Factors associated with failure of exclusive breastfeeding among mothers of twins in Saudi Arabia

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Abstract

Objective: To assess prevalence of exclusive breastfeeding practices and risk factors for failure to fulfill exclusive breastfeeding for twins delivered in Saudi Arabia.

Methods: Following a comparative case-control study design in Saudi Arabia, this study comprised 178 mothers who delivered twins and 122 mothers who delivered singleton babies. The researcher developed a self-administered questionnaire in simple Arabic language. The questionnaire included questions regarding personal characteristics of the mothers, breastfeeding practices of the baby, and questions about mothers' confidence toward their ability to exclusively breastfeed their babies.

Results: Caesarian delivery was significantly more among mothers of twins than mothers of singleton babies (79.5% and 35.4%, respectively, p<0.001). Admission to neonatal intensive care units was significantly more among twin babies than singleton babies (60.7% and 18.5%, respectively, p<0.001). Number of children (5 or more) was significantly more among mothers with twins than those with singletons (16.4% and 4.5%, respectively, p<0.001). Mothers in both study groups did not differ significantly according to their employment status, residence, and family monthly income. Significantly less twin, than singleton babies started breastfeeding during the first 6 hours after birth (48.4% and 73%, respectively, p<0.001). There were significantly less twin than singleton babies who were exclusively breastfed (46.7% and 79.2%, respectively, p<0.001). Exclusive breastfeeding was significantly more practiced by mothers whose children were not admitted to neonatal intensive care units (NICU) than those whose children were admitted to NICU (64.6% and 35.1%, respectively, p=0.001). Exclusive breastfeeding was also significantly more practiced by mothers whose children started breastfeeding within the first 6 hours than those who started breastfeeding after 6 hours (p=0.009). Mothers of twin babies were significantly less confident than mothers of singleton babies regarding being able to exclusively breastfeed their babies (p<0.001 for all statements of confidence).

Conclusions: Twins usually start their first breastfeeding later than singleton babies, and also tend to achieve exclusive breastfeeding less than singleton babies. Exclusive breastfeeding is less practiced by mothers whose children are admitted to NICU and whose children did not start breastfeeding within the first 6 hours. Mothers of twin babies are less confident than those of singleton babies regarding being able to exclusively breastfeed their babies. Rooming-in of mothers with their babies should be allowed at NICU.

Key words: Exclusive breastfeeding, twins, Caesarian section, neonatal intensive care unit, Saudi Arabia

Introduction

Breastfeeding is the most important way to provide nutritional and health benefits for infants, especially during their first six months of life (1-3). Breast milk contains several immunologic factors, e.g., IgA. Moreover, breast feeding is associated with decreased risk of diabetes mellitus and obesity (4).

Compared with their non-exclusively breastfed counterparts, exclusively breastfed infants are less likely to be hospitalized. Frequency of hospital visits during infancy becomes less as the duration of breastfeeding increases (5). Furthermore, a breastfed child exhibits relatively higher cognitive functions (6).

Mothers who exclusively breastfeed their children greatly benefit in various ways. They experience delayed return of their ovulation and also have lower rates of ovarian and breast cancer (7). In addition, the strong bonds between mothers and their infants that becomes strengthened during breastfeeding cannot be overemphasized (8).

Due to the increasing use of infertility treatments, there is an observed growing incidence of multiple pregnancies worldwide (9). The rate for spontaneous occurrence of twins is about one in 250 pregnancies (10). In Riyadh, Saudi Arabia, Kurdi et al. (11) reported that the overall incidence of twins was 14/1000 births.

The WHO (12) recommended exclusive breastfeeding of infants for the first six months of life. Exclusive breastfeeding has been defined as feeding the baby with breast milk only without giving water, water-based foods or formula, except for medications, such as oral rehydration solution or syrups. However, this recommendation did not provide advice regarding what mothers with multiple births should do considering the challenges involved in caring for this group of infants.

Multiple pregnancies have been significantly linked with certain risks and complications, such as the higher likelihood of being born preterm, having a low birth weight and developing cerebral palsy, especially as birth weight falls (8). Östlund et al. (13) reported that almost 80% of mothers of twins could not breastfed for more than for two months. Therefore, a large number of the preterm and term twins may not be exclusively breastfed and become weaned before 6 months.

Early cessation of breastfeeding in twins may occur for several reasons, e.g., delayed onset of lactation, persistent crying of babies after breastfeeding and ill health after Caesarean section (14-15). Yokoyama et al. (8) found that exclusive breastfeeding rate among twins was significantly lower than among singleton babies, i.e., 4.1% among twins compared with 44.7% among singletons.

In Saudi Arabia, there are no available data about breastfeeding rates among multiple babies. Moreover, there are very few studies on breastfeeding for twins. Therefore, it is important to explore factors that enhance or hinder exclusive breastfeeding among twins. This would help develop strategies which could improve exclusive breastfeeding rates among twins as well as markedly reduce infant morbidity and mortality among this group of children.

Aim of study

To assess prevalence of exclusive breastfeeding practices and risk factors for failure to fulfill exclusive breastfeeding for twins delivered in Saudi Arabia.

Methodology

This research followed a comparative case-control study design in the Kingdom of Saudi Arabia. The study population comprised mothers delivering singleton or twin babies in Saudi Arabia during the last 12 months. The inclusion criteria were Saudi mothers who delivered their babies in Saudi Arabia within the last year, while mothers of triplets or quadruplets and non-Saudi mothers were not included.

The study included two groups; mothers who delivered twins during the last years (Study Group, n=178) and mothers who delivered singleton babies during the last year (Control Group, n=122).

Based on review of relevant literature, the researcher developed a self-administered questionnaire in simple Arabic language. The questionnaire included questions regarding personal characteristics of the mothers, breastfeeding practices of the baby, and questions about mothers' confidence toward their ability to exclusively breastfeed their babies.

A pilot study was conducted on 20 mothers (10 mothers of twins and 10 mothers of singleton babies) to test the wording and clarity of the included questions. The face and content validity of the study questionnaire was assessed by three family medicine consultants. Moreover, the internal consistency of the questionnaire was assessed by applying Cronbach's alpha reliability coefficient. Results of the pilot study helped in re-phrasing, adding or omitting some questions. The collected data within the pilot study were not included into the main study.

The final electronic version of the questionnaire was uploaded online and sent to groups of mothers with singleton and twin babies.

Collected data were analyzed using the Statistical Package for Social Sciences (SPSS version 25). Descriptive statistics (i.e., frequency, percentage, mean and standard deviation) were calculated. Appropriate tests of significance, e.g., chi-square (X^2) test and independent variable t-test were applied accordingly. P-values less than 0.05 were considered statistically significant.

The researcher fulfilled all the required official approvals. On the first page of the study questionnaire, all potential participants were informed about the objectives and nature of this study. They were assured that no harm is expected to occur if they decide to participate. They were also assured about the anonymity and full confidentiality of their responses. Their online consent to participate was

made necessary for any participant to proceed in filling in the online questionnaire.

This study was self-funded by the researcher and there was no conflict of interest.

Results

Table (1) shows that the majority of mothers were aged 25-35 years (72.5% in the singleton group and 79.5% in the twins group). Mothers differed significantly according to their age groups, with less percentage of mothers of twins than those in the singleton group in the <25 years age group (5.7% and 15.2%, respectively, p=0.039). Caesarian delivery was significantly more among mothers of twins than mothers of singleton babies (79.5% and 35.4%, respectively, p<0.001). Admission to neonatal intensive care units was significantly more among twin babies than singleton babies (60.7% and 18.5%, respectively, p<0.001). Mothers in both study groups did not differ significantly according to their employment status, residence, and family monthly income.

Table (2) shows that significantly less twins than singleton babies started breastfeeding during the first 6 hours after birth (48.4% and 73%, respectively, p<0.001). There were significantly less twin than singleton babies who were exclusively breastfed (46.7% and 79.2%, respectively, p<0.001, Figure 1).

Table (3) shows that exclusive breastfeeding was significantly more practiced by mothers whose children were not admitted to neonatal intensive care units (NICU) than those whose children were admitted to NICU (64.6% and 35.1%, respectively, p=0.001). Exclusive breastfeeding was also significantly more practiced by mothers whose children started breastfeeding within the first 6 hours than those who started breastfeeding after 6 hours (p=0.009). There were no significant differences in exclusive breast feeding practices according to mothers' age groups, educational level, employment status, residence, family monthly income, or mode of delivery.

Table (4) shows that mothers of twin babies were significantly less confident than mothers of singleton babies regarding being able to exclusively breastfeed their babies (p<0.001 for all statements of confidence).

Table 1: Personal characteristics of participant mothers

Mothers' personal characteristics	Singleton (n=178)		Twins (n=122)		P Value
	No.	%	No.	%	
Age Groups					
• <25 years	27	15.2	7	5.7	
• 25-35 years	129	72.5	97	79.5	
• >35 years	22	12.4	18	14.8	0.039
Educational level					
• Intermediate	3	1.7	5	4.1	
• Secondary	24	13.5	18	14.8	
• University	151	84.8	99	81.1	0.418
Employment					
• Employed	66	37.1	33	27.0	
• Housewife	112	62.9	89	73.0	0.070
Residence					
• Rural	15	8.4	10	8.2	
• Urban	163	91.6	112	91.8	0.943
Family monthly income					
• <5,000 SR	44	24.7	34	27.9	
• 5,000-10,000	58	32.6	39	32.0	
• >10,000	76	42.7	49	40.2	0.820
Mode of delivery					
• Vaginal	115	64.6	25	20.5	
• Caesarian	63	35.4	97	79.5	<0.001
Admission to neonatal intensive care unit	33	18.5	74	60.7	<0.001

Table 2: Duration between delivery and baby's first breastfeeding

Variables	Singleton		Twins		P Value
	No.	%	No.	%	
Duration till first breastfeeding					
• < One Hour	73	41.5	27	22.1	
• 1-6 Hours	55	31.3	32	26.2	
• 7-24 Hours	31	17.4	44	36.1	
• > 24 Hours	17	9.6	19	15.6	<0.001
Exclusive breastfeeding					
• Yes	141	79.2	57	46.7	
• No	35	20.8	65	53.3	<0.001

Figure 1: Prevalence of practicing exclusive breastfeeding (%) according to product of participant mothers' last pregnancy

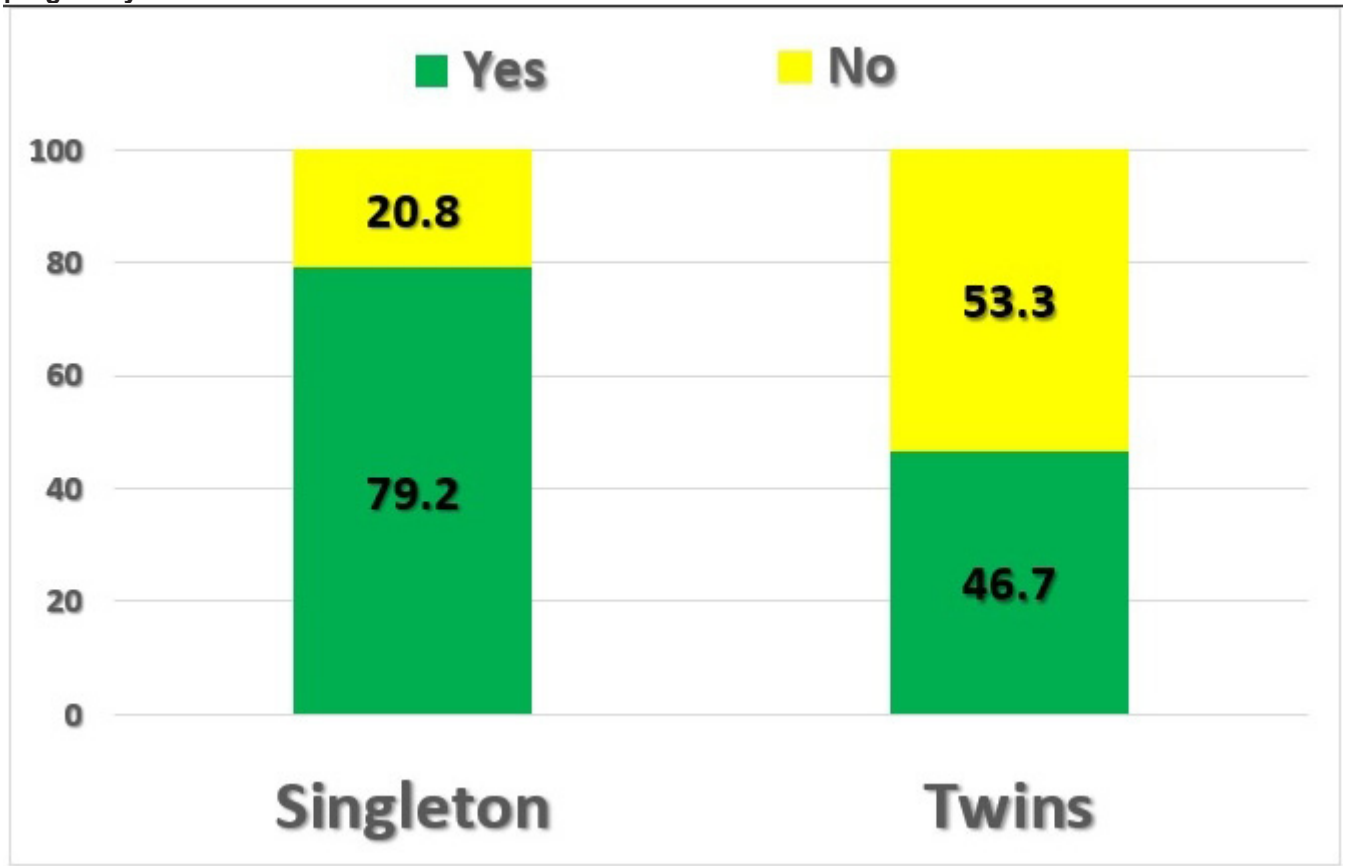

Table 3: Exclusive breastfeeding practices among mothers of twins according to their personal characteristics

Mothers' personal characteristics	Exclusive breastfeeding for six months				
	No (n=65)		Yes (n=57)		P
	No.	%	No.	%	Value
Age Groups					
• <25 years	5	71.4	2	28.6	
• 25-35 years	49	50.5	48	49.5	
• >35 years	11	61.1	7	38.9	0.434
Educational level					
• Intermediate	4	80.0	1	20.0	
• Secondary	8	44.4	10	55.6	
• University	53	53.5	46	46.5	0.368
Employment					
• Employed	16	48.5	17	51.5	
• Housewife	49	55.1	40	44.9	0.518
Residence					
• Rural	7	70.0	3	30.0	
• Urban	58	51.8	54	48.2	0.269
Family monthly income					
• <5,000 SR	19	55.9	15	44.1	
• 5,000-10,000	18	46.2	21	53.8	
• >10,000	28	57.1	21	42.9	0.554
Mode of delivery					
• Vaginal	13	52.0	12	48.0	
• Caesarian	52	53.6	45	46.4	0.886
Admission to neonatal intensive care unit					
• No	17	35.4	31	64.6	
• Yes	48	64.9	26	35.1	0.001
Duration till first breastfeeding					
• < One Hour	12	44.4	15	55.6	
• 1-6 Hours	11	34.4	21	65.6	
• 7-24 Hours	27	61.4	17	38.6	
• > 24 Hours	15	78.9	6	21.1	0.009

Table 4: Comparison between mothers of singleton babies and those of twins about their confidence toward exclusive breast feeding of their babies

Statements of mothers' confidence	Group	Agree		Neutral		Disagree		P value
		No.	%	No.	%	No.	%	
I can decide if my baby gets enough breastfeeding	Singleton	123	69.1	44	24.7	11	6.2	
	Twin	64	52.5	31	25.4	27	22.1	<0.001
I can fulfill absolute breastfeeding for my baby	Singleton	112	62.9	37	20.8	29	16.3	
	Twin	40	32.8	35	28.7	47	38.5	<0.001
I can fulfill absolute breastfeeding without supplements	Singleton	83	46.6	49	27.5	46	25.8	
	Twin	25	20.5	36	29.5	61	50.0	<0.001
My baby stays connected to my breast during feeding	Singleton	121	68.0	36	20.2	21	11.8	
	Twin	48	39.3	36	29.5	38	31.1	<0.001
I can satisfactorily control absolute breastfeeding	Singleton	95	53.4	44	24.7	39	21.9	
	Twin	33	27.0	37	30.3	52	42.6	<0.001
I can continue breastfeeding my baby even while crying	Singleton	101	56.7	49	27.5	28	15.7	
	Twin	24	19.7	36	29.5	62	50.8	<0.001
I can continue breastfeeding my baby till he is 6 months old	Singleton	141	79.2	18	10.1	19	10.7	
	Twin	51	41.8	31	25.4	40	32.8	<0.001
I breastfeed my child even when relatives are around	Singleton	117	65.7	35	19.7	26	14.6	
	Twin	39	32.0	32	26.2	51	41.8	<0.001
I feel satisfied when breastfeeding my baby	Singleton	151	84.8	17	9.6	10	5.6	
	Twin	69	56.6	30	24.6	23	18.9	<0.001
I can manage the long period of absolute breastfeeding	Singleton	124	69.7	37	20.8	17	9.6	
	Twin	46	37.7	35	28.7	41	33.6	<0.001
I can finish feeding my baby from one side before starting the other	Singleton	98	55.1	55	30.9	25	14.0	
	Twin	39	32.0	44	36.1	39	32.0	<0.001
I can provide absolute breastfeeding to all my babies	Singleton	106	59.6	46	25.8	26	14.6	
	Twin	29	23.8	45	36.9	48	39.3	<0.001
I can fulfill all my baby's needs regarding breastfeeding	Singleton	107	35.7	42	14.0	29	9.7	
	Twin	31	25.4	40	32.8	51	41.8	<0.001
I can decide when my baby feels full when breastfed	Singleton	109	61.2	45	25.3	24	13.5	
	Twin	42	34.4	37	30.3	43	35.2	<0.001

Discussion

Breastfeeding is the most useful source of nutrients during the initial six months of life. It is even more significant in multiple pregnancies, since pre-term and low birth weight babies are more common (16).

This study aimed to assess prevalence of exclusive breastfeeding practices and risk factors for failure to fulfill exclusive breastfeeding for twins delivered in Saudi Arabia.

The present study revealed that mothers with twin deliveries were significantly older than those of singleton deliveries. Moreover, Caesarian deliveries and admission to neonatal intensive care units (NICU) were significantly more among mothers of twins than mothers of singleton babies.

These findings are in accordance with those of Khazardoost and Shafaat (17), who reported that women with multiple pregnancies were older, delivered earlier, and underwent more Caesarean deliveries. Similarly, Su et al. (18) added that multiple pregnancy was significantly associated with older maternal age, Caesarean delivery, preterm labor, low birth weight and NICU admissions. In addition, Cinar et al. (16) reported that 90% of the mothers of twins were delivered by Caesarean section.

Results of this study showed that significantly less twins than singleton babies started breastfeeding within the first six hours after birth (48.3% and 72.8%, respectively). Moreover, there were significantly less exclusively breastfed twins than singleton babies (46.7% and 79.2%, respectively).

These findings are in accordance with those of several studies, which indicated that twins are less likely to be exclusively breastfed, compared to their singleton counterparts (8; 16; 19-20).

In the UK, Simmons et al. (21) reported that the rate of breastfeeding of twins was significantly less than that of single babies (40% and 52%, respectively). In Japan, Yokoyama et al. (8) concluded that exclusive breastfeeding among twins was 4.9%, while that of the singletons was 73.2%. In Ghana, Odei (22) reported 44% exclusive breastfeeding rate for six months among singleton infants compared to only 14% of twins.

The low exclusive breastfeeding rates among twins can be explained by the repeated link of prematurity with multiple pregnancies, lack or weakness of sucking reflex, neurodevelopmental failure, and separated due to stay in the intensive care (23).

The present study showed that exclusive breastfeeding was significantly less practiced by mothers whose children were admitted to the NICU and also by mothers whose children did not start breastfeeding within the first 6 hours after birth. However, exclusive breastfeeding did not differ significantly according to mothers' age, educational level, employment status, residence, monthly income, or mode of delivery.

Beal and Hearman (24) stated that admission into the NICU leads to delayed maternal attachment. Moreover, parents with an infant in the NICU may experience depression, anxiety, stress, and loss of control, and they hesitate between feelings of inclusion and exclusion related to the provision of healthcare to their baby (25). Moreover, mothers tend to look for alternatives to feed their children. This could explain why most mothers who had either one or both of their children admitted into the NICU do not practice exclusive breastfeeding (20). This observation is in accordance with findings of Weimers et al. (26), who reported that 70% of mothers did not practice exclusive breastfeeding as a result of neonatal intensive unit admission.

Several studies found that some socio-demographic and economic factors, such as maternal age, education, employment and household income are important determinants of exclusive breastfeeding (27-28).

The World Health Organization (29) recommended that newborns should only be fed mother's milk directly from the breast, and breastfeeding should be initiated within an hour after birth to promote successful breastfeeding. Kim (30) emphasized that each hour delay in the first breastfeeding session is associated with a reduced likelihood of breastfeeding throughout the hospital stay. Rooming-in was associated with an increased likelihood of breastfeeding throughout the hospital stay. Therefore, to encourage breastfeeding of babies at neonatal intensive care units, mothers should have a bed after being discharged from the maternity ward to allow for rooming-in.

Results of this study revealed that mothers of twin babies were significantly less confident than those of singleton babies regarding being able to exclusively breastfeed their babies.

Chatman et al. (31) reported that the dominant reason for partial exclusive breastfeeding was maternal lack of confidence that breast milk alone might not provide sufficient nourishment for their babies. The perception of breast milk insufficiency has been reported by other researchers to be a major barrier to exclusive breast feeding (14). The majority of mothers who are not confident of producing adequate breast milk to satisfy their infants usually introduce other foods and liquids, particularly formula and porridge before six months (20).

It is to be noted that breast milk production is based on a supply-and-demand relationship. Even for multiple babies, it is usually sufficient for each baby (32-34). Prosser et al. (35) found that mothers who were breastfeeding twin babies had twice as much prolactin secretion compared to those with single babies. Therefore, twins can be adequately fed with breast milk, but special efforts are needed to promote and encourage breastfeeding among mothers of twins (16).

Ukegbu et al. (36) stated that perception of breast milk insufficiency has been reported to be a major barrier against exclusive breastfeeding among twins and singletons.

High milk production among mothers was associated with perceived confidence of mothers in breastfeeding (37). Perceived confidence of mothers to produce enough milk for their twin babies is positively associated with exclusive breastfeeding. This finding underscores the importance of mother's emotional and psychological stability in ensuring adequate milk production, which is crucial in ensuring successful exclusive breastfeeding of infants in the first six months of life (20).

Therefore, to promote exclusive breast feeding, especially for twins, all mothers should be supported to have confidence in themselves, get enough rest, ensure they are well-fed, get support from people close to them, and try to ensure that their baby's suction power is sufficient.

In conclusion, twins usually start their first breastfeeding later than singleton babies, and also tend to achieve exclusive breastfeeding less than singleton babies. Exclusive breastfeeding is less practiced by mothers whose children are admitted to NICU and whose children did not start breastfeeding within the first 6 hours. Mothers of twin babies are less confident than those of singleton babies regarding being able to exclusively breastfeed their babies.

Therefore, it is recommended that breastfeeding should be initiated within an hour after birth. Rooming-in of mothers with their babies should be allowed at NICU. All mothers should be supported to have confidence in themselves regarding being able to exclusively breastfeed their babies.

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