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Research Article

Factors Controlling Cessation of Breastfeeding among Primiparas vs. Multiparas in PHC Centers in Riyadh, Saudi Arabia

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Abstract

Objectives: The objectives of this study were to evaluate the prevalence and factors affecting breastfeeding cessation in primiparas compared to those in multiparas attending Prince Sultan Military Medical city PHC centers in Riyadh city, Saudi Arabia. **Subjects and methods:** This study is a cross-sectional study that was conducted from November 2017 to March 2018 with multistage sampling technique of Ministry of defense PHC centers that have well-baby clinics in Riyadh city, Saudi Arabia. 500 subjects were randomly enrolled in the study. Data were collected by a self-administered questionnaire. **Results:** From the sample of N=496, 41.9 % were primiparas, 55.2% of mothers chose to feed their infants with formula, and just 11.9% exclusively breastfed their infants. Most of the participating mothers (74%) started feeding their babies with formula whilst still in the hospital (82.7% in the primiparas group and 67.7% in the multiparas group). Logistic regression revealed that infants who used pacifiers were 77.9 times less likely to be exclusively breastfeeding than exclusively bottle-fed (OR=0.221). Additionally, It was found to be three times more likely that mothers who gave birth vaginally would exclusively breastfeed their babies than those who gave birth via cesarean section (OR=3.071). **Conclusion:** The most common type of feeding in our research was exclusive infant formula. Primiparas were associated with early introduction of infant formula and early cessation of breastfeeding. Hospital stay, pacifier use, and cesarean delivery were negatively associated with breastfeeding. Finally, we recommend adopting The Baby-friendly Hospital Initiative (BFHI) and implementing the Ten Steps to Successful Breastfeeding policy as a standard of practice in Saudi Arabia.

Keywords: Breastfeeding; Primiparas; Multiparas

Introduction

Breastfeeding is the most commonly recommended method of feeding babies around the world [1,2], and has been found to have many benefits over infant formula feeding [3].

If carried out exclusively for six months, breastfeeding reduces the risk of gastrointestinal infection, respiratory tract infections, sudden infant death syndrome, necrotizing enterocolitis, obesity, and hypertension. Furthermore, mothers of breastfed babies also had better prognoses, with longer lactational amenorrhea, a lower incidence of breast and ovarian cancer, type 2 diabetes, and postnatal depression. Thus, this natural behavior is beneficial for mothers, infants, and the wider community [3,4].

"Exclusive breastfeeding" is defined by the World Health Organization as nourishing an infant using no other food or drink than breast milk for the first six months of life. Nonetheless, infants can still consume ORS, drops, and syrups" (such as vitamins, minerals, and medicines).

In an ideal world, all infants could be breastfed by their mothers if they have sufficient knowledge of the process and support from their family, society, and healthcare systems. The key objective of the present study is to investigate the factors that influence breastfeeding cessation in primiparas and multiparas, as well as the prevalence of breastfeeding cessation and the different feeding practices used in Riyadh, Saudi Arabia.

Materials and Methods

In this investigation, a cross-sectional study was carried

out using a random sample in Riyadh. This random sample was multistage in nature and thus came from five specific geographical areas of the city (north, center, east, west, and south). One of the Prince Sultan Military Medical city primary health care (PHC) centers were selected randomly from each of the five areas.

The minimum required sample size was estimated to be 385, after which 10% was added for missing and incomplete questionnaires. Thus, the final sample size was 424. To achieve this, a total of 500 questionnaires were distributed, with 496 completed questionnaires being returned by mothers who attended the WBC and had a child aged two or under. Moreover, systematic random sampling was used to select the mothers. Only the natural mothers of the infants were included in the study. To ensure that the study was performed correctly, the nurses in each of the chosen centers were trained in distributing the questionnaire and adhering to the inclusion and exclusion criteria. The study took place between November 2017 and March 2018.

A questionnaire was distributed to the research participants, and by filling out the questionnaire is an agreement for participation. Cross-culturing translation guidelines were also employed to translate the document, which was originally written in English, into Arabic. Subsequently, it was translated back to English. The questionnaire aimed to uncover information pertaining to the participants' socio-demographic situations, feeding practices, child, pregnancy, breastfeeding practices, and hospital experiences after birth. To verify the design of the questionnaire, a pilot study involving 40 participants was carried out, after which any necessary modifications could be made. For the final study, these participants were eliminated from the sample. The researchers distributed and collected the questionnaires by hand, after which they summarized and organized the data using descriptive statistics. SPSS software version 21 was used for the data analysis. The following descriptive statistics were calculated: central tendency, the mean, percentage, and standard deviation. Moreover, the chi-square test, correlation coefficient tests, t-test, and ANOVA tests were carried out. When the P-value was below 0.05, it was considered to be statistically significant.

Results

The sample for this study consisted of 496 mothers who attended the well-baby clinic, with 42% being primiparas and 58% being multiparas. Moreover, a majority of the participating mothers were aged 25-29 years of age (29%), whilst the majority of infants were aged between 7 months and 18 months(44%). Approximately 52.8% of these infants were female. Additionally, 56.9% of the mothers had university-level qualifications or higher. Most reported being married (98.99%), non-smokers (98.5%), and housewives (70.3%). Finally, (76.2%) reported that they did not have a housemaid.

The Socio-Demographic Characteristics of the primiparas and multiparas were compared, and the findings revealed that most primiparas were less than 25 years old (39.9%). Only one participant reported being divorced. Moreover, 57.3% of the multiparas group were between 30 and 39 years of age. 70.6% of the working mothers, 74.1% of those who had less than high school education, and (74.6%) who had housemaids were multiparas (Table 1).

Characteristics		No(496)	Parity			
			Primiparous (208)		Multiparous (288)	
			No	%	No	%
Age of Mother	<25	105	83	**79.0**	22	**21.0**
	25-<30	144	73	**50.7**	71	**49.3**
	30-<35	121	39	**32.2**	82	**67.8**
	35-<40	95	12	**12.6**	83	**87.4**
	40+	31	1	**3.2**	30	**96.8**
Education group	<High School	54	14	**25.9**	40	**74.1**
	High School	160	72	**45.0**	88	**55.0**
	University and above	282	122	**43.3**	160	**56.7**
Working Status	Not working	349	161	**46.1**	188	**53.9**
	Working	119	35	**29.4**	84	**70.6**
	Student	28	12	**42.9**	16	**57.1**
Age of youngest child (in a month)						

The age group of Youngest Child	1-6	199	97	**48.7**	102	**51.3**
	7-18	217	87	**40.1**	130	**59.9**
	19+	80	24	**30.0**	56	**70.0**
Baby gender	Male	234	99	**42.3**	135	**57.7**
	Female	262	109	**41.6**	153	**58.4**
Smoking status	Yes	7	4	**57.1**	3	**42.9**
	No	489	204	**41.7**	285	**58.3**
Marital Status	Married	491	207	**42.2**	284	**57.8**
	Divorced	1	1	**100.0**	0	**0.0**
	Widow	3	0	**0.0**	3	**100.0**
Do you have a housemaid in the house?	Yes	118	30	**25.4**	88	**74.6**
	No	378	178	**47.1**	200	**52.9**

Table 1: The Socio-Demographic Characteristics of Study.

In this study 85.7% of the mothers initiated breastfeeding while they were in the hospital. A majority of mothers had given birth vaginally (70.4%), whilst (29.6%) had given birth via a caesarian section. Most mothers and babies were healthy (85.9% and 93.3%, respectively). Nearly all infants involved in the study were full term (90.3%). Interestingly, 55.2% of mothers chose to feed their infants with formula, whilst 32.9% opted for mixed feeding and just 11.9% exclusively breastfed their infants. Most of the participating mothers (74%) started feeding their babies with formula whilst still in the hospital (82.7% in the primiparas group and 67.7% in the multiparas group). Finally, 36.5% of the mothers started breastfeeding within one hour of delivery (Table 2).

Characteristics	**Parity**					
	Primiparous (208)		**Multiparous (288)**		**Total (496)**	
	No	**%**	**No**	**%**	**No**	**%**
Mode of delivery						
Vaginal Birth	137	**65.9**	212	**73.6**	349	**70.4**
Cesarean Section	71	**34.1**	76	**26.4**	147	**29.6**
Mother health status						
Healthy	197	**94.7**	229	**79.5**	426	**85.9**
Unhealthy	11	**5.3**	59	**20.5**	70	**14.1**
Infant health status						
Healthy	196	**94.2**	267	**92.7**	463	**93.3**
Unhealthy	12	**5.8**	21	**7.3**	33	**6.7**
Maturity of infant						
Term	187	**89.9**	261	**90.6**	448	**90.3**
Preterm	21	**10.1**	27	**9.4**	48	**9.7**
Type of feeding						
Exclusive breastfeeding	22	**10.6**	37	**12.8**	59	**11.9**
Mixed feeding	83	**39.9**	80	**27.8**	163	**32.9**

Exclusive infant formula	103	**49.5**	171	**59.4**	274	**55.2**
While you were in the hospital or birth center, was your baby fed water, formula, or sugar water at any time.						
Water	2	**1.0**	7	**2.4**	9	**1.8**
Formula	172	**82.7**	195	**67.7**	367	**74.0**
Sugar water	1	**0.5**	3	**1.0**	4	**0.8**
Do not remember	13	**6.3**	56	**19.4**	69	**13.9**
None of the above	20	**9.6**	27	**9.4**	47	**9.5**
Breastfeeding initiation time						
≤1hour	76	**36.5**	105	**36.5**	181	**36.5**
>1 hour	104	**50.0**	140	**48.6**	244	**49.2**
Don‘t know/ Don‘t remember	14	**6.7**	25	**8.7**	39	**7.9**
Did not breastfeed	14	**6.7**	18	**6.3**	32	**6.5**

Table 2: Mother, infant, and feeding practice characteristics.

Whilst 14% of mothers who had a vaginal delivery exclusively breastfed their babies, only 6.8% of those who had cesarean section breastfed theirs. This difference is statistically significant, with a P-value of <0.031. The percentage of multiparas mothers who exclusively breastfed their infants was higher than primiparas, at 12.8% and 10.6%, respectively. A p-value of 0.039 was identified for this difference, which is statistically significant. Moreover, 16.6% of the infants who did not use pacifiers were exclusively breastfed, with only 5.3% of those who did use a pacifier being exclusively breastfed. This finding was statistically significant, with a P-value <0.001 (Table 3).

Characteristics	**N(496)**	**Type of feeding practice**						**P-value**
		Exclusive breastfeeding		**Mixed feeding**		**Exclusive infant formula**		
		No(59)	**%**	**No(163)**	**%**	**No(274)**	**%**	
Working Status								
Not working	349	45	**12.9**	118	**33.8**	186	**53.3**	**0.228**
Working	119	14	**11.8**	37	**31.1**	68	**57.1**	
Student	28	0	**0.0**	8	**28.6**	20	**71.4**	
How was your infant delivered?								
Vaginal Birth	349	49	**14.0**	118	**33.8**	182	**52.1**	**0.031**
Cesarean Section	147	10	**6.8**	45	**30.6**	92	**62.6**	
For how long you were pregnant with your youngest infant								
9 months	448	56	**12.5**	152	**33.9**	240	**53.6**	**0.068**
Less than 9 months	48	3	**6.3**	11	**22.9**	34	**70.8**	
Pacifier or teats use (also called dummies or soothers)								
Used	206	11	**5.3**	59	**28.6**	136	**66.0**	**<0.001**
Not used	290	48	**16.6**	104	**35.9**	138	**47.6**	
Parity								

Primiparous	208	22	**10.6**	83	**39.9**	103	**49.5**	**0.039**
Multiparous	288	37	**12.8**	80	**27.8**	171	**59.4**	

Table 3: The association between type of feeding and selected variable.

Primiparas were found to be 1.7 times more likely than multiparas to feed their infants using mixed bottle feeding rather than exclusively using baby formula ((OR=1.719; 95% CI, 1.160-2.547; p-value <0.007). What's more, it was found to be three times more likely that mothers who gave birth vaginally would exclusively breastfeed their babies than those who gave birth via cesarean section (OR=3.071;95% CI, 1.393-6.733; P-value 0.005). Additionally, infants who used pacifiers were 77.9 times less likely to be exclusively breastfeeding than exclusively bottle-fed (OR=0.221; 95% CI, 0.107-0.456; P-value <0.001). Hospital stays increase by unit, and thus the chances of mothers engaging in exclusive breastfeeding over bottle-feeding are reduced by 38.2 % (OR=0.618; 95% CI, 0.483-0.790; P-value< 0.001) (Table 4).

Variables	β coefficient	S.E. of β	P-value	Odds Ratio (OR)	95% confidence interval
Parity	0.541	0.201	0.007	1.718995	1.160-2.547
Mode of delivery	1.122	0.404	0.005	3.071	1.393-6.733
Used pacifier	-1.512	0.370	<0.001	0.221	0.107-0.456
Hospital stay (day)	-0.482	0.126	< 0.001	0.618	0.483-0.790

Table 4: Logistic Regression Analysis of significant Factors Associated with exclusive baby formula and exclusive breastfeeding.

Furthermore, hospital stay and its effect on the type of feeding was studied. The findings indicated that mothers who had the shortest hospital stays were more likely to breastfeed their babies exclusively (P=<0.001). The mean duration of stay for mothers who exclusively breastfed their babies was 1.8 days SD+/- 1.043, whilst for those who exclusively fed their babies formula, this figure was 3.03 days SD +/- 2.178 (Table 5).

	N	Mean	Std. Deviation	95% Confidence interval	Minimum	Maximum	P-value
Exclusive breastfeeding	55	1.8	1.043	1.52-2.08	1	5	<0.001
Mixed	162	2.45	1.898	2.16-2.75	1	15	
Exclusive bottle feeding	272	3.03	2.178	2.77-3.29	1	14	

Table 5: Hospital stay and its effect on the type of feeding.

The reasons for breastfeeding cessation are listed in Table 6. The 274 mothers who chose to exclusively feed their babies formula were asked why they stopped breastfeeding. Insufficient breast milk production was the most common reason (57.7%), followed by infant refusal (38.3%). The most chosen reason among the primiparas was infant rejection, which was cited by 67 mothers (65%). Insufficient breast milk was also the most common explanation given by 97 moms in the multiparas group (56.7%).

Reason	No (%)	Parit			
		Primiparous		Multiparous	
		No(103)	%	No(171)	%

Insufficient breast milk	158(**57.7**)	61	**59.2**	97	**56.7**
Infant refusal	105(**38.3**)	67	**65.0**	38	**22.2**
Return to work	65(**23.7**)	18	**17.5**	47	**27.5**
Housework	24(**8.76**)	10	**9.7**	14	**8.2**
To avoid breast sagging after breastfeeding (cosmetic reasons)	10(**3.65**)	6	**5.8**	4	**2.3**
Wanted to use contraception that can't be used while breastfeeding	34(**12.4**)	10	**9.7**	24	**14.0**
A health professional said I should not breastfeed for medical reasons	16(**5.84**)	4	**3.9**	12	**7.0**

Table 6: Reasons associated with breastfeeding cessation.

Table 7 shows that the mean age for introducing infant formula in the multiparas group (N=266) was 72.9 days (SD=99.189). On the other hand, the mean age for introducing infant formula in the primiparas group (N=202) was statistically shorter at 56.5 days (SD=84.844).

	N	Mean	Std. Deviation	P-value
Primiparas	202	56.5	84.8	0.05
Multiparas	266	72.9	99.2	

Table 7: Time of infant formula initiation in the parity group.

Mothers who were still breastfeeding or did not breastfeed their babies at all were excluded. Breastfeeding discontinuation in the multiparas group (N=221) occurred at a mean age of 5.19 months (SD = 6.031), whilst this was quantitatively lower in the primiparous group (N=182), with the mean age of breastfeeding cessation being 3.27 months (SD=3.652) (Table 8).

	N	Mean	Std. Deviation	P-value
Primiparas	182	3.27	3.65	<0.001
Multiparas	221	5.19	6.03	

Table 8: Age at which breastfeeding was stopped in the parity groups.

Discussion

In our study 85.7% of the mothers initiated breastfeeding, similar results were reported in Qatar, 84.7% [5], and in the USA, 87% [6]. Other studies done in Saudi Arabia reported breastfeeding initiation ranging from 92% to 100% [7-10], in the United Arab Emirates, 98% [11], in Lebanon, 94.4% [12], were higher than our results. Our study showed that 49.2% of the mothers initiated breastfeeding after one hour of delivery there was no difference between the parity groups. Moreover 6.5 % of the mothers in our study never breastfed their infants at all. This figure was higher than the national survey in Lebanon 4.6% of the mothers never breastfed their infants [12]. This practice is against The WHO Ten Steps to Successful Breastfeeding that recommends helping mothers initiate breastfeeding within a half-hour of birth [13].

The study also revealed that fewer primiparas exclusively breastfed their infants (10.6%) than multiparas (12.8%). Several other studies performed in various countries also showed an increase in breastfeeding with parity [11,14-16]. The findings of these studies are in line with those revealed in the presented investigation since the research populations share similar characteristics. The difference in breastfeeding among the parity group can be expected as multiparas mothers have more experience. Interestingly, studies carried out in Thailand and Nigeria revealed that the lactation performance of primiparas and multiparas is similar, yet the parity had no impact on breastfeeding habits [17,18]. It is important to note, however, that the population and the settings of these studies were different from that of the present study. For example, they were performed in poor rural areas where breastfeeding is essential as formula is not available. In such areas, breastfeeding is also socially accepted and strongly supported by family and culture. This seems to indicate that primiparas can breastfeed as successfully as multiparas if they receive adequate support from their families.

Exclusive formula feeding was found to be the most common form of feeding in the present research (55.2%), with only (11.9%) of participants reporting that they were exclusively breastfeeding their babies. This figure is lower than that revealed in a 1994 study carried out in Saudi Arabia, in which 34 % of mothers reported exclusively breastfeeding, whilst 56% reported using mixed feeding practices and only 10% used bottle feeding [19]. Thus, it seems that, although bottle feeding was the least common type of feeding in 1994, it has now become the most common type of feeding. This could be due to the modernization of societies, the effect of infant formula companies offering readymade infant formula to the mothers while they are still in the hospital, and/or a lack of health care system support. Our study revealed that 74% of mothers introduced infant formula whilst still in the

hospital, 82.7% of the primiparas, and 67.7% of the multiparas. Nonetheless, lower figures were revealed in two other studies performed in Saudi Arabia (66.7%) and (33.1%) [7,10]. This may thus be the reason for the shift in infant feeding practices, as this can cause nipple confusion.

In the present study, insufficient breast milk was found to be the most common reason for breastfeeding cessation (57.7%), which is in line with the findings of four other studies performed in Saudi Arabia, Lebanon, Jordan, and Iran [7,10,12,14,20-22]. In the primiparas group, infant refusal was the most prominent reason (65%), whilst insufficient breast milk production was once again the primary reason in the multiparas group (56.7%). This is most likely why participating mothers reported introducing formula while they were still in hospital, after which they shifted to the mixed feeding or exclusive infant formula as their feeding practice of choice. Many studies highlight insufficient lactation as being a key issue, and thus mothers require continuous support and education once leaving the hospital to overcome the belief that breast milk is not sufficient for nourishing a baby [11].

What's more, our investigation revealed that primiparas typically introduced baby formula earlier than multiparas, at 56 days and 73 days , respectively. Our findings were similar to those of another investigation performed in Riyadh (1.842.49 months) [20]. On the other hand, they were lower than the figures revealed in a study carried out in the United Arab Emirates (3.8 months) [11]. Introducing infant formula as early as one and a half months may cause nipple confusion and adaptation to infant formula, which in turn increases the chances of changing from breastfeeding to infant formula feeding.

Breastfeeding discontinuation at an early age was shown to be prevalent in our study. Primiparas appeared to cease breastfeeding at a mean age of 3.27 months, with multiparas stopping at a mean age of 5.19 months. Nonetheless, a slightly better figure of 6.57 months was identified in another Riyadh-based study [20], whilst Al-Binali study revealed a figure of 8.7 months [10]. Primiparas mothers were also found to have breastfed for shorter periods of time and increased the use of formula, according to a survey conducted in Riyadh [8]. The difference in breastfeeding cessation between parity groups may be caused by the earlier introduction of infant formula among the primiparas.

Moreover, a negative relationship was identified between hospital stay and breastfeeding in this study, with results indicating that those who stayed in the hospital for the shortest time were more likely to opt for exclusive breastfeeding. On the other hand, mothers who were required to stay in hospital for longer periods of time were more likely to engage in exclusive formula feeding. The mean length of hospital stay associated with exclusive breastfeeding was found to be 1.8 days, whilst for exclusive infant formula use, it was 3.03 days. The mother's health status may influence this negative relationship, as mothers who are required to stay in hospital for longer periods of time after giving birth are likely to have given birth via caesarian section or be experiencing postpartum complications.

The association between type of feeding and selected variable, we found in our study that exclusively breastfed infants among the mothers who had a vaginal delivery (14%) was double those who had a cesarean section (6.8%). This is consistent with the results of previous studies carried out in Saudi Arabia, the USA, and the UAE [6,11,14,23]. In one meta-analysis of 53 studies from 33 countries found that, globally, there is an association between cesarean delivery and lower rates of breastfeeding [24]. This finding can be explained by post-surgery pain and separation from their baby as mothers will be in the recovery room after the surgery, this will delay breastfeeding initiation, and they will not be in close contact with their newborn.

Exclusive breastfeeding was also found to be negatively related to pacifier use. The findings showed that 66% of newborns who use a pacifier prefer exclusive infant formula. These findings are in line with those revealed in another Saudi Arabian study [14]. Moreover, a cohort study performed in Western Australia also found that using a pacifier at two weeks was associated with a six-month reduction in breastfeeding duration [25]. Nonetheless, such outcomes are expected because using a pacifier reduces the instances of babies crying for food. In turn, this reduces contact between mother and baby.

Multiple Logistic regression analysis was performed on the factors influencing exclusive breastfeeding. The findings of this analysis revealed that primiparas were 1,7 more likely to use mixed feeding practices than exclusive infant formula feeding compared to multiparas (p-value <0.007), which was somewhat surprising. Nonetheless, the mode of delivery was found to be positively associated with breastfeeding practices in this study. Mothers who gave birth vaginally were found to be three times more likely to exclusively breastfeed their babies as opposed to bottle-feeding them (P-value 0.005).

An earlier study showed that multiparous mothers were 1.8 times more likely to exclusively breastfeed their babies, whilst those who gave birth vaginally were 2.2 times more likely to exclusively/predominantly breastfeed their babies than those who gave birth via cesarean section [11]. Hospital stay was also found to play an important role here, as the odds of mothers exclusively breastfeeding their babies was found to drop by 38.2% with each day in the hospital (P-value< 0.001).

Conclusion and Recommendations

The most common type of feeding in our research was exclusive infant formula (55.2%). Only (11.9%) were exclusive breastfeeding. Moreover, this figure was lower among primiparas. Most of our study population started infant formula while they were in the hospital (74%), a most were primiparas. Thus, to move away from nourishing babies with formula milk in the hospital, we advise that Baby-friendly Hospital Initiative policies be strictly implemented and followed.

To conclude, this research found that primiparas were more likely to introduce infant formula whilst still in the hospital. They were also more likely to stop breastfeeding at an early age. We thus advise that support initiatives developed specifically for this group should be implemented at an early stage during pregnancy and continued throughout the antenatal period.

Furthermore, breastfeeding was found to be negatively impacted by cesarean delivery, pacifier use, and lengthy hospital stays. It is thus crucial that mothers are educated about the importance of vaginal delivery during pregnancy and at antenatal visits. Vaginal deliveries should be facilitated as much as possible and hospitals should implement evidence-based birth practices that promote and support natural births. If a cesarean section is necessary, mothers should be taught about the importance of starting breastfeeding early.

It is also important that mothers are well-informed about the World Health Organization's recommendation against using artificial teats or pacifiers when breastfeeding their babies [13]. Measures should also be implemented to ensure that excessively long hospital stays are reduced as much as possible for healthy women and their newborns. However, if a longer stay is required, then the Baby-Friendly Hospital Initiative policies should be followed. It is thus critical to encourage breastfeeding on demand, teach mothers how to maintain lactation even if they are separated from their babies, and Practice rooming-in (allow mothers and infants to remain together) 24 hours a day [13].

Lastly, it is recommended that the Ten Steps to Successful Breastfeeding policy(Baby-Friendly Hospital Initiative)should be adopted as the standard of practice in Saudi Arabia. This is based on the data obtained from the Global Baby-Friendly Hospital Initiative, which shows that only 28 of the 400 hospitals in Saudi Arabia currently adopt it [26].

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