



A CROSS-SECTIONAL STUDY TO ASSESS THE KNOWLEDGE AND ATTITUDE REGARDING HUMAN MILK BANKS AMONG POST-NATAL MOTHERS ADMITTED IN THE POSTNATAL WARD AT A SELECTED HOSPITAL IN PATNA, BIHAR.

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ABSTRACT

Background: Donated human milk is the choice of feed when mothers have ambient secretion. Various factors influence postnatal mothers' knowledge, attitude, and acceptance of donated human milk. The current study aims to assess the knowledge, attitude and acceptance of the postnatal mothers on human milk donation and human milk bank. **Materials And Methods:** A descriptive cross-sectional study was conducted among 103 postnatal mothers selected by a convenient sampling method. Data was collected using a self-structured interview schedule, which included interviews with all the mothers who met the eligibility criteria in a selected tertiary care hospital. **Results:** The results of the study show that 53.4% of mothers had inadequate knowledge. Around 51.5% of postnatal mothers had a negative attitude toward human milk donation, whereas 48.5% of mothers had a positive attitude toward human milk donation. The study shows that the knowledge has a weak positive association with the attitude among the post-natal mothers. **Conclusion:** This study concludes that the Knowledge related to the concept of human milk donation and human milk banks is not satisfactory. Most of the mothers had a negative attitude towards human milk donation and the human milk bank and were not ready to accept feeding their infants with the donated milk and also not ready to donate their breast milk, which might be due to misconceptions, lack of knowledge, safety concerns, and religious and cultural restrictions.

KEYWORDS : Knowledge, Attitude, Donated milk, Human milk Donation, Human milk Bank.

INTRODUCTION

Breastfeeding is the best method of infant feeding because human milk continues to be the only milk that is tailor-made and uniquely suited to the human infant.¹ The value of breastfeeding (BF) and donated human milk (DHM) for providing optimal nutrition and immunological protection for infants is well established. As a pillar of child survival worldwide, human milk is immunologically and nutritionally ideal for infants and especially important for infants born prematurely or in resource-limited settings.²

According to National Family Health Survey-3 data, about 20 million children cannot receive exclusive breastfeeding (EBF) for the first six months, and about 13 million do not get timely and appropriate complementary feeding along with continued breastfeeding. Over the past several years, India has failed to witness any remarkable progress in infant feeding practices, with only a little increment recorded in EBF rates amongst infants 0-6 months of age – from 41.2% in 1998-99 (NFHS-2) to 46.3% in 2005–2006 (NFHS-3).³

The World Health Organization (WHO, 2018) reported that approximately 15 million infants were born worldwide each year who were preterm (before 37 weeks of gestation), and this number has been rising. The number of preterm births in China ranked second in the world (approximately 1.2 million), behind India (WHO, 2018). Complications of preterm birth were the leading cause of death among children under five years of age; three-quarters of these deaths could have been prevented with current, cost-effective interventions, and breastfeeding was one of these cost-saving interventions (WHO, 2018). However, in some cases, direct breastfeeding could not be achieved. As a result, the American Academy of Pediatrics (AAP) recommended the introduction of donor human milk (DHM) to infants as a first alternative (Committee on Nutrition, 2017). It had previously been found that donor milk protected premature infants from necrotizing enterocolitis (NEC) (Gibbins et al., 2013; Hair et al., 2016; Kantorowska et al., 2016) and sepsis

(Patel et al., 2013), which were two fatal diseases in newborns. Moreover, the supplementation of DHM could significantly shorten hospital stays and lower hospitalization costs for low-birth-weight infants (Dritsakou et al., 2016). Therefore, establishing and developing human milk banks (HMBs) in China was of great importance.⁴

Numerous health and medical organizations consider breast milk the healthiest option for feeding babies. The World Health Organization (WHO), American Academy of Pediatrics (AAP), and United Nations Children's Fund recommended that the best alternative to a mother's breast milk was milk from a healthy wet nurse or donor human milk (DHM) from a human milk bank (HMB).^{2,3} Though wet nursing had been in practice since the mythological ages, modern human milk banking was in its infancy in India. Lack of awareness, leadership deficits, infrastructural and maintenance costs, and fewer neonatal setups were some of the reasons for this. The first milk bank in Asia, named Sneha and founded by Dr. Armeda Fernandez, was started in Dharavi, Mumbai, on November 27, 1989. From 2005 to 2015, only 22 human milk banks were established, but in the past 2 years, this number has more than doubled. There were currently about 50 milk banks in India, which were still inadequate to meet the massive demand for donor human milk.⁴ The growth of human milk banks had been very slow compared to the growth of neonatal intensive care units. Hence, it was important to educate postnatal mothers regarding human milk banking, its benefits, and so on, to reduce infant mortality and morbidity.

Need And Significance

The preferred nutrition for the newborn is his or her own mother's milk. When that is not available or is limited, pasteurized human donor milk is recommended as an alternative for hospitalized neonates. The use of pasteurized human donor breast milk is prioritized for compromised preterm infants and is prescribed only following written informed consent from a parent or guardian. Educating

parents about the benefits of human breast milk or pasteurized human donor breast milk is essential for parental choice and informed decision-making in prescribing an optimal feeding plan for hospitalized neonates. The concept of milk banking is adopted as a free nutritional source for hospitalized neonates because it reduces disease incidence and severity.⁸

Family members are still unaware of breast milk donation and are fearful of related disease transmission, preferring formula feed instead. Even though acceptance levels are found to be good in some parts of India, they are still not up to the mark in other areas due to restrictions imposed by family, social stigma, religious and cultural beliefs, and safety concerns.⁸ For mothers, including women from various social, economic, and educational strata, and from different castes, creeds, and religions, breastfeeding is the only way to reduce the risk and mortality of preterm infants and to lessen illness among infants. In this study, I aimed to assess the awareness, attitude, and acceptance among postnatal mothers about human milk banks and donations, their knowledge of its benefits, and to evaluate the association between knowledge, attitude, and acceptance levels among the postnatal mothers.⁸

MATERIALS AND METHODS:

It Should Include And Describe The Following Aspects:

Ethics:

The study was approved by the Institute Ethics Committee on August 17, 2023, with reference number AIIMS/Pat/PGRMC/PG. Th/July22/10. Prior to their inclusion in the study, all individuals gave their informed consent to the researchers.

Study Design:

To accomplish the study's goals, a quantitative research methodology was applied. A cross-sectional descriptive research design was chosen for this investigation.

The setting of the study: The chosen postnatal wards of a tertiary care hospital in the Patna, Bihar, India, area served as the study's site. This location was selected because it is convenient for the participants, it is pertinent to the research issue, and it is feasible to carry out the study without any problems.

Selection and Description of Participants: The postpartum mothers in the postnatal wards who met the researcher's inclusion requirements were the study's participants. Using a straightforward non-probability sampling technique, the samples were gathered. The 103 postpartum mothers who met the researcher's sampling requirements made up the population included in this study.

The following are the sample criteria:

Inclusion Criteria:

Postpartum mothers who provided their agreement to take part.

Mothers who are at least eighteen years old.

Mothers who are pregnant with a singleton.

Mothers who were able to speak Hindi or English.

Postpartum women who had given birth to a child without any complications or birth defects.

Exclusion Criteria:

- Postnatal mothers who had serious complications after delivery.
- Postnatal mothers who had postpartum psychosis.

Technical information: In this study, a five-point Likert scale and a self-structured knowledge questionnaire were employed. The researcher self-structured the data collection instruments. Experts in the fields of nursing and medicine provided the content validity. A pilot study was carried out to assess the tool's dependability. The sociodemographic

characteristics of the participants, such as age, domicile, religion, marital status, mother's level of education, occupation, family type, monthly income, and number of children, were among the factors examined. The research variables included the knowledge and attitudes regarding banks and the donation of human milk.

Statistics: The raw data obtained from the postpartum mothers by convenient sampling for knowledge and attitudes regarding human milk banks was used to conduct the study's analysis. Descriptive and inferential statistics were used to examine and interpret the raw data once it was entered into an Excel spreadsheet.

Frequency And Percentage Distribution Of Samples According To Their Socio-demographic Variables.

Tab 1. Frequency Percentage Distribution Of Samples According To Their Socio-demographic Variables. (n-103)

Demographic variable	n (%) / Mean $\pm$ SD	
Age	25.39 (3.8)	
Demographic variables	Frequency (n)	Percentage (%)
Residence		
Urban	43	41.7
Semi-urban	16	15.5
Rural	44	42.7
Religion		
Hindu	86	83.5
Christian	06	5.9
Muslim	11	10.7
Marital status		
Married	99	96.1
Unmarried	1	1
Divorced	1	1
Widow	2	1.9
Education		
Non-formal	7	6.8
Primary school	26	25.2
Secondary school	34	33.0
Graduate	36	35.0
Occupation		
Homemaker	78	75.7
Government	14	13.6
Private Service	8	7.8
Daily wage	3	2.9
Types of family		
Joint family	69	67
Nuclear family	26	25.2
Extended family	8	7.8
Monthly income (Rupees)		
< 5000	19	18.4
5000 – 10000	53	51.5
10000 – 15000	17	16.5
> 15000	14	13.6
Number of children		
One	54	52.4
Two	35	34.0
Three or more	14	13.6
Are you aware of breast milk donation		
Yes	57	55.3
No	46	44.7
Have you heard about breast milk banks		
Yes	39	37.9
No	64	62.1

Table 1- The distribution of the socio-demographic variables among postnatal mothers admitted in the postnatal ward at the selected hospital in Patna Bihar.

The majority of participants (42.7%) were from rural areas, and their mean age was 25.39 ± 3.8 . In terms of educational

background, 36 people (35.0%) have a graduate degree. Hindus make up the majority of them (83.5%) in terms of religious affiliation. Homemakers accounted for 78 (75.7%) of the participants with an employment status. Joint families make up the majority of family kinds, followed by nuclear families.

(69, 67.0%; 26 25.2%), in that order. Over half of the participants' family's monthly income (53, 51.5%) is between Rs. 5000 and Rs. 10,000. Of these, 64 (62.1%) are unaware of human milk banks, whereas 57 (55.3%) are aware of the donation of human milk.

Percentage Distribution Of Samples Based On Their Knowledge, And Attitude Regarding Human Milk Bank.

Tab 2 - Distribution Of Samples Based On Their Knowledge Regarding Human Milk Bank (n= 103)

Characteristics	Knowledge regarding human milk bank (n= 103, %)	
	Inadequate	Adequate
Residence		
Urban	19 (44.2)	24 (55.8)
Semi-urban	11 (68.8)	5 (31.2)
Rural	18 (40.9)	26 (59.1)
Religion		
Hindu	38 (44.2)	48 (55.8)
Christian	5 (83.3)	1 (16.6)
Muslim	5 (45.5)	6 (54.5)
Education		
Non formal	5 (71.4)	2 (28.6)
Primary school	21 (80.8)	5 (19.2)
Secondary	12 (35.3)	22 (64.2)
Graduate	10 (27.8)	26 (72.2)
Occupation		
Homemaker	30 (38.5)	48 (61.5)
Government	10 (71.4)	4 (28.6)
Private	7 (87.5)	1 (12.5)
Daily wage	1 (33.3)	2 (66.7)
Family Income		
<5000	8 (42.1)	11 (57.9)
5000-10000	27 (50.9)	26 (49.1)
10000-15000	8 (47.1)	9 (52.9)
> 15000	5 (35.7)	9 (64.3)
Family type		
Joint	26 (37.7)	43 (62.3)
Nuclear family	15 (57.7)	11 (42.3)
Extended	7 (87.5)	1 (12.5)
Number of children		
One	16 (29.6)	38 (70.4)
Two	25 (71.4)	10 (28.6)
Three and more	7 (50.0)	7 (50.0)

*- Significant, p- probability

Tab 2 illustrates the data on the distribution of samples based on their knowledge regarding human milk banks.

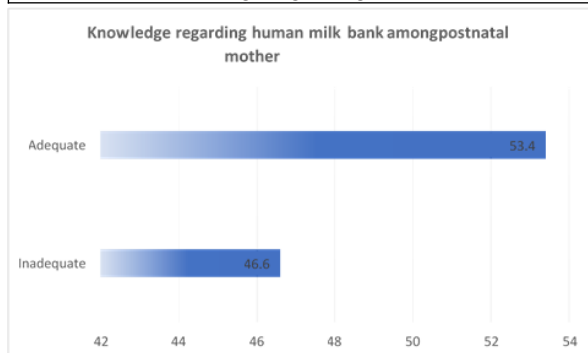


Figure 1. Knowledge Regarding Human Milk Bank Among

Postnatal Mothers

According to the study, the mean knowledge score was 6.09 ± 2.9 (Range 1–9), with 55 (53.4%) of the individuals having adequate knowledge and just 48 (43.5%) having inadequate knowledge.

Tab 3 – Distribution Of Samples Based On Their Attitude Regarding Human Milk Bank

Characteristics	Attitude Toward Human Milk Bank (n= 103, %)	
	Negative	Positive
Residence		
Urban	20(46.5)	23 (53.5)
Semi-urban	6 (37.5)	10 (62.5)
Rural	27(61.4)	17 (38.6)
Religion		
Hindu	46(53.5)	40 (46.5)
Christian	3 (50.0)	3 (50.0)
Muslim	4 (36.4)	7 (63.6)
Education		
Non formal	4 (57.1)	3 (42.9)
Primary school	9 (34.6)	17 (65.4)
Secondary	20(58.8)	14 (41.2)
Graduate	20(55.6)	16 (44.2)
Occupation		
Homemaker	41(52.6)	37 (47.4)
Government	5 (35.7)	9 (64.3)
Private	4 (50.0)	4 (50.0)
Daily wage	2 (80.0)	1 (20.0)
Family Income		
<5000	11(57.9)	8 (42.1)
5000-10000	28(52.8)	25 (47.2)
10000-15000	9 (52.9)	8 (47.1)
> 15000	5 (35.7)	1 (20.0)
Family type		
Joint	36(52.2)	33 (47.8)
Nuclear family	13(50.0)	13 (50.0)
Extended	4 (50.0)	4 (50.0)
Number of children		
One	32(59.3)	22 (40.7)
Two	15(42.9)	20 (57.1)
Three and more	6 (42.9)	8 (57.1)

Tab 3 illustrates the data presented in the attitude regarding human milk banks have no significance with socio-demographic variables of postnatal mothers.

Fig 2- Distribution of samples based on their attitude regarding human milk bank

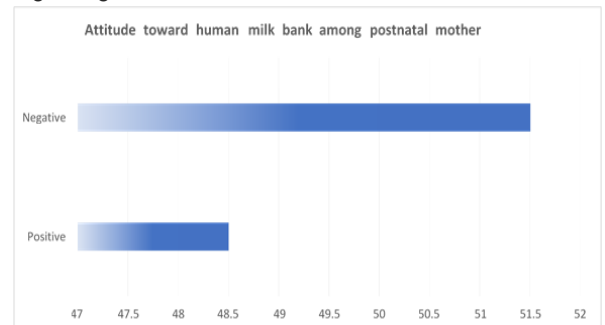


Figure 2. Attitude toward human milk bank among postnatal mothers (range of score 23- 56)

Nonetheless, 53 (51.5%) of the participants had a poor opinion of breast milk banks. Because this idea was completely unfamiliar to the respondents, the overall mean score of attitudes (34.8 ± 6.1) shows that they had a generally negative opinion regarding breast milk banking.

ASSOCIATION BETWEEN KNOWLEDGE REGARDING HUMAN MILK BANK WITH SELECTED SOCIO-DEMOGRAPHIC VARIABLES.

Table 4 Association Between Knowledge And Attitude Regarding Human Milk Bank With Selected Demographic Data n - 103

Characteristic s	Knowledge regarding breast milk bank (n- 103, %)		p- value	Attitude Toward breast milk bank (n- 103, %)		p- value
	Inadeq uate	Adequa te		Negativ e	Positive	
Residence						
Urban	19 (44.2)	24 (55.8)	0.14	20 (46.5)	23 (53.5)	0.18
Semi- urban	11 (68.8)	5 (31.2)		6 (37.5)	10 (62.5)	
Rural	18 (40.9)	26 (59.1)		27 (61.4)	17 (38.6)	
Religion						
Hindu	38 (44.2)	48 (55.8)	0.07	46 (53.5)	40 (46.5)	0.50
Christia n	5 (83.3)	1 (16.6)		3 (50.0)	3 (50.0)	
Muslim	5 (45.5)	6 (54.5)		4 (36.4)	7 (63.6)	
Education						
Non formal	5 (71.4)	2 (28.6)	<0.001 *	4 (57.1)	3 (42.9)	0.25
Primary school	21 (80.8)	5 (19.2)		9 (34.6)	17 (65.4)	
Second ary	12 (35.3)	22 (64.2)		20 (58.8)	14 (41.2)	
Gradua te	10 (27.8)	26 (72.2)		20 (55.6)	16 (44.2)	
Occupation						
Home maker	30 (38.5)	48 (61.5)	0.01 *	41 (52.6)	37 (47.4)	0.23
Govern ment	10 (71.4)	4 (28.6)		5 (35.7)	9 (64.3)	
Private	7 (87.5)	1 (12.5)		4 (50.0)	4 (50.0)	
Daily wage	1 (33.3)	2 (66.7)		2 (80.0)	1 (20.0)	
Family Income						
<5000	8 (42.1)	11 (57.9)	0.74	11 (57.9)	8 (42.1)	0.62
5000- 10000	27 (50.9)	26 (49.1)		28 (52.8)	25 (47.2)	
10000- 15000	8 (47.1)	9 (52.9)		9 (52.9)	8 (47.1)	
>15000	5 (35.7)	9 (64.3)		5 (35.7)	1 (20.0)	
Family type						
Joint	26 (37.7)	43 (62.3)	0.01 *	36 (52.2)	33 (47.8)	0.97
Nuclear family	15 (57.7)	11 (42.3)		13 (50.0)	13 (50.0)	
Extende d	7 (87.5)	1 (12.5)		4 (50.0)	4 (50.0)	
Number of children						
One	16 (29.6)	38 (70.4)	0.01 *	32 (59.3)	22 (40.7)	0.25
Two	25 (71.4)	10 (28.6)		15 (42.9)	20 (57.1)	
Three and more	7 (50.0)	7 (50.0)		6 (42.9)	8 (57.1)	

*statistically significant (<0.05).

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Table 5 illustrates the relationship between a few chosen sociodemographic factors, knowledge, and attitudes on human milk banks. The aforementioned table demonstrated a significant correlation (p<0.001) between the knowledge score

of postpartum mothers admitted to tertiary care teaching hospitals about breast milk banks and the chosen sociodemographic variables, education, occupation, family type, and number of children. Nevertheless, there was no statistically significant relationship between the degree of attitude toward breast milk banks and any sociodemographic factors. (p>0.05).

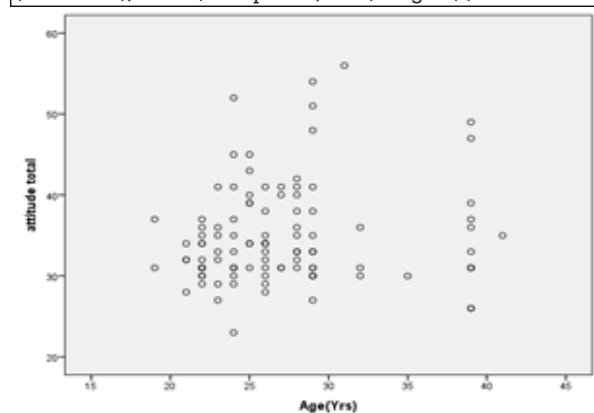
Table 5- Knowledge, And Attitude Regarding Human Milk Bank. (n -103)

	N	%	Mean + SD	Range
Knowledge regarding Human Milk Bank				
Inadequate	48	46.6	6.09 + 2.9	1 – 9
Adequate	55	53.4		
Attitude toward Human Milk Bank				
Positive	50	48.5	34.85 + 6.14	23 – 56
Negative	53	51.5		

Table 6. Adjusted linear regression analysis with demographic characters

	Beta (A)	95 % Confidence interval	t- Value	P-Value
Religion	0.41	-0.11 to 0.13	0.153	0.87
Education	-0.24	0.12 to 0.31	4.59	0.007
Occupation	0.01	-0.28 to -0.04	-2.78	<0.001*

Note: Details of adjusted model: R = 0.470^a; R² = 0.22^a; Adjusted R² = 0.197; F (9.34, P<0.001*) Beta (A) – Adjusted regression coefficient. (Constant:1.09 (attitude), 0.22 (Education), -0.16 (Occupation, 0.01(Religion))



(r = 0.470; p<0.001)

Fig 3 Correlation graph of attitude toward breast milk bank with Age. (n-103)

The above table and graph shows the correlation graph of attitude toward breast milk bank with Age (n-103) (r = 0.470; p<0.001) which is statistically significant.

DISCUSSION

Less than half of the mothers (42.7%) in the current study lived in rural Bihar, and almost all of the mothers (83%) identified as Hindu. Ninety-six percent of the mothers who took part in the study were married. Thirty-five percent of the mothers were graduates. Of the mothers, 25.3% worked, and more than half (75.5%) were stay-at-home moms. Of the women, over half (67%) were part of joint households, and 51.5% earned between Rs 5000 and Rs 10000. Furthermore, a living child was already present in 55.5% of the women.

These results are in line with a study conducted in 2020 by Naik R.P and Mahadalkar P, which involved 100 postpartum women who were hospitalized to particular hospitals in Pune City²¹. 21% of the study's participants were employed, while 79% were stay-at-home moms. In addition, 28% of the women had upper secondary education, 52% were part of joint families, 61% lived in cities, and 28% had only completed

secondary school. However, the current study²¹ found that 64% of the women earned between Rs 15000 and Rs 25000 each month.

To assess the knowledge and attitude regarding human milk banks among postnatal mothers admitted in a postnatal ward at a selected hospital in Patna, Bihar.

In this study, it was found that among 103 postnatal mothers, 46 (44.7%) were not aware of human milk donation, while 64 (62.1%) had not heard of human milk banks. This finding was supported by the study conducted by Rajeesha C.H. et al., who found that among 150 postnatal mothers admitted to the postnatal ward, only 6.7% had heard about human milk banks. The majority of mothers were unaware of the concept of human milk banking, with the main reason being a lack of knowledge about the importance of human milk. Many believed that formula milk was the best alternative to direct human milk. In this study, 80.5% of the mothers were not knowledgeable about human milk banks; among those who were knowledgeable, 12% had learned about it through mass media²². In contrast, the study conducted by Naik R.P. and Mahadalkar P. found that among 100 postnatal mothers admitted to hospitals in Pune City, none had previous information about human milk donation or human milk banks²¹.

Among the participants, 53.4% had adequate knowledge, while 46.6% had inadequate knowledge. Specifically, 55.3% of mothers understood milk donation, and 37.9% correctly recognized the concept of human milk banks, while 44.7% did not know about human milk donation. These findings were similar to those of the study conducted by Eksioğlu A. et al., which found that 41.6% of mothers were aware of milk banking²³.

To find out the association between Knowledge and attitude of postnatal mothers regarding human milk donation.

In the present study, it was found that there was a weak positive correlation between awareness and attitude among pregnant and nursing mothers ($p = 0.000111$). This finding was consistent with the study conducted by Tahasildar H. A. et al., which reported a significant positive correlation between knowledge and attitude scores about banked human milk among mothers of infants. However, statistically, this correlation was not significant as the calculated value was $p > 0.05$ ($p = 0.2601$)¹⁹.

In the present study, a weak positive correlation between awareness and attitude was found ($p = 0.000111$). This was consistent with the study conducted by Kaur M. et al., which involved 200 parous mothers. In their study, the majority of participants (56.5%) had inadequate knowledge, while only 43.5% had adequate knowledge. Additionally, 66.5% of the participants had a neutral attitude, which depicted a significant correlation between knowledge and attitude ($r = 0.334$, $p = 0.000$). The nature of this correlation was mild²⁰.

Limitations And Recommendations

Since only one tertiary care hospital was investigated and the study was conducted with a small sample size, it is unlikely to generalize the findings. Strength of the study: We considered a structured interview method to collect the data and used valid and reliable instruments.

CONCLUSION:

According to the study's findings, there is insufficient knowledge about the idea of human milk donation and human milk banks. The majority of the mothers were supportive of human milk donation and the human milk bank, but they were not prepared to give their breast milk or accept

feeding their babies with donated milk. This could be because of misunderstandings, ignorance, safety concerns, or cultural and religious prohibitions. Thus, it is advised that medical professionals, such as doctors and nurses, play a proactive role in educating women about the breadth and advantages of human milk donation as well as human milk banks.

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