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Research Article

STUDY OF THE FACTORS THAT ASSOCIATED WITH MOTHERS' DECISIONS TO CHOOSE CERTAIN ARTIFICIAL MILK FOR THEIR INFANTS, MADINA, SAUDI ARABIA

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Abstract:

Background: Exclusive breast feeding has several advantages for both infant and mother. It protects child from several disease and protect mother from cancer. Alternative formula has been manufactured to replace breastfeeding in case of presence of breastfeeding barriers.

Aim: To determine the factors that influence choosing a specific formula brand, number and reasons for changing brands, and what are the most common brands used among the mothers in Medina

Methods: This study is cross sectional, it was conducted on mothers who use formula partially or completely in Al-Madina, Saudi Arabia, using an online survey.

Results: In this study, there were 34.4% mothers using complete artificial milk, whereas 65.6% reported partial use. The most common cause of using formula was physician advice (46.1%). The main source of information about artificial milk was pediatrician and physician (67.5%). Physician advice was the main factor that affects the decision of mothers to choose certain type of formula (67.7%).

Conclusion: Partial formula use was very common among mothers, mothers were affected by physician advice in using formula in general and using certain type, however changing the type of formula was more prone to be affected by the infant needs.

Keywords: Formula, Decision making, Factors, Saudi Arabia, Mothers.

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INTRODUCTION:

Breastfeeding provides ideal nutrition to the baby, which is required for healthy growth and development [1]. It was reported that breastfeeding resulted in mortality reduction among preterm infants [2-4], and provide protection against early onset diabetes mellitus [5], and obesity [6,7] and raised adult blood pressure [8]. Also, breastfeeding is beneficial for mother, it protects mother against ovarian cancer [9], osteoporosis [10] and premenopausal breast cancer [11,12]. There is infant formula available in markets to be alternative to human milk in case of breastfeeding is not possible [13]. Infant formula is associated with several risks to health [14-17]. Several studies national and international showed that the prevalence of breastfeeding in Saudi Arabia was low, where less than 10% of Saudi mothers breastfeed their babies up to 6 months of age, no exclusive formula or partial breastfeeding are the trend for infant nutrition in the first 6 months of age [18-25]. There is a broad range of artificial milk developed for baby nutrition [13]. In developed countries, less than 5 brands of formula are presented in each country, whereas Drug Agency (SFDA) resulted in more than 20 brands available for infants [13]. There are factors influence the selection of certain product including personal, social, cultural and physiological factors [26]. Several factors were reported to influence mothers to select formula at Medan Johor region including advertising, good knowledge and information from health care providers [27]. Another study mentioned that the decision to select infant formula was dependant on several factors such as social and personal factors [28]. The present

study aimed to investigate the factors that affect mothers' decision to choose certain type of formula.

SUBJECTS AND METHODS

Subjects and study design:

This study is cross sectional, it was conducted on mothers who use formula feeding in Al-Madina city, Saudi Arabia. The inclusion criteria were mothers who use formula feeding partially and completely. The exclusion criterion was mothers who breastfeeding only. The study was performed using an online survey available on social media. The confidentiality and privacy were maintained by data coding to eliminate identifying data with personal information.

Statistical analysis:

Statistical analysis was done using SPSS 16.0 statistical software package. Results were presented as mean and standard deviation for quantitative data, frequencies and percent for qualitative data. T-student test was used, P-value < 0.05 was significant.

RESULTS:

The present study included 674 mothers, the mean \pm SD age of mothers was 33.8 ± 7.4 , mothers with age range of 31-40 years old were more dominant among other participants 302(44.8%). Most of mothers 533(79.1%) had university education, the large majority were Saudi 661(98.1%) and more than one third 233(34.6%) had income of 5000-10000 SR, table 1 shows the details of demographics.

Table 1: Demographics of mothers

Demographics	N (=674)	%
age		
<=30	276	40.9
31-40	302	44.8
≥ 40	95	14.1
mean \pm SD	33.8 \pm 7.4	
Education		
primary	11	1.6
secondary	88	13.1
intermediate	16	2.4
University	533	79.1
Postgraduate	26	3.9
Nationality		
saudi	661	98.1
Non-saud	13	1.9
Income		
<3000	119	17.7
3000-5000	110	16.3
5000-10000	233	34.6
10000-15000	159	23.6
>15000	53	7.9

The information about formula used and characteristic of children are shown in table2. There were 232(34.4%) mothers using complete formula, whereas 442(65.6%) were using formula with breast feeding. The large majority of mothers 640(95%) were using powder formula, 311(46.1%) reported using this certain type according to physician's advice. There were 456(67.7%) reported changing type of milk and

the time of change ranged from 1-11 months with a median of 2 months, the most common cause of change was that the old type was refused from the child and cause problems for him 175(38.4%). There were 265(39.3%) mothers stated that 2-3 of their children used artificial milk and the mean age of the infant when used artificial milk was 1.9 ± 1.2 months.

Table2: Characteristic of artificial milk used and children

Characteristics of milk and children		N (=674)	%
Pattern of Artificial milk use	complete	232	34.4
	With breast feeding	442	65.6
Type	powder	640	95.0
	Ready use	34	5.0
Number of children use artificial milk	1	237	35.2
	2-3	265	39.3
	>3	172	25.5
	Median (range)	2(1-11)	
Age in months of infant when use artifial milk	Mean \pm SD range	1.9 \pm 1.2 Days to 11 months	
Causes of using this type	Relatives and friend advice	185	27.5
	Physician advice	311	46.1
	Hospital decision	67	9.9
	As cheap	15	2.2
	Relieve my infants and contain antiemtics	91	13.5
	Pharmacist	5	0.7
Do you change type of milk	No	218	32.3
	Yes	456	67.7
Times of change milk	Median (range)	2(1-11)	
Causes of change	Relatives and friend advice	43	9.4
	Physician advice according to infant medical condition	147	32.2
	Old type was refused from my child and cause him problem as diarrhea, cnstipation , colic	175	38.4
	New type is More cheap	16	3.6
	New type contain more nutrients	63	13.8
	Advertisement of the new type	12	2.6

The most common source of information for mothers about artificial milk was pediactrian and physicians 455(67.5%) followed by social media 234(34.7%), whereas the least common sources were nurses 11(1.6%) and dietciaians 4(0.6%), figure1. The factors which may affect the decision to use certain formula

are shown in figure2. It was found that physician advice was the most common reason 456(67.7%), followed by the nedd of the infant to certain type because of his health condition 223(33.1%), then income 143(21.2%) and offers on products during buying formula 67(9.9%).

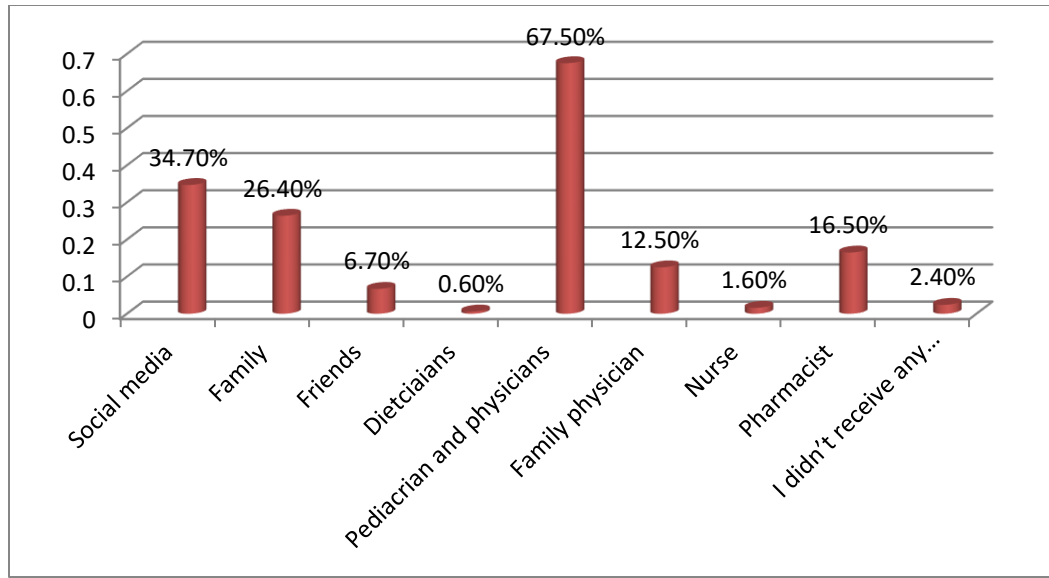


Fig1: Sources of information about artificial milk

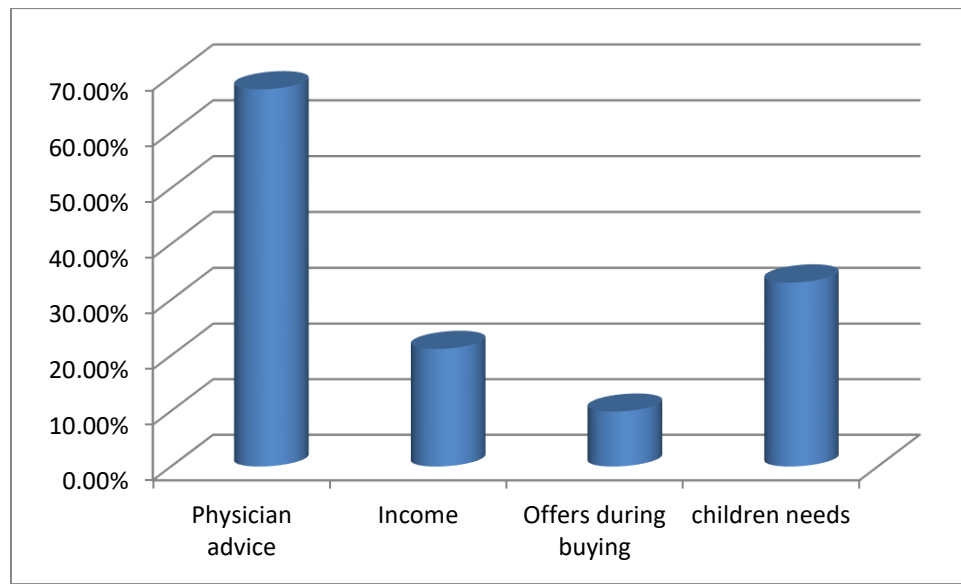


Fig2: Factors affecting the decision of choice

The correlations between studied factors and different demographics were investigated (table3-5). There was a significant association between age and physician advice (P -value=0.007), mothers with age range of 31-40 where the most participants reported advice of physicians as the affecting factor, age had no

association with other factors (P -value>0.05). Income significantly was associated with offers during buying (P -value<0.001) and level of education was significantly associated with offers during buying (P -value=0.001).

Table3: Correlations between age and factors

	Factors		Age			P- value
			<=30	31-40	>40	
Did your physicians advice you before to use certain type	No	N	108	86	24	0.007
		%	39.1%	28.5%	25.3%	
	yes	N	168	216	71	
		%	60.9%	71.5%	74.7%	
Does you income influence your choice for certain type of formula	No	N	223	231	76	0.427
		%	80.8%	76.5%	80.0%	
	yes	N	53	71	19	
		%	19.2%	23.5%	20.0%	
Do offers during buying formula affect you to select certain typ?	No	N	244	278	85	0.327
		%	88.4%	92.1%	89.5%	
	yes	N	32	24	10	
		%	11.6%	7.9%	10.5%	
Did your children need certain type of formula because of his health condition?	No	N	192	198	61	0.487
		%	69.6%	65.6%	64.2%	
	yes	N	84	104	34	
		%	30.4%	34.4%	35.8%	

Table4: Correlations between Income and factors

	Factors		Income					P value
			<3000	3000-5000	5000-10000	10000-15000	>15000	
Did your physicians advice you before to use certain type	No	N	49	33	69	51	16	0.246
		%	41.2%	30.0%	29.6%	32.1%	30.2%	
	yes	N	70	77	164	108	37	
		%	58.8%	70.0%	70.4%	67.9%	69.8%	
Do offers during buying formula affect you to select certain typ?	No	N	95	96	217	150	49	<0.001
		%	79.8%	87.3%	93.1%	94.3%	92.5%	
	yes	N	24	14	16	9	4	
		%	20.2%	12.7%	6.9%	5.7%	7.5%	
Did your children need certain type of formula because of his health condition?	No	N	78	77	158	104	34	0.9
		%	65.5%	70.0%	67.8%	65.4%	64.2%	
	yes	N	41	33	75	55	19	
		%	34.5%	30.0%	32.2%	34.6%	35.8%	

Table5: Correlations between education level and factors

Factors			Education level					P value
			primary	University	secondary	postgraduate	intermediate	
Did your physicians advice you before to use certain type	No	N	4	175	32	5	2	0.222
		%	36.4%	32.8%	36.4%	19.2%	12.5%	
	yes	N	7	358	56	21	14	
		%	63.6%	67.2%	63.6%	80.8%	87.5%	
Does you income influence your choice for certain type of formula	No	N	6	429	63	21	12	0.103
		%	54.5%	80.5%	71.6%	80.8%	75.0%	
	Yes	N	5	104	25	5	4	
		%	45.5%	19.5%	28.4%	19.2%	25.0%	
Do offers during buying formula affect you to select certain typ?	No	N	7	492	74	21	13	0.001
		%	63.6%	92.3%	84.1%	80.8%	81.2%	
	Yes	N	4	41	14	5	3	
		%	36.4%	7.7%	15.9%	19.2%	18.8%	
Did your children need certain type of formula because of his health condition?	No	N	8	363	55	12	13	0.098
		%	72.7%	68.1%	62.5%	46.2%	81.2%	
	Yes	N	3	170	33	14	3	
		%	27.3%	31.9%	37.5%	53.8%	18.8%	

DISCUSSION:

The current study aimed to investigate the factors that affect the decision of mothers. The present study included 674 mothers, 65.6% of them reported using artificial milk partially with breast milk and 34.4% reported using artificial milk completely. By investigating number of children who used artificial milk, 39.3% of mothers reported 2-3 of their children, 35.2% reported one child and 25.5% reported more than 3 children. It was reported that the prevalence of breastfeeding was low in Saudi Arabia, where exclusive or partial formula feeding was the trend during the first six months of birth [18-25]. In this study, the large majority (95%) reported using powder milk, whereas only 5% reported using ready milk. Mothers reported days to 11 months as the age of infant when they started using artificial milk. There were 46.1% of mothers reported that the physician advice made them use the current type of formula and the least reason was Pharmacist (0.7%). High percent 67.7% reported that they changed the type of milk and the main reason for that was the refusal of the old type by the child (38.4%). A national wide survey in Saudi Arabia showed that 51.4% of infants were given formula milk in one month of age and 90% of them in 6 months of age and this was far from WHO

recommendation for exclusive feeding which was recommended for 4-6 months [25]. Other researches from Gulf Cooperation Council showed similar findings [29,30]. In a previous Saudi study [13] it was found that changing type of formula was for many reasons including colic and gas occurred (34%), constipation (23.6%) and gastroesophageal reflux (20.4%), which all reflect one reason which is health condition of the infant and this was in agreement with our findings, as this reason was the most common reason for changing formula type. Mothers in our study reported different sources of their information about artificial milk, the most common source was pediatrician and physician (67.5%), followed by social media (34.7%), whereas the least source of information was dieticians (0.6%). It was reported that there were social, personal and cultural factors influence the customer buying behavior in general [26], and it was reported that advertising, good knowledge of formula and information from health care personnel are the factors that influence mothers' choice of specific formula [27]. A study from Indonesia showed that social, cultural, psychological and personal factors affected choice of mother to specific formula [31]. The current study revealed 4 factors to affect the choice of mothers for certain

formula and they included; physicians advice (67.7%), the need of child to certain type (33.1%), income availability (21.2%) and offers on formula during buying (9.9%). The role of physicians in making decision was also reported in a previous Saudi study by Alfaleh et al [13], where it was found that the most important factors affected mother choice of certain formula were advice of doctors (40%), availability of formula free of charge (22%), previous experience (13.6%) and advice of friends (12.5%). We investigated the correlation between the reported factors and different demographics, it was found that age was significantly associated with physicians advice, where mothers with age range of 31-40 years old were more affected by physician advice. Mothers with income less than 3000 SR were more prone to be affected by offers during buying formula and offers affected their choice depending on their income. Education level was significantly associated with offers during buying either, the most affected were those with university education. This study include several limitations, first there were no more comparison with previous researches, however this because of there were few studies about this subjects, second the study lack declaration of the correlations reported if the correlations were positive or negative, so further studies are recommended to investigate the prevalence of using artificial milk, not only in one city of the kingdom, but also including the whole kingdom, and to investigate other possible factors and found the different correlations.

CONCLUSION:

Partial formula use was very common among mothers, mothers were affected by physician advice in using formula in general and using certain type, however changing the type of formula was more prone to be affected by the infant needs. Those with average age was more affected by physician advice and both of low income and university education were more affected by offers of markets during buying.

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