DETERMINANTS OF BOTTLE USE AMONGST ECONOMICALLY DISADVANTAGED MOTHERS

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Background: There is documented evidence of increased risk of infant mortality in formula fed infants versus breast fed babies. The hazards of bottle use for infant feeding, especially in underprivileged communities, are also well known. As the issue of bottle use is directly related to childhood survival and mortality, there is legislation against propagation of bottle-feeding in Pakistan. **Methods: Objectives:** To obtain information about determinants of bottle use for infant feeding in a low-income periurban community. **Design:** Community based cross-sectional study. **Results:** 150 mothers with infants up to one year of age were included in the study period from October 03 to March 04. Out of these 102 mothers were found using bottle for infant with or without breast-feeding. The tendency to use the bottle increased in relation to child's increasing age. Only 17% of the infants under the age of 3 months were offered bottle, it was 69% between 4 to 6 months and it increased to 76%.in infants from 7 months to 1 year. The attributes associated with increased bottle use were mother's older age, illiteracy and increased parity. **Conclusion:** Bottle use is a public health issue in poor and illiterate mothers of developing countries. While, in Pakistan, laws are enacted against its propagation, we need community-based strategies to bring about a socio-cultural shift in the growing prevalence of bottle use found in the study.
Key words: Infant feeding in developing countries, bottle use, breast milk substitute.

INTRODUCTION

For centuries infants were breastfed especially in Islamic world as per Quranic instructions. At the beginning of last century various forms of processed animal milks were designed and manufactured to be a medicinal nutrional tool for babies who were unable to breast feed. Soon the widespread availability of infant formulae and feeding bottles introduced a new trend in infant feeding pattern. The use of bottle started initially in the west and soon became a widespread phenomenon globally.[1] As a result, bottle-feeding is now a socially and culturally accepted norm in underdeveloped countries including Pakistan.[2-5]

The bottle is used not only to give milk but all other types of fluids e.g. water, tea, juice etc.[6] The semisolid cereals are also diluted as a drink to be given through the bottle. The adverse effects of bottle-feeding are well known. They are more profound in the under developed world due to limited economic resources, lack of clean water, unhygienic surroundings and illiteracy amongst mothers.[7] The prevalence of unsuitable and/or low-quality bottles and teats further aggravate the situation in developing countries.

The hazards of bottle-feeding include over dilution of milk with resultant malnutrition. There is increased susceptibly to diarrhea and other GIT infections, ear infections, [8-10] allergic tendency[11] and dental caries. [12] Recently a detailed comprehensive report, using data both from developed and developing countries, highlighted the increased relative risk of infant mortality amongst formula fed versus breast-fed infants. In Pakistan, the risk of IMR was estimated to be 4.5 times higher in bottle fed babies as compared to breast-fed. [13]

The report also highlights that the extent, severity and frequency of childhood illnesses is more in formula fed infants as compared to breast fed babies.

Many studies on infant feeding practices in Pakistan have found the declining trend and decreased duration of exclusive breast-feeding. [14-17] However no study has particularly focused on determinants of bottle-feeding amongst low-income urban communities.

MATERIAL AND METHODS

The present study was undertaken with the objective to get information about infant feeding practices including the use of bottle and their determinants, from economically underprivileged mothers in a Peri-urban area of Karachi, Pakistan.

This is part of larger cross sectional study on infant feeding practices carried out in "well baby clinic" of Jinnah Medical College Hospital situated in Korangi industrial area of Karachi from October 03 to March 04.

The community/residential localities around the factories mainly consist of multi ethnic factory workers.

150 mothers were interviewed about the child current feeding practices including the use of bottle using a structure interview schedule.

The data was analyzed on Epi-Info ver.6.0 computer package. In all statistical analysis P values < 0.05 were considered significant.

RESULTS

At the time of study, out of 150 infants, 102 (68%) were being offered the bottle for feeding purposes.

Table 1 shows some of the factors of index children with bottle-feeding.

Table 1: Factors of index children associated with Bottle feeding

Characteristics of Index children		Subjects No. (%)	Bottle feeding No. (%)	P-Value
Place of Delivery	Home	81 (54)	118 (72.8)	0.374
	Hospital	20 (13.3)	24 (60.0)	
	Maternity home	49 (32.6)	62 (63.3)	
On birth: Weight	Normal	129 (86)	168 (65.1)	0.783
	Low	21 (14)	36 (85.7)	
Age (in months) at the time of study	≤ 3	17 (11.3)	03 (17.6)	0.001
	4 – 6	32 (21.3)	22 (68.8)	
	7 – 12	101 (67.3)	77 (76.2)	

There were 17 infants under 3 months out of which only 3 (17.6%) were bottle-fed. Between 4-6 months there were 32 infants and 22 (68%) were being fed with bottle. A substantial increase (76%) was noted in the extent of bottle use after 7 months of age (p value. 0.001)

The place of delivery and birth weight did not affect prevalence of bottle use. Thus no statistical difference was found in use of bottle amongst babies born at home, hospital and maternity home. Bottle use was noted in 65% of normal birth weight infants in comparison with 85.7% infants with low birth weight.

Table 2 shows socioeconomic and demographic characteristics of mothers and families of bottle-fed babies.

Seventy person of the sample population had an income of up to or below Rs: 5000/- per month. The mothers were mainly housewives out of which 50% were illiterate. The mothers in age group above 30 showed preference for using a bottle (p value 0.001). The prevalence of bottle use in illiterate and less educated mothers was higher than more educated mothers (p value0.02). A large majority of mothers were housewives (91%), while only 9% were employed outside. No statistical difference was noted in the 2 groups in terms of bottle use.

Bottle use was found to be higher in grand multipara women (p value 0.015). This trend was also noted if family size was large. (p value 0.008); however, the type of family i.e. nuclear or extended, did not matter.

The important factors associated with bottle use were age of infant, uneducated multipara mothers and large family size.

Table2: Socioeconomic and demographic characteristics of mothers and family associated with bottle feeding

Characteristic of Mothers and Family		Subjects (n=150)	Bottle feeding (n=150)	P-Value
Age (in years)	Under 30	90	52 (57.8)	0.001
	30& above	60	50 (83.3)	
Education	Illiterate	64	46 (71.9)	0.029
	Deeni Taleem (Quran)	11	10 (90.9)	
	Primary	53	38 (69.8)	
	Secondary	11	05 (45.5)	
	High	11	04 (36.4)	
Occupation	House wife	137	94 (68.6)	0.832
	Work out side	13	08 (61.5)	
Parity (Live Children)	< 3	62	34 (54.8)	0.015
	3 – 4	48	37 (77.1)	
	≥ 5	40	31 (77.5)	
Family Income (in rupees)	< 5000	95	67 (70.5)	0.490
	≥ 5000	55	35 (63.6)	
Family members	≤ 5	75	43 (57.3)	0.008
	> 5	75	59 (78.7)	
Types of family	Nuclear	83	57 (68.7)	0.767
	Extended	67	45 (67.2)	

Statistically significant P value < 0.05.

DISCUSSION

Giving milk with bottle is not a simple, straightforward or safe procedure as is commonly believed. The breast milk substitute should comprise of a precisely reconstituted formula or properly sterilized fresh milk. The other important essentials are availability of fuel, clean water, appropriate equipment and time for preparation, with preferably refrigeration facilities. The left over milk in the bottle should be discarded; however, it is observed that, in poor communities of Pakistan, the leftover milk is

often given for subsequent feeds due to limited resources, which favors the growth of pathogens.

Early introduction of other milk results in earlier termination of breast-feeding. Out of 150 infants in the study, 70% were being bottle-fed. Another study from Lahore[14] reported similar findings in which bottle was used to feed 82% infants either exclusively or in combination with breast-feeding. The study reported that mixed breast and bottle-feeding was found to be the most common practice in infancy. This approximates the bottle-feeding pattern found in urban areas of Bangladesh.[18] Bottle use appeared to get more common as the age of infant increased. This is similar to the figures reported in other studies from Pakistan. [15-17] shows an increase upto 80% after six months and other studies from all provinces of Pakistan show the same trend.

Although the place of delivery was not statistically significant with regard to bottle-feeding, a large number of infants born in hospital (60%) and maternity homes (63%) were also bottle-fed. This reflects that the international lactation policy of WHO/UNICEF, and approved by Government of Pakistan, is yet not fully implemented even in hospitals in Pakistan. It emphasizes the need for wider campaign of baby friendly hospital initiative launched in 1992 internationally by WHO and UNICEF for protection, promotion and support of beast feeding.

The illiterate and less educated mothers in the study were found to be more in practice of using bottles. This pattern showed a different trend from that reported in an all Pakistan study conducted in 1991-92. [15] At that time bottle was more common in educated women in urban areas. The lower incidence of bottle-use in relatively educated mothers in the present study could be attributed to increased awareness and understanding of the advantages of breast-feeding. It must be noted that uneducated mothers in rural areas still prefer breast-feeding[17] which highlights the rural / urban difference.

Employed women have been found to use bottle more than housewives[19] but in this study 91% mothers were housewives out of which 69% used bottle for feeding. The prevalence of increased bottle-feeding amongst non-working mothers is also reported from other developing countries.[2] This illustrates a growing trend of increased bottle use in urban communities.

Bottle use was found to be high in multipara mothers. This may be due to mothers' impaired nutritional reserves[20]; it is possible that they start bottle-feeding when they find their own milk insufficient. Such mothers were also noted to have lack of awareness about giving semisolids after six months.[21] In large families mothers are usually busy with household chores. With many caretakers of the child in the house, feeding with bottles might be convenient.

The findings of the study show that bottle feeding, earlier common in well off families only, is now becoming more wide-spread in less privileged communities. This could be a real threat to the health of children in these communities.

Reasons for initiation of bottle use were not explored. Perceived inadequate quality and quantity of breast milk has been noted in other studies. Convenience could be another factor. Failure of lactation should be managed on individual basis[22] as exclusive breast-feeding is recommended till six months and later semisolids should be introduced as part of infant's diet.

CONCLUSION

The potential distressful effects of bottle-feeding on health and survival of children have led to a global campaign against bottle use. [23] In Pakistan, there is a promulgation of an ordinance by the President of Pakistan, which prohibits the propagation not only of breast milk substitutes but also bottles, teats and pacifiers.[24] However, in order to bring a socio-cultural change in attitudes and related infant feeding practices we need community-based strategies and campaigns to discourage bottle use for infant feeding in parallel with promotion of breast-feeding practices.

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