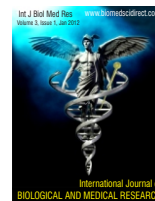


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Original Article

Assessment of Infant and Young Child Feeding Practices among the Mothers in a Slum Area of Kolkata: A Cross Sectional Study

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ABSTRACT

Background-Infant and young child feeding is a cornerstone of care for childhood development. It was estimated that optimal IYCF practices could reduce childhood morbidity and mortality dramatically in most cost-effective and efficacious way. Proper assessment of IYCF practices among the mothers is the need of the hour to identify the gaps in their performance and to find out the influencing factors for these gaps. Materials and Methods -A cross-sectional study was conducted among 86 mother-child pair attending a MCH clinic of an urban health center catering health care service to the largest slum of Kolkata, the Chetla slum. Result-68.6% of the children had late initiation of breast feeding and 31.4% had prelacteal feeding. Exclusive breastfeeding among children less than 6 months was 66.7% and adequate minimum dietary diversity among children 6-23 months was 46%. Literacy status of mother was significantly associated with exclusive breastfeeding. Continued breastfeeding at 1 year of age and Minimum meal frequency (MMF). ($p < 0.05$) Conclusion- Assessment of IYCF practices revealed very unsatisfactory status and appropriate, widespread and high quality health education at domiciliary, outdoor, individual and mass level should be initiated and implemented for optimum health of the infant and the child.

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1. Introduction

Appropriate Infant and young child feeding in early age of life are widely identified as an important factor for the ideal child growth and development. Every year 10.9 million of under-five children died worldwide among which 2.4 million were from India alone. Poor feeding and repeated infections resulted in 30% of stunted under-five children world-wide.² Malnutrition alone is responsible for 67% of child death in India.³ In all settings breastfeeding had positive effects on the health of infants and mothers.⁴ Optimal infant and young child feeding practices rank among the most effective interventions to improve child health.⁵ Almost one-fifth of overall under-five mortality can be averted if 90% of infants are covered with a package of intervention to protect, promote, and support the optimal Infant and young child feeding (IYCF) practices.⁶ Exclusive breastfeeding up to six months of age and breastfeeding up to 12 months established as top most preventative child survival interventions for their effectiveness in preventing under-five mortality followed by nutritionally-

adequate, safe, age-appropriate complementary feeding starting at six months.^{2,10} These two interventions alone were estimated to prevent almost one-fifth of under-five mortality in developing countries.^{10,11} The beneficial effects of breastfeeding depend on the initiation of breastfeeding, its duration, and the age of complementary feeding.⁷ It is estimated that sub-optimal breast-feeding, especially non-exclusive breastfeeding in the first 6 months of life, results in 1.4 million deaths and 10% of the disease burden in children younger than 5 years.^{5,11} Risk of death from diarrhea and pneumonia is 7 and 5 times more in non-breastfed child than exclusively breastfed one at aged 0-5 months.⁸ At the same age, non-exclusive rather than exclusive breastfeeding results in more than 2-fold increased risks of dying from diarrhea or pneumonia.⁹ The Third National Family Health Survey (NFHS-3) of India reported that overall 21.5% of children aged under three years were breastfed within one hour of birth, 48.3% of the children aged zero to five months were exclusively breastfed, and 53.8% of the children aged six to nine months received solid or semi-solid food and breast milk.¹² These figures justify the high under five mortality in this country.

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Therefore studies to find out the status of IYCF and its predictors will go a long way in chalking out relevant, appropriate and feasible policies and programmes for improvement of IYCF in the community and thus the growth, development and above all the survival of children. With this backdrop a study was conducted among mothers of under-two children to find out the status and some covariates of Infant and young child feeding (IYCF) in a slum area of Kolkata.

MATERIAL AND METHODS

This cross sectional, outpatient facility based study was conducted in MCH clinic of an urban health center (UHC) situated at 19 B, Chetla Hat Road, Kolkata. This center is in Chetla which is the urban field practice area of All India Institute of Hygiene and Public Health, Kolkata providing Comprehensive health care service along with excellent opportunity for field training, research and learning in all aspects of community health care in a true setting.¹³ UHC, Chetla was established on 30th December, 1955 and presently caters health care services to around 1.1 lac population in three wards of Kolkata Corporation spread over around 3.6 square kilometer.¹³ Majority of the population in this area belongs to low socio-economic group. The comprehensive and diversified healthcare service that this centre provides is both at domiciliary and outdoor level.¹³

Required sample size was determined with the NFHS-3 data, regarding early initiation of breast feeding (27.7%) among children less than 24 months of age in slum area of Kolkata. Considering 10% relative error, 5% alpha error the estimated sample size was 77 which were further increased to 85 allowing 10% of non-responsiveness. Mother-child dyads with children less than 24 months were included in the study. Mothers who were unwilling to participate or carrying very sick and/or irritable child were excluded from the study. 92 mothers were approached and 6 of them were not willing to participate or withdrew in the middle of the interview. Altogether 86 mothers responded to all the questions of the schedule.

Time required to complete the schedule was estimated from the pretesting which was approximately half an hour for each pair and about six mothers were planned to interview each day in two outpatient sessions from 9:30 am to 11:30 am and 2 pm to 3:30 pm. All the mothers were interviewed after obtaining informed verbal consent and assurance of confidentiality. A predesigned, pretested structured schedule in the local language Bengali was used for data collection and measurement in the study. The survey schedule was constructed in order to find out the socio-demographic, economic status of the mothers, incidents related to pregnancy, practices regarding infant and young child feeding. The questions regarding feeding practices was adopted from WHO standard questionnaire for IYCF practices and the indicators were considered as per their guidelines.¹⁴ All the responses regarding feeding habits were recorded by 24 hours recall method except for initiation of breastfeeding, colostrum feeding and prelacteal feeding which were elicited by historic recall. Socio-economic status was calculated as per Prasad scale 2013.¹⁵

Operational definitions:

Early initiation of breastfeeding: Proportion of children born in the last 24 months who were put to the breast within one hour of birth.

Exclusive breastfeeding under 6 months: Proportion of infants 0–5 months of age who are fed exclusively with breast milk.

Continued breastfeeding at 1 year: Proportion of children 12–23 months of age who are fed breast milk.

Introduction of solid, semi-solid or soft foods: Proportion of infants 6–8 months of age who receive solid, semi-solid or soft foods

Minimum dietary diversity (MDD) indicator: Proportion of children 6–23 months of age who receive foods from 4 or more food groups from a total of 7 food groups, namely, dairy products, legumes and nuts, flesh foods, eggs, vitamin A rich fruits and vegetables, cereals and tubers, and other fruits and vegetables.¹⁴ This indicator reveals whether the child is receiving a complete and balanced diet or not.

Minimum meal frequency (MMF) indicator: Proportion of breastfed and nonbreastfed children aged 6–23 months who receive solid, semi-solid, or soft foods (but also including milk feeds for nonbreastfed children) the minimum number of times or more.⁸ For breastfed children the minimum number of times varies with age (two times if 6–8 months and three times if 9–23 months). For nonbreastfed children, the minimum number of times does not vary by age (four times for all children aged 6–23 months).¹⁴

Minimum acceptable diet (MAD) indicator: Proportion of children aged 6–23 months who receive at least the MDD as well as at least the MMF according to the definitions mentioned above.¹⁴

Ethics committee approval

Ethical clearance was obtained from the Institutional Ethics Committee of All India Institute of Hygiene and Public Health, Kolkata. Informed verbal consent was sought from the participant in local language after explaining the total procedure and purpose of the study.

Analysis of data

Data analysis was done by standard statistical methods using Microsoft excel and SPSS V.16. Chi-square test of significance was done for testing the association.

RESULTS

A total of 86 mother child pair was considered for the analysis. A majority of them belonged to Hindu religion (79.1%) and general caste (60.5%). All the participants were housewives and the main earning member of the family were their husbands with mean per capita income of Rs.1059.25±618.8. Majority of the husbands were employed as skilled (45.3%) and unskilled (30.2%) labour. 18.6%

of the mothers and 4.5% of their husbands were found to be illiterate. Mean age of the mothers during the interview was 22.73 ± 2.87 years. Among the mothers, 55.8% had their marriage at less than 18 years of age with mean age of marriage 17.5 ± 1.9 years. 52.3% mothers had conceived for the first time at less than 20 years of age. Almost all of them (98.8%) had two or less number of children during the interview and 17.4% of the mothers had history of complications during the previous child birth. Mean age of the children was 10.04 ± 7.6 months. 41.9% children were less than 6 months of age, 23.3% were between 6 to 11 months of age and the rest (34.9%) were 12 months to 24 months of age. 41.9% of the all children were males. Among the 86 children, 25 (29.1%) were born low birth weight (birth weight less than 2.5 kg) and 3.5% had undergone home delivery.

Among the total 86 children aged less than two years, only 31.4% had started breastfeeding within 1 hour after birth, 29.1% did not get colostrum and 31.4% had prelacteal feeding mainly in the form of water and honey. Only two-third (66.7%) children of under 6 months of age were found to be exclusively breast fed. Among the children of 6-23 months (31/50), 62% were found to be exclusively breast fed according to their mothers from historic recall. All the children from 6-11 months and 43.3% children from 6-23 months continued breastfeeding till the date of data collection. Minimum dietary diversity (MDD), Minimum meal frequency (MMF) and Minimum acceptable diet (MAD) were found to be adequate in 46% (23/50), 78% (39/50) and 46% (23/50) children among 6-23 months of age.

Initiation of breast feeding after 1 hour of birth was more (statistically significant) among children delivered by caesarean section and those whose fathers were illiterate. No significant association was found with variables regarding socio-economic, demographic characteristics and incidents related to pregnancy. Among the children 2.3% were found to have been fed with expressed milk and 12.8% of the children were given wet nursing. Prelacteal feeding and deprivation of colostrum following birth were statistically associated with delivery by Caesarean section ($p < 0.05$). Caste was associated with exclusive breastfeeding and continued breastfeeding at 1 year of age. Gender of the child was found to be significantly associated with Minimum dietary diversity (MDD) and Minimum acceptable diet (MAD). Literacy status of mother was significantly associated with exclusive breastfeeding, Continued breastfeeding at 1 year of age and Minimum meal frequency (MMF). All other variables did not show any statistical significance at level of 0.05.

Only 5.6% (2/36) of children of less than 6 months of age and 32% (16/50) of 6-23 months of age, had started complementary feeding before reaching 6 months of age. 32% (16/50) children of 6-23 months of age had late initiation of complementary feeding i.e. from 7 months of age or more. Only 36% (18/50) children of 6-23 months had started complementary feeding correctly at the age of 6 months.

All the children of 6-8 months of age and two children of 4-5 months of age had started complementary feeding. Initiation of complementary feeding found in 10% and 27.6% of children between 4-5 months and 12-24 months of age respectively. Bottle feeding apparently was quite common and was found to be more than 50% in the age group of 9-11 months of age. Formula feeding was found quite frequent during complementary feeding among the children. Only 6.9% of 12-23 months old children had fruit juice in complementary feeding and no one had micronutrient supplementation.

Table 1: Some IYCF Status (indicators) among the study population.

IYCF Status		n	%
Early initiation of breastfeeding among children less than	Within 1 hour	27	31.4
	After 1 hour	59	68.6
	Total	86	100.0
2 4 months (n=86) Prelacteal feeding among children less than 24 months (n=86)	No	59	68.6
	Yes	27	31.4
	Total	86	100.0
Colostrum given to the children less than 24 months (n=86)	No	25	29.1
	yes	61	70.9
	Total	86	100.0
Exclusive breastfeeding among children less than 6 months (n=36)	No	12	33.3
	Yes	24	66.7
	Total	36	100.0
C o n t i n u e d breastfeeding among children 12-23 months (n=30)	No	17	56.7
	Yes	13	43.3
	Total	30	100.0
Minimum dietary diversity among children 6-23 months (n=50)	Inadequate	27	54.0
	Adequate	23	46.0
	Total	50	100.0
M i n i m u m m e a l frequency among children 6-23 months (n=50)	Inadequate	11	22.0
	Adequate	39	78.0
	Total	50	100.0
Minimum acceptable diet among children 6-23 months (n=50)	Inadequate	27	54.0
	Adequate	23	46.0
	Total	50	100.0

Table 2: IYCF indicators according to socio-economic, demographic characteristics and incidents related to pregnancy

Covariates		a	b	c	d	e	f	g	h
		n= 86	n=86	n=86	n=24	n=30	n=50	n=50	n=50
Religion	Hindu	29.4	32.4	72.1	52.4	52.4	45	82.5	45
	Muslim	38.9	27.8	66.7	22.2	22.2	50	60	50
Caste	General	32.7	28.8	67.3	23.5 *	23.5 *	43.3	76.7	43.3
	Scheduled caste	29.4	35.3	76.5	69.2	69.2	50	80	50
Education of mother	Illiterate	18.8	43.8	62.5	11.1 *	11.1 *	36.4	54.5 *	36.4
	literate	34.3	28.6	72.9	57.1	57.1	48.7	84.6	48.7
Fathers' education	Illiterate	0	75	50	33.3	33.3	0	33.3	0
	literate	32.9	29.3	72	44.4	44.4	48.9	80.9	48.9
Economic Status(PCI	Class IV and V	32.9	32.9	70	40.7	40.7	42.9	78.6	42.9
	Class I,II and III	25	25	75	66.7	66.7	62.5	75	62.5
Mother's age of marriage	less than 18	27.1	37.5	68.8	36.8	36.8	46.7	70	46.7
	more than 18	36.8	23.7	73.7	54.5	54.5	45	90	45
Addiction of mother	Nil	34.7	29.2	75	50	50	47.6	78.6	47.6
	Tobacco/Gutkha	14.3	42.9	50	16.7	16.7	37.5	75	37.5
Age of mother during 1 st conception	<18	37.5	25	68.8	20	20	37.5	62.5	37.5
	>=18	30	32.9	71.4	48	48	47.6	81	47.6
Sex of the child	Female	28	36	68	47.4	47.4	32.3 *	71	132.3*
	Male	36.1	25	75	36.4	36.4	68.4	89.5	68.4
Mode of delivery	Caesarean section	0	52.2 *	47.8 *	37.5	37.5	50	66.7	50
	Normal	42.9	23.8	79.4	45.5	45.5	44.7	81.6	44.7

* Statistically significant at the level of $p < 0.05$. All figures are in percentage

(a. Early initiation of breastfeeding among children less than 24 months, b. Prolacteal feeding among children less than 24 months, c. Colostrum given to the children less than 24 months, d. Exclusive breastfeeding among children less than 6 months, e. Continued breastfeeding among children 12–23 months, f. Adequate Minimum dietary diversity among children 6–23 months, g. Adequate Minimum meal frequency among children 6–23 months, h. Adequate Minimum acceptable diet among children 6–23 months)

Table 3: Complementary feeding practices according to different age groups.

Age in months	Initiation of complementary feeding				Type of food given				Fed with the help of	
	Not started	at < 6 months	at 6 months	at > 6 months	Semi solid	solid	formula	Non human milk	bottle	katori/spoon
<2 months(n=9)	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-3 months(n=7)	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-5 months(n=20)	90.0	10.0	0.0	0.0	0.0	0.0	100.0	0.0	10.0	10.0
6-8 months(n=12)	0.0	33.3	50.0	16.7	66.7	16.7	33.3	33.3	16.7	50.0
9-11 months(n=8)	0.0	50.0	25.0	25.0	50.0	50.0	50.0	25.0	50.0	50.0
12-23 months(n=27)	0.0	27.6	34.5	37.9	100.0	69.0	48.3	51.7	27.6	100.0

All figures are in percentage and are calculated in respect to the total number of the children in that age group.

Type of food given during complementary feeding and Feeding instruments were not mutually exclusive.

DISCUSSION

Early initiation of breastfeeding among children less than 24 months within 1 hour of birth: In this study it was 31.6% which was more than NFHS-3 23.4%(national level) and 27.7%(Kolkata Slum)^{16,17} and a study in rural West Bengal^{13.6%}¹⁹ but almost same as in Urban Health Center in East Delhi 37.1%¹⁸ slum in Bankura town^{39.6%}²⁰ and clinic based study in Hooghly district 34.2%²¹. A study in rural Karnataka however found 81%²² of the mothers initiated breastfeeding within 1 hours. As per WHO recommendation 2 early initiation of breast feeding is important for development of children and it is evident from others study that failing to do it significantly increase childhood mortality.²⁸ A study in Ghana showed early initiation of breast feeding could prevent 22% of neonatal mortality.²⁷ Though the results of this study is comparable with other studies and national level data, still the percentage is low enough to do reevaluation of the situation and put more emphasis on breast feeding initiation. In case of caesarean section early initiation within 1 hour was nil and it is a situation required for urgent attention. Mothers education, socioeconomic status, birth order and place of delivery was found to be statistically associated with early initiation of breastfeeding in another study in slum of Gujarat³⁵ quite unlike the present study.

Prolacteal feeding among children less than 24 months: In the present study prolacteal feed was found to be given to 31.4% . Comparing with other data regarding prolacteal feeding, NFHS-3 data at the national level(57.2%)¹⁶, Slum area of Kolkata(40%)¹⁷, West Bengal (47.8%)¹⁷, and a study at Delhi(38%)¹⁸, Hooghly, rural West Bengal(42.1%)²¹ found higher proportion whereas studies in Bankura slum of West Bengal(27.1%)²⁰ for children of 0-5 month, had less than the present study. Although it was already established that anything other than breast milk is unnecessary and harmful in first 6 months

of life²⁹, prolacteal feeding is still prevalent across the nation due to cultural prejudice and false belief even after health promotion. All efforts must be made both at institution and domiciliary level to do away with this unhealthy practice.

Colostrum given to the children less than 24 months:

Colostrum is rich in vitamins, minerals, and immunoglobulins that protect the child from infections and should not be discarded.³⁰ Colostrum was given to 70.9% of the babies in the present study was comparable to another study in rural West Bengal (76.3%)²¹. A study in Karnataka²² also found 19% of mothers had discarded colostrum. It was due to the negative influence of the other family members²¹, 31 and primary care providers³¹ and therefore the latter should also be roped in along with the mothers for health education regarding correct IYCF.

Our study found positive association of caesarean section with prolacteal feeding and discarding colostrum which may be due to the lack of help (for feeding her child for the first time) that should be meted out to a mother by her caregivers. A study in rural Northern Ethiopia indicates that the mother's knowledge and false belief were the main causes for discarding colostrum and prolacteal feeding.³² Prolacteal feeding was found to be associated with mothers' literacy status, socioeconomic status and type of family but not with mode of delivery.³³ Gender of the child, mothers education, socioeconomic status, type of family and place of delivery was found to be statistically associated with prolacteal feeding whereas type of family and birth order were significantly associated with colostrum feed practices of mothers in another study in a slum of Gujarat.³⁴ In another study prolacteal feeding was also found to be statistically associated with maternal education and antenatal breast feeding counseling.³⁵

Exclusive breastfeeding among children less than 6 months:

66.7% of less than 6 months old children were found to be exclusively breast fed and this figure was better than that reported by NFHS-3 data, both at national level (46.4%)¹⁶ and at state level (West Bengal 58.6%)¹⁷ and also from other studies like in Delhi(57%)¹⁸, rural Bankura district(57.1%)¹⁹, slum of Bankura(52.1%)²⁰, rural Hooghly district (58.7%)²¹ and rural Karnataka(40%)²². This may reflect the good service delivery by the field staff of this 60 years old Urban Health Centre under AIHPH.

In a previous study²⁵ quite like the present study, exclusive breast feeding was found to be more in literate mothers and no association was found between mode of delivery and exclusive breast feeding. Fathers' education, religion, mode of delivery was found to be significantly associated with exclusive breast feeding in another study²⁶. Others studies show that non-exclusive breastfeeding practices was significantly more among illiterate mothers, who belonged to food secured households, who had little access to health facilities and who had little knowledge about IYCF practices.³⁶ In a study in Gujarat it was observed that exclusive breast feeding was statistically associated with maternal education beyond 7th standard and antenatal breast feeding counseling.³⁵

Introduction of solid, semi-solid or soft foods:

Complementary feeding was found to be started 21.2% both at less than 6 months and at 6 months and 17.6% at more than 6 months of age. In another study it was found to be 30.32%,³⁴ 69%

and 29.78% at age less than 6 months, at 6 months and more than 6 months.³⁷ In West Bengal(NFHS-3)¹⁷ 23.3%, 47.1%, 85.8% children had started complementary feeding in 4-5 months, 6-8 months and 9-11 months of age group.

In present study all 4-5 months children who started complementary feeding getting formulas which were 33.3% and 50% in later ages(6-8 months and 9-11 months). According to NFHS-3(India)¹⁶ formula feeding was found 6.2%, 10%, 11.9% respectively in the age groups of 4-5 months, 6-8 months and 9-11 months of breast feeding children. Prevalence of giving other milk in that respective age groups the percentage were 27.1%, 35.7% and 42.1% which is more than the present study.

In West Bengal¹⁷ percentage of children using bottle in 4-5 months, 6-8 months and 9-11 months of age group were 31.5%, 15.5%, 19.7%, which is not comparable to the present study (10%, 16.7%, 50%). A Delhi based study found prevalence of bottle feeding was 26.5% among all the children.¹⁸ Bottle feeding was also found to be statistically associated with maternal education beyond 7th standard.³⁵

Continued breastfeeding among children 12–23 months:

Breastfeeding continued at one year of age in children of 12 to 23 months of age was found to be 43.3%(13/30). This was less than that observed in other studies of Delhi(72.1%)¹⁸, of rural West Bengal(71.7%)¹⁹ and better than a study done at Allahabad(38.7%)²⁴. A study²¹ in rural area of Hooghly district at West Bengal found 100% continuation of breastfeeding among 12-15 months of children.²⁰ Continued breastfeeding practices were significantly more in schedule caste and literate mothers. Proper education may be needed to address this poor performance.

Minimum meal frequency among children 6–23 months

Minimum meal frequency was found to be adequate in 78% of children. It was more than the finding of study in Delhi (48.6%)¹⁸ and less than that of NFHS-3 West Bengal(87.5%)²¹. NFHS-3 finds that only 44%¹⁶ of breastfed children are fed at least the minimum number of times recommended. In West-Bengal only 39%¹⁷ of children age 6-23 months are fed the recommended minimum times per day. It was significantly associated with literacy status of mother. Repetitive counselling and education may easily help to increase the adequacy.

Minimum dietary diversity among children 6–23 months

Minimum dietary diversity was found to be adequate in only 46% of children. In West-Bengal(NFHS-3) 59%¹⁷ are fed from the appropriate number of food groups. It was more than the finding of study in Delhi(32.6%)¹⁸ and less than West Bengal(83.3%)²¹. The adequate minimum dietary diversity was significantly more among the male child which may reflect the gender bias and should be dealt with sensitive approach through counselling and motivation.

Minimum acceptable diet among children 6–23 months

Present study shows 46% of children had adequate minimum acceptable diet whereas in Delhi it was 19.7%. Overall, only 29%¹⁷ are fed according to all three recommended practices in West Bengal (NFHS-3). Significant association with male child proves the strong gender bias in the community.

In another study overall IYCF practices were found to be significantly associated with age of mothers, family type and per capita income not with literacy status, occupation and parity of the mothers.²¹

Conclusion

Results show that success was achieved only with exclusive breastfeeding neglecting the other domains of healthy IYCF like the various aspects of complementary feeding and use of bottle feeding. It may be concluded that IYCF practices among mothers of less than 2 years old children were far from satisfactory and proper action should be taken at all levels to improve the situation by propagation of the right message to the antenatal and postnatal mothers and to their families. Health education on child bearing and child rearing must be given from time to time, in easy language and by the field health staff who are very much acceptable by the general people. The health staff on the other hand should be properly educated and their knowledge updated so that they may impart the correct knowledge to the mothers. This will play a long way in improving the health of all children at large turning India into a healthy nation.

List of Abbreviations

AIHH&PH - All India Institute of Hygiene and Public Health
EBF - Exclusive breastfeeding
IYCF - infant and young child feeding
MAD - Minimum acceptable diet
MDD - Minimum dietary diversity
MMF - Minimum meal frequency
NFHS - National family health survey
UHC - Urban Health Centre, Chetla
WHO - World Health Organization

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