

Influencing factors on early complementary feeding and its health consequences on Omani infants: A research study.

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Abstract

Introduction: A descriptive quantitative study conducted in Oman to explore the causative factors of early complementary feeding and its health consequences in particular gastrointestinal and respiratory disorders.

Method: A total of 450 Omani mothers of a healthy baby were selected using convenient sampling from Ministry of Health primary health centres located in Muscat Governorate. Data collected using a structured questionnaire, including closed and open questions. The data analyzed using statistical software SPSS (statistical package for the social science) version 23. T-test was used to analyze the data and to compare the means of quantitative data and chi-square/regression analysis to identify the relationship between the factors.

Results: A 66% (279) of questionnaires were completed and returned. 67.5% of the participants started supplementary feed in the first three months of life. Excessive child cry identified by the mother as the most factor insists them to start the early supplementary feed. There is no significant relationship between early feeding and infant common sickness and admission.

Conclusion: Common factors affecting Omani mothers to start early complementary feeding are; crying vigorously, mother assumption that breast milk is not sufficient milk and working mother. There is no significant relationship between early complementary-fed infant and commonly reported disease.

Keywords: Complementary feeding, Breast feeding, Health consequences.

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Introduction

Adequate nutrition for infants to grow and develop healthy set as one of the core child health promotion. In correspondence with this during last three decades, Ministry of Health (MOH) in Oman and collaboration with World Health Organization (WHO) increased public health awareness of weaning infants from exclusive breast milk after six months only. However, despite health promotions activities, many Omani families display poor adherence to MOH and World Health Organization (WHO) recommendations [1]. In 2015 Annual Health Report (MOH, 2015), 85% of infants at six months are on formula-feeding compared to only 4% at birth. The report also shows that formulae fed consumers has increased from 60.7% in 2005 to 90% in 2012 and decreased slightly to 85.2% in 2013. In 2016, at birth 92.1%, 54.1% at 4 months and 10.2%. Mothers in the region of Al-Dhahirah, Al-Buraimi, Muscat, North and south Batinah reported being less compliant with exclusive breastfeeding of all scored less than 10.2% by six months [2]. However, national statistics provides no figures for BFHI practice between the first and sixth month of life. Similarly, United Nations Children's Fund [3,4], reported that only 31% of infants on exclusively breastfeeding for the first six months of life similar to other neighboring gulf countries. These figures alarm of non-compliance with national policy and indicate a need to explore the factors which influence mother decision of early initiation of complementary feeding. On the other hand, gastro-enteritis and bronchiolitis are a common cause of

hospital admissions in Oman. 17% of infants were admitted to the hospital in the first year of life due to gastro-enteritis and; 17% were admitted due to bronchitis and bronchiolitis. Thus, it was also necessary to explore if those babies started on early complementary feeding may get gastro or/and respiratory disease which is the leading cause of morbidity in the country.

Literature Review

Many worldwide studies show that a remarkable number of families worldwide do not adhere to the World Health Organization (WHO) exclusive breastfeeding recommendations [5-7]. For example; in a large survey conducted by Schiess et al., [6] in five (5) European countries which included a sample of 1,678 healthy term infants, agreed that almost half of the infants received solid food at the age of four (4) completed months. These are incongruent with the study findings of Wright et al., [5] in Glasgow, which agreed that a significant number of infants weaned from exclusive breast milk at the age of three and a half (3.5) months, with 21% commencing before three (3) months and only 6% after four (4) months of age.

Similarly, Arabian Gulf countries reported having a considerable percentage of reluctance to adhere to the feeding advice. This reluctancy to adhere to BFHI policy illustrated in Radwan [8] research. Radwan evaluated breastfeeding and complementary feeding practices of the mothers in the United Arab Emirates (UAE) and compared it with guidelines and recommendations

of the World Health Organization. The outcome was, despite the efforts of the UAE National Health Education Programs, 593 mothers who participated in the study introduced complimentary food before six (6) months of age. Accordingly, this was due to poor adherence to birth spacing. Another factor noted was market pooling with substitute milk products. Generally, amongst the reviewed literature, the factors which influence parents' decision to start feeding are similar to those reported in UAE [8]. The commonly identified factors that could affect the initiation of complementary feeding included; perceptions of inadequate lactation [5,8]; parents' socio-economic and educational level, access to commercial baby foods, inadequate breastfeeding knowledge, lack of guidance and encouragement from health care professionals [7-9]. Likewise, in a survey conducted by Wright et al., [5] parents' perception that their baby was hungry and on feeding mode was considered to be one of the predictors for early weaning. Indeed, these factors, in turn, may promote the early introduction of complementary feeding. A cross-sectional study conducted in Nepal to explore factors influencing complementary feeding practice revealed that illiteracy and poor awareness regarding appropriate feeding practices were contributing factors to early initiation of complementary foods [10]. In Scotland, Alder [9] conducted a prospective cohort study of 338 primiparous women using triangulated data collection strategies to study the factors which interfere with the decision to start weaning diet early. The factors identified were grandmother's advices, friend's encouragements and free samples of manufactured milk from companies.

In addition, Alder et al., [9] claim that exclusive breastfeeding for the first six months of life could give protection against gastro-enteritis and respiratory infection. They added that the early introduction of complementary feeding could increase the risk of cardiovascular problem due to the increase of body fat and body mass index (BMI). Kramer and Kakuma [11] agreed with this argument stating in the findings of a systematic review that infants who continue exclusive breastfeeding for six months or more appear to have a significantly reduced risk of gastrointestinal and respiratory infection. Wright et al. [5] mentioned in a comparative study done in the United Kingdom that diarrhoea is a common risk of early weaning. These findings support the argument that starting solids before age four (4) months has been associated with a higher risk of developing respiratory and gastrointestinal diseases. In Oman, it has been noticed that the main two leading causes of infant morbidity as per Ministry of Health 2012 statistical report are respiratory problems (21.8%) and gastrointestinal (15%) of the total hospitalized male infant. Similarly, female infants have almost close percentage where in 19.3% accounts for respiratory problem and 17% of gastrointestinal problem (Ministry of Health Statistical Report 2013). There are some international studies conducted with a similar purpose which has shown that many families introduced complementary feeding for their infants before six months due to social and educational factors. So far, no similar study done in Oman, especially it has a unique social and cultural context which could be an influencer in the mother's decision in starting early complementary feeding. However, factors affecting adherence to the international recommendation of exclusive breastfeeding up to six months is

not studied thus far in Oman. The relationship between common childhood sickness (gastrointestinal and respiratory problems) and early initiation of solid foods to infants had no attention from researchers during the last two decades. This indicates the need to study further the factors influencing Omani mothers' decision on the initiation of complementary feeding as well as its effects on the infant's health status.

Statement of the problem

The Annual Health Report [2] shows 85% of Omani infants at six months on complementary feed compared to only 4% at birth. On the other hand, the same record shows an increase in the childhood sickness of gastrointestinal and respiratory diseases. The raised inquiry from these health facts, what are the factors affecting mothers' decision to start early feeding? Furthermore; is there any relationship between early feeding and respiratory and gastrointestinal diseases?

Research questions

- What are the factors influencing Omani mothers' decision to start complementary feeding on their healthy full-term infants before six months?
- What are the consequences of early initiation of complementary feeding on infant's health status indicated by the outpatient visit and hospital admissions?

Scientific hypothesis

There is a relationship between early complementary feeding and increase the incidence of gastrointestinal and respiratory childhood diseases.

Aim of the study

The study aims to explore the causative factors and the health consequences of early complementary feeding before six (6) months on Omani Infants and to identify the relationship between early complementary feeding and childhood gastrointestinal and respiratory disorders.

The main objectives are:

- Evaluate Omani mothers' level of compliance with the MOH policy of exclusive breastfeeding in the first six months of life.
- Determine the causative factors which influence Omani mothers' decision on starting complementary feeding before six (6) months of age.
- Identify the consequence of the early introduction of complementary feeding on infant's health status.

Methods

A descriptive quantitative study was conducted in Ministry of Health primary health centres in Muscat, namely Al-Wattaya, Al-Seeb, Al-Khwair, Al-Amerat. These provinces were purposively selected because of the population are Omani citizens from a different cultural background.

Population

The sample was selected using convenient sampling. All Omani

mothers with healthy infants were recruited from five health centres located in Muscat (1 health centre from each wilayat). These five health centres were purposively selected as they have infants follow up clinic where nutrition states (their growth and development and overall health status) evaluated. In addition, Muscat is a city where people from different background are living in it; such cultural diversity will enrich the findings of the study. The inclusion criteria were Primi and multipara Omani mothers with a healthy baby. Vulnerable mothers with special needs and adolescence mothers were excluded from the study. The exclusion criteria will also include non-Omani mother due to contextual diversity.

Sample size

All the infants at the age from 2-6 months who have an appointment for growth and development follow up at the five selected health centers from November 2018 to January 2019 were included. The average mothers are visiting maternal, and child clinic is 22 mothers/daily who's their children six months and less. However, this number differs from the health center to another. Therefore, an average of four mothers per day completed the questionnaire. Some mothers showed no interest to participate in the study due to the restriction of time.

Data collection

Structured questionnaires were used consisting of a multiple-choice, 5 points Likert scale and Open-ended questions. The questionnaire subdivided into three parts; the first part of the questionnaire structured to identify respondents' socio-demographic and socio-economic status (i.e. age, level of education, place of childbirth, occupation, marital status, sex of the baby, age of the baby when complementary feeding started, type/s of complementary feeding, frequency of initiating complementary feeding). The second part comprises questions subdivided into 5 components as to the respondent's knowledge, cultural traditions and beliefs, practices/experiences, barriers/other related factors influencing the non-compliance of the recommended age in the initiation of complementary feeding. The second part included questions and statements that will identify if early initiation of complementary feeding is associated with the health status of the infant. The questionnaire was validated by five experts from the Higher Institute of Health Specialties and external experts. The participants and experts provided comments and suggestions regarding the questionnaire content and structure and accordingly adjusted. The questionnaire was piloted to ensure accuracy of questions; and its clarity, and check the consistency of questions, and to identify ambiguous items. It was distributed to a group of 15 mothers who were not involved later in the main study. Returned questionnaires were reviewed and necessary changes made.

Settings and time

The questionnaire was distributed to mothers who were willing to participate by researchers/immunization nurses in the five selected health centers.

Ethical consideration

Information related to research purpose and objectives were explained in the information sheet attached to the questionnaire.

Anonymity was ensured by not mentioning the name, and the coding number was used for analysis purpose. Completed questionnaires and analysis transcripts kept in a secure place. The Research Ethical Committee approved the study at the Ministry of Health in Sultanate of Oman. No direct or indirect coercion or pressure on the participant. Participation was voluntary, and the participants had the right not to participate. Collection of data was done when the mothers are available on the health centre or hospital for follow-up.

Data management

The structured questionnaire analyzed using computer SPSS (statistical package for the social science) version 23.

Statistical analysis

Three types of analysis were used, including descriptive statistics, comparing the means and correlation analysis. Analysis using descriptive statistics undertaken to understand the characteristics of the sample, e.g. Mean, Median, Range and Standard Deviation. E-Pearson product-moment correlation matrix was used to identify mothers' beliefs that significantly correlated with the behaviors of introducing solids at six months. Then, to identify those beliefs that make independent contributions to the behavior, within each belief-based measure, the significant key beliefs were entered in a multiple regression analysis. Multiple logistic regression will also be used to explore the relationship between the introduction of solids diet before four months and each explanatory factor. Finally, all of the key beliefs that made an independent contribution to the prediction of behavior were entered into a final regression. The analysis examined the proposed predictors of mothers' intentions to introduce solids at 6 months. Indeed, interpretation and analysis of data will also be entered in using a table format.

Results

The data was collected between November 2018 and February 2019. A total of 450 questionnaires distributed to the mothers of children younger than six mothers. The number of returned questionnaires is 297 (74.25% response rate) divided to 40.1% (N114) primipara mothers and 58.9%. 170 Multipara mothers.

Demographic data

Majority of the participants (82.6%) are from medium class family. Working mothers counted for 56.1% of the total participants compared to 41.7% of a housewife (Figure 1). 47.8% of the participants with a general national diploma and 42.8% with a graduate degree (Figure 2).

Health education and mother knowledge: Majority of the participants of around 66.9% indicated that they did not attend any health education program. 31.5% said they attended health education in health centres, postnatal at a hospital or through social media and YouTube. Mother knowledge about the initiation of complementary feeding as to MOH/WHO breastfeeding guidelines assessed with 4-point Likert scale (strongly agree to disagree). 81.8% of mothers agreed that the correct age initiates complementary feeding based on the Ministry of Health guidelines in six months. 48.9% of the mothers agreed that Infants could survive with breast milk alone

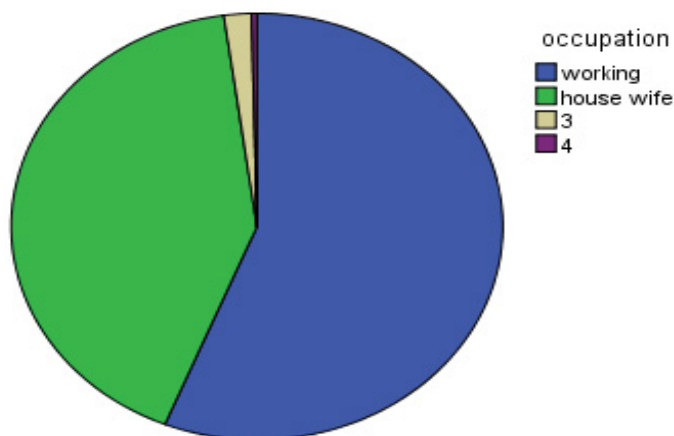


Figure 1. Percentage of participants according to occupation.

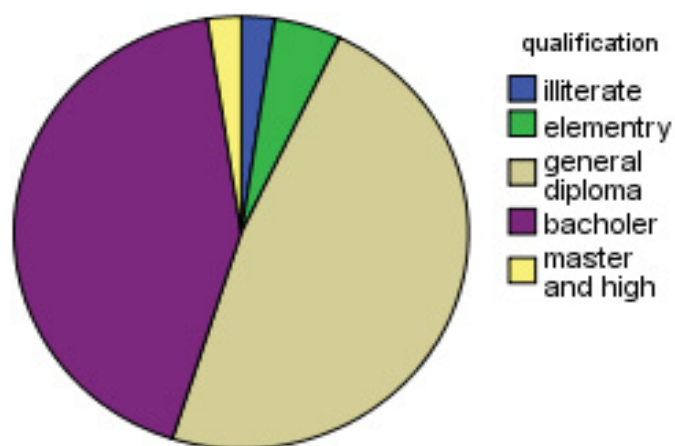


Figure 2. Percentage of participants according to qualification.

even without water, while 49.7% of the mothers disagree with this concept (Figure 3).

Omani mothers' level of compliance with the policy of exclusive breastfeeding in the infants first six months of life:

The results showed that 32.5% of the participants started the complementary feed at six months. Others started before six months 34.3% at five months, 25.7% at four months and 6.8 less than three months (Table 1 and Figure 4).

The causative factors which influence Omani mothers' decision on starting complementary feeding before six (6) months of age

95.9% of the mothers had a good intention to breastfeed their child at birth. Grandmother had more influences on mother decision on starting early complementary feeding compared to other relatives. Mother-in-law has an influence of 15.6% and relatives are almost similar of 14.8%. Self-decision due to child cry and hunger was one of the significant reasons, as stated by mothers (Figure 5). The factors affected mothers to start early complementary feeding, as stated by the participants are; insufficient breast milk 35.1%, crying and hunger 31.2%, working mother 28.6. only 1.3% considered lack of information as a factor on starting early complementary feeding (Figure 6).

Health status

The results show that 49.4% of infants involved in the study

were taken during their first months of life to the health care institution, and 50.2% did not visit any health institution. 89.7% of those who visited health care institutions was as an outpatient, and only 9.8% of them were admitted to hospital. Correlation between the month of starting complementary and health institution visit showed -0.002 Pearson correlation with 0.975 2-tailed p test. A most common condition is cough/wheeze of almost 24%, diarrhoea 15.8%, constipation 10.8 and abdominal pain or distention 10.8% (Figure 7).

Discussion

Exclusive breast feeding considered as an essential practice to maintain good health status among infants. Oman is one of the recognized countries which supports this initiative and discourage early complementary feeding before six months. However, despite this national initiative and effort, early

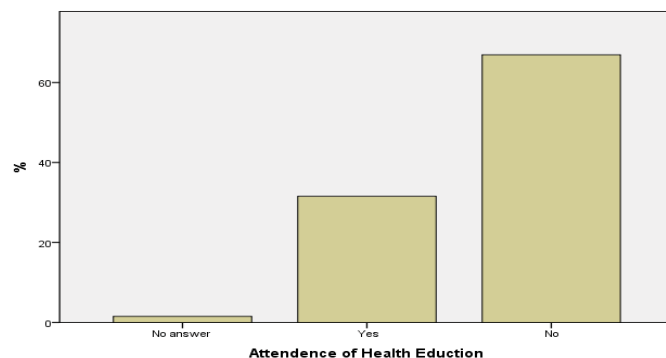


Figure 3. Attendance of health education.

Table 1. Correlation between the month of starting feed and health visit.

Variables		The month of starting complementary feeding	Health institution visit in the last 6 months
The month of starting complementary feeding	Pearson Correlation	1	-0.002
	Sig. (2-tailed)		0.975
	N	280	252
Health institution visit in the last 6 months	Pearson Correlation	-0.002	1
	Sig. (2-tailed)	0.975	
	N	252	263

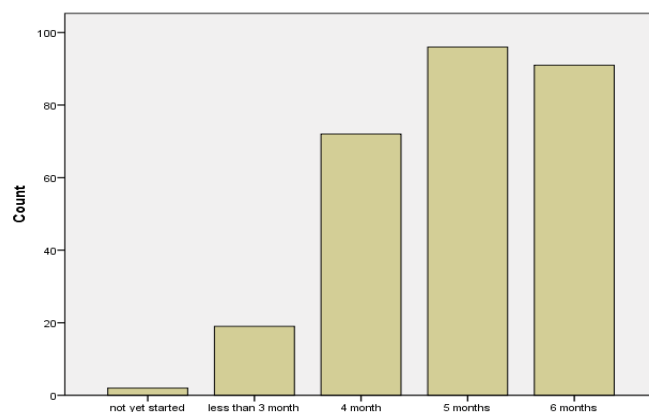


Figure 4. Start of complementary food.

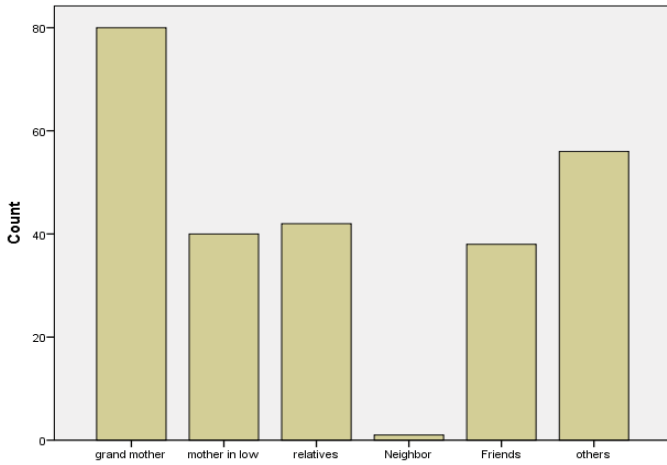


Figure 5. Influencers of early complementary feeding.

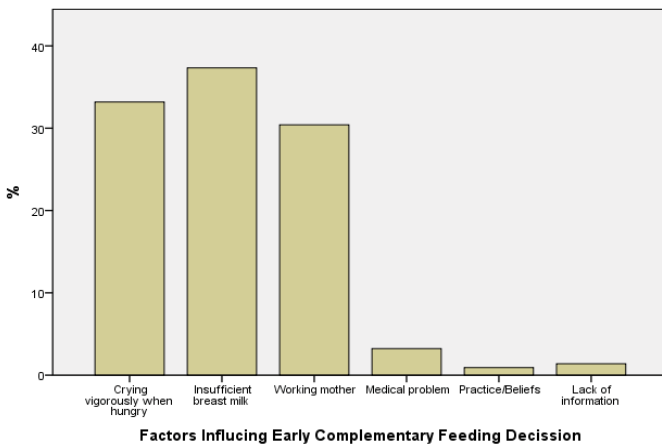


Figure 6. Factors Influencing complementary feeding decision.

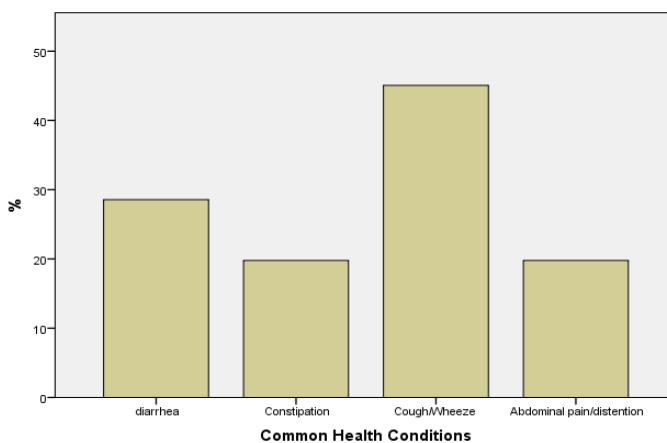


Figure 7. Health status affecting complementary feeding.

complementary feeding is still practised largely in the country. The finding of this study agreed that early complementary feeding still practised by some mothers. Which is in line with previous researches around the world and Gulf countries [7,9,12,13] the study findings reveal that around 67.5% of infants were kept on complementary feeding before six months. Interestingly 82% of mothers who participated in the study were aware of the correct age to start complementary feeding, which is six months. The causative factors of starting early food based

on mother are; mothers felt that they do not have enough breast milk (37%), a vigorous cry of the baby and (33%). One of the significant factors is the working mother of 30%. Elder people in the family, mainly grandmothers and mother had a major influence in the decision to start complementary feeding of about 30%. Interestingly, some mothers state that the decision to stop exclusive breastfeeding was by made by themselves and their spouse and not a decision of other family members or friends. Although many started early complementary feeding, only 10% of the infants got admission to hospital for different health conditions, including respiratory and gastrointestinal conditions. The majority were admitted due to chest wheeze and cough, followed by diarrhoea. The data showed no relationship between early complementary feeding and hospital admissions. The present study has a strength that it is the first study of its own in Oman to explore factors related to early complementary feeding. It has some possible limitations, including the descriptive nature of the study and the difficulty to establish a cause and effect relationship. Also, the results are data reported by participants retrospectively, which may give a chance for a bias of recall. However, the data were collected when infants were around the timing of starting the complementary feeding. In addition, this study adopted the WHO recommendation of complementary feeding timing which defines it as the introduction of complementary feeding before six months. Hence, the findings of this study are exclusive to the population with similar cultural context.

Conclusion

In conclusion, exclusive breastfeeding until six months of age in Oman faces social and behavioural challenges. At the real-life, parents are influenced by their community, families and friends. The factor within Oman is working mother, inability to calm child cry and believes that child is hungry despite the breastfeed. The work of the mother and her absence from home constitute a pressure on her to replace breast milk with manufactured milk. Health awareness of managing child cry and signs of child hunger push some parents to add manufactured food to calm their child. Current health promotion needs to consider the cultural and social factors. Working mothers need to be supported with possible policies to allow them for enough time to breast their children. The study also identified there is no significant relationship between complementary-fed infant and commonly reported disease. Future studies in this could provide more evidence.

Recommendations

A better strategy to educate the mother of managing child cry as well as learning lactation stimulators and good nutrition can contribute to mother confidence and prevent early complementary feeding. Hence, MOH institutions should be more specific in health education and focus on these two health education needs.

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