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Timely Initiation of Breast Feeding and Its Predictors among Northern Ethiopia Women having Children Less than Six Months Age ; A Community Based Cross Sectional Study

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Abstract

Background: Timely initiation of breastfeeding or early initiation is the start breast feeding immediately or within one hour of after delivery. Breastfeeding is one of the primary health care components and almost universal practice in both urban and rural parts of Ethiopia. However, there is no well documented study of factors associated with timely initiation of breastfeeding in the study area. Therefore the aim of this study was to assess factors for timely initiation of breastfeeding in rural communities of Gozamen district.

Methods: A community -based cross-sectional study was conducted among seven hundred forty-one (741) mothers having children less than six months age in Gozamen district from August 1 to September 12 /2019. Stratified cluster sampling technique was used to select study participants. Data were collected by face to face interviewer-administered, pretested and semi-structured questionnaires. Descriptive analysis, bi-variable and multivariable logistic regression model were employed. Adjusted odds ratio with 95% confidence interval was used to identify factors associated with timely initiation of breast feeding.

Results: In this study the prevalence of timely initiation of breast feeding was found to be 60.9% with 95% CI [57.5, 64.2]. Mothers who had no antenatal follow up [AOR:0.32, CI; 0.60] ,those mothers who did not discard colostrum [AOR: 2.31, CI; 1.12,4.78], respondents who did not gave prelacteal feeding [AOR: 3.14, CI; 1.64, 6.03] ,mothers who had counseled on breast feeding at post natal care [AOR:2.69 CI; 1.75, 4.15] , mothers who did not participate on pregnant women forum [AOR: 0.38 CI; 0.24, 0.61] were statically significant factors associated with timely initiation of breast feeding.

Conclusions: This study concluded that timely initiation of breast feeding was relatively low in the study area .To increase timely initiation of breast feeding strengthening infant feeding counseling , encourage mothers to avoid prelacteal feeding and discarding of colostrum to their child and health education and awarenes creation of the communities are recommended interventions.

Keywords: Timely initiation of breast feeding; Early initiation of breast feeding; Prevalence; Associated factors; Predictors; Mothers having children less than six months age; Ethiopia

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Introduction

Internationally, it is estimated that every day, around 4,000 infants and young children loss their life due to lack of breastfed[1]. World Health Organization (WHO) recommends to start breast feeding(BF) immediately within one hours of life, exclusive breast feeding until six months of life and to continue BF until two years or beyond[2,3].

Timely initiation of Breastfeeding (TIBF) also known as early initiation is defined as starting BF immediately or within one hour of after delivery[4-6]. TIBF contributes vastly to the sustainable health of the child by reduction malnutrition, gastrointestinal disease and increase the immune system of the child against diseases[7]. Despite, of this advantage late intitation of breast feeding practiced in Ethiopia as well as worldwide[1,8,9]. Initiation of breastfeeding after one hours of a child's birth decreases the likelihood of exclusive breastfeeding(EBF) and longer duration of breastfeeding[10] and additionally late or delayed initiation of BF doubles the risks of neonatal mortality[1,11].

In developing countries like Ethiopia early and sudden stopping of BF, delay initiation of BF, starting dirty and artificial feeding of infants with diluted milk product is very common[12,13]. Consequently infants and young childes are exposed to malnutrition and infectious disease as their body resistance to disease and nutrient storage is not well developed[14,15].

Previous studies have identified a factor that interferes with TIBF: like routine labour ward practices, beliefs among mothers and health-care providers and routine hospital practices[10,16,17]. Provision of inadequate breastfeeding information in the health system, delivery attended by traditional birth attendants, access to mass media and attendance at delivery by health workers are barriers for early in the initiation of breastfeeding[17,18].

Breastfeeding is one of the Primary health care components and almost universal practice in both urban and rural parts of Ethiopia, but still a wide range of harmful infant feeding practices are registered, even after implementation of Infant and Young Child Feeding (IYCF) recommendations, furthermore, there is no well documented study of factors associated with timely initiation of breastfeeding in the study area. Thus, the aim of this study was to assess factors for timely initiation of breastfeeding in rural communities of Gozamen district.

Methods

Study design and setting

A community-based quantitative cross-sectional study was conducted from August 1 up to September 12/2019 in Gozamen district. Gozamen district is one of the 18 districts in East Gojjam zone. Debre Markos town is the zonal capital of the district. It is found 300 Km far northwest from the capital city of the country and 260 from Bahir Dar the capital city of Amhara regional state. The district is divided into 30 kebels administratively (the smallest administration unit next to the district in Ethiopia) of those 5 are urban and 25 are rural kebels. According to the district administrative report, the population size of the district estimated at 164,816 among the total population, about 82,573 are women of those, 2536 are mothers who gave birth in the last six months and 82,224 are males. The district has 6 health centers and 26 health posts and they are providing Maternal and child health care (MCH) service.

Population

All mothers having children less than six months age in Gozamen district were source population and all mothers having children less than six months age in the selected kebeles/clusters were the study population. All mothers who lived in the area for at least 6 months and who gave informed consent were included in the study.

Sample size determination and sampling procedure: The sample size was calculated for the first objective and second objective. Finally, the largest sample size was taken. Single population proportion was used to determine the sample size for the first objective by assuming prevalence of TIBF in Motta town 78.8 %(19) with a 95% confidence level and 5 % marginal error and 10% non response rate. Based on these assumptions, the total sample size was calculated using the following formula:

$$n = (z\alpha/2)2\ p\ (1-p) \qquad n = (1.96)2(0.788(1-0.788) = 224$$
$$d2 \qquad (0.05)2$$

Where n = required sample size, Z = critical value for normal distribution at 95 % confidence level (1.96) P =prevalence of Colostrum avoidance in North Wollo zone d = 0.05(5% margin of error), by considering 10% non-response rate of = 24 and D = 2 (design effect) was used due to cluster sampling method, the sample size was found to be 494.For the second objective the sample size was calculated using Epi info 7.2 (double population proportion) information obtained from the previous study by taking significant factors in previous studies done in Amibara district (20) and the sample size was greater the second objective than the first objective,then final sample size was 798. Since it is cluster sampling method the final sample size that the actual data collected was 741.Stratified cluster sampling technique was used to recruit study participants. First the population was stratified by residence as urban and rural Kebles. The residential stratification gives 25 rural and 5 urban kebels. Out of those, two urban and 7 rural kebeles were selected randomly by using lottery method. Finally, all the selected kebeles were used as clusters. Household having two mothers having children less than six months age by lottery method one mother was selected. Households closed during the data collection period were proceed to the next eligible house and returned back for the second time.

Data collection tool and procedures: The data were collected by using a pretested, semi structured and an interviewer- administered questionnaire. The questionnaire was developed a by reviewing related literatures and some modification was done accordingly. It was first prepared in English and translated into local language Amharic for data collection and then it was translated back to English to check consistency by both language experts. The questionnaire had socio-demographic variables, health service utilization variables, obstetrics related variables, and maternal behavior related questions, breast feeding related

variables and wealth index related variables. Data were collected by six (Health Extension Workers) HEW under the supervision of the investigators and supervisors.

Study variables: In this study, the dependant variable was 'timely initiation of breast feeding'. Timely initiation of breast feeding is starting of breast feeding immediately or within one hour after delivery[8,21]. Intitation within 1hr of birth coded as '1' while initiation after 1hr of birth coded as'0'for regression analysis. The independent variables were; Sociodemographic variables, health care service utilization variables, obstetrics related variables, maternal behavioral related variables and infant feeding characteristics.

Data quality control: One day training was given for data collectors and supervisors. The data were checked daily manually for completeness and accuracy by principal investigator and supervisors on daily basis. Pretest was conducted on (5%) of the sample size in the non selected kebeles of the district to ensure the validity, reliability, and clarity of the data collection instrument. Based on the pretest done some modification was done on questionnaire.

Statistical analysis: Data were cleaned and entered into computer using Epi data 4.4.1 software and exported to Statistical Package for Social Science (SPSS) version 20 for data analysis. Before data analysis, the missing value and outliers were checked and managed appropriately.

Data were analyzed using SPSS version 20. Descriptive analysis was employed for categorical variables using frequency, percentage, tables, and charts. For quantitative variables, summary values like median and Intra quartile range was used. PCA was performed to classify the household wealth index into low, middle and high.

Binary logistic regression (bivariable and multivariable logistic regression analysis) was fitted to identify factors associated with colostrum avoidance. Variables having p-value of <0.2 in the bivariable analysis were entered into multivariable analysis. To estimate the strength of the association adjusted Odds ratio (AOR) with their 95% Confidence Interval (CI) was determined. Finally, variables with a p-value of ≤ 0.05 were considered statistically significant. Model fitness was checked by using Hosmer Lemeshow Goodness- of-fit and declared good fitted at p-value of >0.05.

Results

Sociodemographic characteristics of respondents

A total of 741 mothers-child pairs were interviewed and giving a response rate of 100%. Majority (643) of the respondantes were from rural area and the rest were from urban.The median age of the respondents was 30 years ± 10 IQR and the median age of their child was 3 months ±3 IQR. Majority (93.1%) of respondents were married out of them 566(82%) of their husband's occupation were farmers and 289(41.9%) of their husband's educational status were unable to read and write. Three hundred seventy eight (51%) of mothers were unable to read and write. About 643(86.8%) of study participants residences were rural. From 741 study participants 487 (65.7%) of the Mothers occupation were farmer. Only 57(7.7%) of respondents were household heads. Almost all respondents (99.5%) were orthodox religious followers and 738(99.6%) Amhara were by ethnicity (Table1).

Table 1: Socio-demographic characteristics of mothers having children less than six months age in Gozamen district, East Gojjam zone, North West Ethiopia, 2020 (n=741)

Variables	Category	Frequency(n)	Percent (%)
Residence	urban	98	13.2
	Rural	643	86.8
Sex of child	Male	343	46.3
	Female	398	53.7
Age of respondent	15-25	162	21.9
	26-35	375	50.6
	36-45	204	27.5
Age of child	0-1 month	165	22.3
	2-3 month	290	39.1
	4-6 month	286	38.6
Family size	≤3	182	24.6
	≥4	559	75.4
Number of children	≤3	565	76.2
	≥4	176	23.8
Marital status of the mothers	Single	26	3.5
	Married	690	93.1
	Widowed	9	1.2
	Separated	3	0.4
	Divorced	13	1.8
Educational status of husband (n=690)	Unable to write and read	289	41.9
	Able to write and read	206	29.8
	Primary school	129	18.7
	Secondary school	51	7.4
	Collage and above	15	2.2
Occupational status of husband (n=690)	Farmer	566	82
	Merchant	43	6.2
	Governmental Private and employee	63	9.1
	Daily laborer	18	2.7
Occupational status of mother	Housewife	175	23.6
	Merchant	22	3
	Private and Governmental employee	31	4.2
	Farmer	487	65.7
	Daily lobour	19	2.6
	Student	7	0.9

Educational status of mother	Unable to read and write	378	51
	Able to write and read	176	23.8
	Primary school (1-8)	127	17.1
	Secondary school (9-12)	44	5.9
	Collage and above	16	2.2
Access to radio	Yes	417	56.3
	No	324	43.7
Access to television	Yes	60	8.1
	No	681	91.9
Household head	Yes	57	7.7
	No	684	92.3
Wealth index of family	Low	256	34.5
	Medium	238	32.2
	High	247	33.3

Obstetrics and maternal behavioral related characteristics of respondents

Around three-fourth (75.4%) of the study participants were multiparious and more than half (58%) of them spaced their birth more than 24 months .About 508 (68.4%) of mothers had good knowledge and more than two-third of respondents (72.2%) had favorable attitude (Table2).

Table 2: Obstetrics and maternal behavioral related characteristics of mothers having children less than six months age in Gozamen district, East Gojjam zone, North West Ethiopia, 2020 (n=741)

Variable	Category	Frequency (n)	Percent (%)
Parity of mother	Primparious	182	24.6
	Multi parious	559	75.4
Birth space	No previous birth	182	24.6
	<24months	129	17.4
	≥ 24 months	430	58
Knowledge	Poor knowledge	234	31.6
	Good knowledge	507	68.4
Attitude	Unfavorable	169	22.8
	Favorable	572	77.2

Health care service utilization of study participants

Regarding health care service utilizations more than three-fourth of the study participant (88.9%) was gave their birth in health facilities (hospital and health centers). About 660(89.1%) of respondents had ANC follow up during their pregnancy out of them 444(67.3%) were less than four visits. Three hundred thirteen 313 (47.4%) were counseled about breastfeeding of those 121(38.7%) were counseled about exclusive breastfeeding. Majority of respondents (88.7%) their labor was assisted by a health professional. Out of the total respondents, 419(56.6%) of mothers were participated in pregnant woman form (Table3).

Table 3: Health care service utilization of mothers having children less than six months age in Gozamen district, East Gojjam zone, North West Ethiopia, 2020 (n=741)

Variable	Category	Frequency(n)	Percent (%)
Place of delivery (n=741)	Health facility	666	89.9
	Home	75	10.1
Mode of delivery (n=741)	Caesarian delivery	67	9
	Spontaneous vaginal delivery	659	88.9
	Instrumental delivery	15	2.1
Number of ANC visit(n=660)	<4	444	67.3
	≥ 4	216	32.7
BF counseling at ANC (n=660)	Yes	313	47.4
	No	347	52.6
what did you counseled about	Benefit of breastfeeding	52	16.6
	Position during BF	22	7.0
	EBF	121	38.7
	Management of BF problem	13	4.1
	Expression of breast milk	18	5.8
	Colostrum benefit and should not discard	61	19.5
	Others*	26	8.3
The person assisted you during delivery (n=741)	Health professional	657	88.7
	Traditional birth attendant	15	2.0
	Family (mother, husband)	56	7.6
	Others**	13	1.7
PNC visit (n=741)	Yes	567	76.5
	No	174	23.5
BF counseling at PNC (n=567)	Yes	263	46.4
	No	304	53.6
Participation in pregnant woman form	Yes	419	56.5
	No	322	43.5

Breast feeding-related characteristics

Regarding level of TIBF 451(60.9%)of respondents initiate breast feeding within one hour after delivery. 127(17.1%) of respondents gave prelacteal feeding to their child within three days after delivery before initiation of breast feeding and the main reason was 44 (34.6%)of respondants thoughts to clean the mouth and throat of the baby. The most common prelacteal feeding was butter (81.1%).164 participants out of total respondents they discard colostrums within five days after delivery (Table4).

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Table 4: Timely initition of breast feeding among mothers having children less than six months age in Gozamen district, East Gojjam zone, North West Ethiopia, 2020 (n=741)

Variable	Category	Frequency(n)	Percent (%)
Time of initiation of breast-feeding (n=741)	More than one hour	290	39.1
	Within one hour	451	60.9
BF counseling on timely initiation	No	293	39.5
	Yes	448	60.5
Prelacteal feeding (n=741)	Yes	127	17.1
	No	614	82.9
Types of prelacteal feeding (n=127)	Butter	103	81.1
	Milk	19	15
	Water	5	3.9
Reason for prelacteal feeding (n=127)	Breast milk cause thirsty	3	2.4
	Good for child growth	9	7.1
	Breastfeeding problem	17	13.4
	Maternal medical illness	18	14.2
	Cultural practice	22	17.3
	To calm baby	7	5.5
	To clean bowel and throat	44	34.6
	Others**	7	5.5
Colostrum avoidance (n=741)	Yes	164	22.1
	No	577	77.9
Reasons for colostrum avoidance (n=164)	Causes abdominal cramp and diarrhea	42	25.6
	Dirty	38	23.2
	Cultural practice	25	15.2
	Maternal medical illness	13	7.9
	My breast has no milk	14	8.5
	Not good for child growth	5	3
	Infant not feed	9	5.5
	Influence by others	12	7.3
	Others*	6	3.8

Factors associated with colostrum avoidance

In the bivariable analysis variables having p-value of less than 0.2 were entered into the multivariable analysis. Those variables were mother occupation, mother educational status, marital status, ANC visit, breast feeding counseling at PNC visit, colostrum discarding, and participation on pregnant woman forum, prelacteal feeding and birth space and mothers age. In multiple logistic regression models ANC visit, BF counseling at PNC, participation on pregnant women forum, prelacteal feeding and colostrum discarding were independent factors associated with prelacteal feeding. Mothers who had no ANC follow up were 68 % times less likely to initiation breast feeding early feeding [AOR:0.32, CI; 0.60] as compared to their counter parts. Those mothers who did not discard colostrum were 2.31 times more likely to initiate of breast feeding early [AOR: 2.31, CI; 1.12, 4.78] as compared to those mothers who discarded colostrum. The odds of timely initiation of BF was 3.14 times higher in respondents who did not gave prelacteal feeding [AOR: 3.14, CI; 1.64, 6.03] than respondents who gave prelacteal feeding. Mothers who had counseled on breast feeding at PNC were 2.69 times more likely practice initiation of breast feeding early [AOR:2.69 CI; 1.75, 4.15] as compared to their counter parts. Mothers who did not participate on pregnant women forum were 62 % times less likely to initiate breast feeding early [AOR: 0.38 CI; 0.24, 0.61] than their counter parts (Table5).

Table 5: Bivariable and multivariable logistic regression analysis showing factors associated with timely initiation of breast feeding in Gozamen district , East Gojjam zone, North West Ethiopia, 2020(n=741)

Variables	Timely initiation of breast feeding		COR(95% CI)	AOR(95%CI)
	Yes	no		
ANC				
No	13	68	0.01(0.52,0.18)	0.32(0.12,0.83)**
Yes	438	222	1	1
Birth space				
No privious space	105	77	0.75(0.53,1.07)	0.64(0.34,1.23)
Less than 24 months	69	60	0.64(0.23,0.95)	0.88(0.47,1.63)
More than 24 months	277	153	1	1
BF counsling at PNC visit				
No	221	83	2.10(1.48,2.98)	1
Yes	147	116	1	2.69(1.75,4.15)**
Mother age				
15-25	110	74	1.29(0.85,1.95)	0.81(0.43,1.37)
26-35	243	131	1.61(1.12,2.31)	1.39(0.82,2.36)
36-45	98	85	1	1
Participation in pregnant woman form				
No	126	196	0.19(0.14,0.57)	0.38(0.24,0.60)**
Yes	325	94	1	1
Colostrum discarding				
No	416	160	9.66(6.38,14.63)	2.31(1.12,4.78)*
Yes	35	130	1	1
Prelacteal feeding				
No	424	190	8.27(5.23,13.07)	3.14(1.64,6.03)*
Yes	27	100	1	1
Mother educational status				
Unable to write and read	211	167	0.57(0.21,1.69)	1.07(0.29,3.89)

Able to read and write	125	51	1.11(0.37,3.37)	1.85(0.49,7.02)
Primary school (1-8)	79	48	0.75(0.25,2.28)	1.57(0.40,6.13)
Secondary school (9-12)	25	19	0.68(0.18,2.01)	0.59(0.14,2.48)
Collage and above	11	5	1	1

NB: *=P<0.05 **=P<0.001 1 Reference Hosmer and lemshow goodness -of- fit p- value=0.568 AOR=Adjusted odds ratio COR =Crude odds ratio CI=Confidence interval

Discussion

This study tried to assess the prevalence of timely initiation of breast feeding and associated factors in Gozamen district, East Gojjam zone, North West Ethiopia. As such, in our study the prevalence of timely initiation of breast feeding was found to be 60.9% with 95% CI[57.5,64.2]. This finding is lower than studies conducted in Zhejiang Province, an eastern coastal region of China 96.9%[22], urban dwellers of western Ethiopia 88.5%[23], Tiyo woreda 67.3%[24], Demibecha district 73.1[18], Bahirdar city 75.4%[25] and Motta town 78.8 %[19]. This discrepancy might be due to study design, study setting, Sociodemographic variation and infant feeding style that affects breast feeding. Those urban dwellers are more prone to mass media and information[26].

However ,this finding is higher than studies done in western Nepal 42.2%[27], Brazilian population 47.1%[28], Baby-Friendly Hospital 35.2%[29], Indian 36.4%[30], Saudi Arabia 11.4%[31], Arbaminch Zuria 42.8%[32], Amibara district 39.6%[20], Goba woreda 52.4%[8] and Axum town 41.6%[21]. This difference may be due to difference in Sociodemographic, cultural, study setting and year of study. Studies done out of Ethiopia are cultural variation on infant feeding style.

The factors associated with timely initiation of breast feeding were ANC visit was one factor associated with timely intitation of breast feeding. In this study ,mothers who had no ANC follow up were 68 % times less likely to initiation breast feeding early[AOR:0.32, CI; 0.60] as compared to their counter parts. This finding is in line with studies done in Brazilian population and Axum town[21,28]. This might be due to the fact that ANC visit is an initial point for mothers to have contact with the health care providers and counseling on timely initiation and exclusive breast feeding(EBF). Therefore, having ANC visit makes the mothers to start breast feeding early[21].

Those mothers who did not discard colostrum were 2.31 times more likely to practice timely initiation of breast feeding [AOR: 2.31, CI; 1.12, 4.78] as compared to those mothers who discarded colostrums .This result is consistent with study done in Axum town[21]. The possible reason might be due to mothers they did not discard colostrums is use effectively the first one hour of life to start breast feeding but if they discard they take more time and initiate BF lately.

The odds of timely initiation of BF was 3.14 times higher in respondents who did not gave prelacteal feeding than respondents who gave prelacteal feeding[AOR: 3.14, CI; 1.64, 6.03]. This finding is in line with study done in Motta town, western Nepal and AI-Hassa province, Saudi Arabia[19,27,31]. The possible explanation might be due to the fact that as the time interval between delivery and time of initiation of BF increase there may be enough time to practice infant feeding malpractice like prelacteal feeding .In fact PLF might be the reason for delay initiation of breast feeding[33]. It also introduction of prelacteal feeds may decrease infants suckling activity which in turn can affect or decrease maternal milk production due to decreased breast stimulation[19].

In our finding also found that mothers who had counseled on breast feeding at PNC were 2.69 times more likely practice initiation of breast feeding early as compared to their counter parts[AOR:2.69 CI; 1.75, 4.15]. This finding is supported by study done in Goba district[8]. This might be due to mothers they counseled on breast feeding at PNC is more knowledgeable towards advantage of early initiation of breast feeding.

Once more, mothers who did not participate on pregnant women forum were 62 % times less likely to practice timely initiation of breast feeding [AOR: 0.38 CI; 0.24, 0.61] than their counter parts. No study supports this finding. The possible reason might be due to mothers who did not participate in pregnant women form were they lacks information on the advantage of timely initiation of breast feeding to the their child.

Limitation of the study: This study does not show cause effect relationship. The information obtained from mothers might be prone to recall and information bias.

Conclusions

This study concluded that timely initiation of breast feeding was relatively low in the study area. ANC visit, colostrum discarding, PLF, BF counseling at PNC visit and participation on pregnant woman forum were independent predictors associated with timely initiation of breast feeding. To increase timely initiation of breast feeding strengthening infant feeding counseling, encourage mothers to avoid prelacteal feeding and discarding of colostrum to their child and health education and awarenes creation of the communities are recommended interventions.

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Availability of data and materials: The datasets supporting the conclusions of this article are available upon request to the corresponding author.

Authors' contributions: MG, ZNA participated in the conception and design of the study, MG interpreted the data and drafted the initial manuscript. ZNA and KM participated in commenting the document. The final manuscript is read and approved by all authors and contributed the critical review of the manuscript.

Ethics approval and consent to participate: Ethical clearance and approval was obtained from the Institutional Review Board of University of Gondar. Then official permission letter was writ-

ten to Gozamen district health office. Verbal informed consent was obtained from participants after explained well the purpose and objective of the study. Confidentiality was maintained at all levels of the study. Participant's engagement in the study was on voluntary basis; participants who were unwilling to participate in the study and those who wish to quit their participation were informed to do so without any restriction.

Consent for publication: Not applicable.

Competing Interest: The authors declare that they have no competing interests.

Abbreviations: ANC: Antenatal Care; AOR: Adjusted Odds Ratio; BF: Breast Feeding; CI: Confidence Interval; EBF: Exclusive Breast Feeding; IYCF: Infant and Young Child Feeding; PCA: Principal Component Analysis: PLF: Prelacteal Feeding; PNC: Postnatal Care; SPSS: Statistical Package for Social Science; TIBF: Timely Initiation of Breast Feeding

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