 108 | 50.9 | |
| >35 years | 14 | 60.9 | 1 | 4.3 | 8 | 34.8 | |
| Father's age | | | | | | | |
| <30 years | 26 | 57.8 | 4 | 8.9 | 15 | 33.3 | 0.258 |
| 30-40 years | 78 | 42.6 | 18 | 9.8 | 87 | 47.5 | |
| > 40 years | 26 | 50.0 | 2 | 3.8 | 24 | 46.2 | |
| No. of children | | | | | | | |
| One child | 42 | 51.9 | 15 | 18.5 | 24 | 29.6 | < 0.001 |
| 2-5 children | 72 | 49.0 | 8 | 5.4 | 67 | 45.6 | |
| > 5 children | 16 | 30.8 | 1 | 1.9 | 35 | 67.3 | |
| Family Size | | | | | | | |
| <4 | 41 | 50.6 | 16 | 19.8 | 24 | 29.6 | < 0.001 |
| 4-8 | 78 | 45.6 | 8 | 4.7 | 85 | 49.7 | |
| >8 | 11 | 39.3 | 0 | 0.0 | 17 | 60.7 | |
| Mother's education | | | | | | | |
| Illiterate | 7 | 41.2 | 0 | 0.0 | 10 | 58.8 | 0.012 |
| Primary | 14 | 60.9 | 4 | 17.4 | 5 | 21.7 | |
| Intermediate | 8 | 50.0 | 1 | 6.3 | 7 | 43.8 | |
| Secondary | 29 | 33.7 | 5 | 5.8 | 52 | 60.5 | |
| University | 72 | 52.2 | 14 | 10.1 | 52 | 37.7 | |
| Father's education | | | | | | | |
| Illiterate | 3 | 42.9 | 0 | 0.0 | 4 | 57.1 | 0.014 |
| Primary | 8 | 47.1 | 2 | 11.8 | 7 | 41.2 | |
| Intermediate | 6 | 42.9 | 2 | 14.3 | 6 | 42.9 | |
| Secondary | 48 | 35.0 | 13 | 9.5 | 76 | 55.5 | |
| Mother's Occupation | | | | | | | |
| Working | 47 | 50.0 | 8 | 8.5 | 39 | 41.5 | 0.6 |
| Not working | 83 | 44.6 | 16 | 8.6 | 87 | 46.8 | |
| Father's Occupation | | | | | | | |
| Working | 121 | 46.5 | 20 | 7.7 | 119 | 45.8 | 0.008 |
| Not working | 2 | 33.3 | 3 | 50.0 | 1 | 16.7 | |
| Retired | 7 | 50.0 | 1 | 7.1 | 6 | 42.9 | |
| University | 65 | 61.9 | 7 | 6.7 | 33 | 31.4 | |
| Monthly income (in SR) | | | | | | | |
| <3000 | 24 | 61.5 | 6 | 15.4 | 9 | 23.1 | < 0.001 |
| 3000-8999 | 44 | 40.0 | 2 | 1.8 | 64 | 58.2 | |
| 9000-14999 | 38 | 45.2 | 13 | 15.5 | 33 | 39.3 | |
| 15000+ | 24 | 51.1 | 3 | 6.4 | 20 | 42.6 | |

Table 18: Infant' feeding practice factors

| Infant Feeding Practice Factors | Breastfeeding | | Artificial Feeding | | Both | | P value |
|---|---------------|------|--------------------|------|------|------|---------|
| | No. | % | No. | % | No. | % | |
| Prenatal Plan | | | | | | | |
| Breastfeeding | 95 | 76.6 | 7 | 5.6 | 22 | 17.7 | < 0.001 |
| Artificial Feeding | 4 | 28.6 | 4 | 28.6 | 6 | 42.9 | |
| Both | 27 | 23.5 | 10 | 8.7 | 78 | 67.8 | |
| No Plan | 4 | 14.8 | 3 | 11.1 | 20 | 74.1 | |
| Prenatal Health Education | | | | | | | |
| Yes | 93 | 54.4 | 16 | 9.4 | 62 | 36.6 | < 0.001 |
| No | 35 | 33.3 | 6 | 5.7 | 64 | 61.0 | |
| Practice of Previous Child | | | | | | | |
| This is the first child | 42 | 54.5 | 12 | 15.6 | 23 | 29.9 | < 0.001 |
| Breastfeeding | 36 | 70.6 | 3 | 5.9 | 12 | 23.5 | |
| Artificial Feeding | 6 | 35.3 | 5 | 29.4 | 6 | 35.3 | |
| Both | 46 | 34.1 | 4 | 3.0 | 85 | 63.0 | |
| Health Education on Preparation of Artificial Milk | | | | | | | |
| Yes | 33 | 45.2 | 6 | 8.2 | 34 | 46.6 | 0.85 |
| No | 75 | 41.4 | 17 | 9.4 | 89 | 49.2 | |

Table (18) shows statistically significant differences regarding infant' feeding patterns at birth according to the prenatal plan ($p < 0.001$) with mothers who prenatally planned to breastfeed their child offering breastfeeding to their infants significantly more than others (76.6%).

In addition, prenatal health education was significantly different ($p < 0.001$) with mothers who underwent prenatal health education having the highest proportion of breastfeeding their infants than those who had not (54.4%).

Moreover, practice with previous child was significantly different ($p < 0.001$) with mothers who practiced breastfeeding with their previous child having the highest proportion of breastfeeding their infants than those who practiced artificial or both (70.6%).

Type of infant' feeding did not differ significantly according to health education on preparation of artificial milk.

Discussion

The global report of the World Health Organization on infant feeding shows only about 36% of infants aged 0 to 6 months worldwide were exclusively breastfed over the period of 2007-2014 [14].

The present research was looking for the background characteristics of the families of infants, prenatal plan, prenatal education, previous and current feeding practice of mothers of infants to find out its relation to infant feeding knowledge and practice.

Among 280 mothers; (75.7%) of them were aged 25-35 years, (49.3%) of them had a university level of education and (66.4%) of them were not working. The results showed the reversed relationship of low level of education of mothers, large family size and low income to infant breastfeeding. It was surprising in this study to find that the mother's age had a reverse relation to breastfeeding as younger mothers (<25

years) were offering breastfeeding to their infants significantly more than others (71.1%). Moreover, type of infants' feeding whether it was breastfeeding or artificial milk feeding did not differ significantly according to mothers' occupational status.

Similar results are found in a published review of seventeen cross-sectional studies about breastfeeding in KSA in 2014 [8] that showed the factors associated with a high prevalence of breastfeeding and longer duration include increased maternal age, low educational levels, rural residence, low income, and multiparity [10].

Background knowledge of the participants' mothers about benefits of breastfeeding to mothers showed that (61.1%) of mothers knew it bonds the child to the mother, (52.5%) knew it helps in losing weight, (48.9%) knew it prevents cancer and (41.1%) knew it is a natural contraceptive. About breastfeeding benefits for the babies, (62.5%) believe it strengthens the immune system, (53.2%) knew it bonds the child to mother and (47.9%) knew it is the best for the child.

Similar findings were observed in a study done by Ayed A in Abha PHCCs [11] that stated the overall mothers' breastfeeding knowledge was good among more than half of them (55.3%) and excellent among (30.7%) of them while it was unsatisfactory among (14%) of the mothers. Positive attitude towards breastfeeding was reported among (62.2%) of the participants while negative attitude was reported among more than one-third of them (37.8%).

Results of the present study showed that only (46.4%) of infants received breastfeeding alone at birth while (45%) of them received artificial milk feeding alone at birth.

Both the mothers who discontinued the breastfeeding of their infants and those who added the artificial milk to the breastfeeding mostly reasoned that by the breast milk was inadequate for child's need.

Similar results are found in the study done by Dr. Ali Mohamed Al-Binali in Abha [9] which revealed that (31%) of mothers started breastfeeding their children within one hour of delivery, while exclusive breastfeeding for 6 months was reported only by 32 (8.3%) participants. Insufficient breast milk and work related problems were the main reasons given by 169 (44%) and 148 (38.5%) of participants, respectively, for stopping breastfeeding before two years.

Another systematic review in KSA [8] showed a low percentage of exclusive breastfeeding practice of the mothers. This study also reported that the partial (mixed) feeding method was common. The mean duration of breastfeeding has showed a progressive decline over time from 13.4 months in 1987 to 8.5 months in 2010.

In the present study, prenatal planning of infant feeding showed that the percentage of mothers who planned to breastfeed was (44.3%) , while (41.1%) of them planned to give both artificial milk and breastfeeding. The results showed that mothers who prenatally planned to breastfeed their child offered breastfeeding to their infants significantly more than others (76.6%). The main reason to plan to breastfeed was the mother's believe that breastfeeding is the best for the child, while the most reasons to feed them artificial milk were that they did the same with previous child, being busy at work and presence of other children to care for.

The data about receiving prenatal health education of infant feeding was disappointing. Only (53.6%) of the mothers received health education on infant feeding. Education about breastfeeding benefits in particular was given to only (61.1%) of mothers.

Similar results were reported by the Alwelaie YA study [6]. Only (55.8%) of women had received prenatal breastfeeding education, and approximately (54.2%) of women received breastfeeding education when they were in the hospital for delivery.

Another study done by Al-Faleh [7] reported that (41%) of the mothers attended breast feeding health education.

The present study showed that practice of infant feeding in previous child had a significant influence on breastfeeding practice to the index infant. Mothers who practiced breastfeeding with their previous child had the highest proportion of breastfeeding their infants than those who practiced artificial or both (70.6%).

In this study, the percentage of mothers who are adherent to the optimal practice of weaning time at 4-6 months was (46.4%) which is less in comparison with the study done by El Mouzan MI [5]. He reported that (80.8%) were introduced to "solid foods" between 4 to 6 months of age. This difference in practice of weaning among the participants of this study may be due to lack of knowledge regarding correct time of starting weaning.

Only a quarter of the mothers received health education on artificial milk preparation and mainly through the family members. This data can't be compared with any study as none of the studies reported on this issue. This area needs to be addressed more among the pregnant women.

Conclusion

Based on the findings of this study, it is concluded that breastfeeding was more prevalent among the mothers who had a prenatal plan to breastfeed their infants and those who received health education on breastfeeding. Moreover, breastfeeding was significantly higher among the younger mothers and also it was related to higher parent's educational levels, low economic status and lower family size.

Link to Appendix: Infant Feeding Questionnaire

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