

Assessment of mother's knowledge on growth monitoring of under five children in a tertiary level hospital

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ABSTRACT

Introduction: Growth monitoring is an essential child health intervention for the early detection of growth faltering and under-nutrition. Mother's knowledge plays a crucial role in the effective utilization of growth monitoring services.

Objectives: To assess mother's knowledge of growth monitoring and identify associated factors among mothers of under-five children.

Methodology: A hospital-based cross-sectional study was conducted at Kathmandu Medical College Teaching Hospital (KMCTH), Nepal from 9th December 2025 to 8th January 2026. A total of 384 mothers of children aged 0–59 months attending Paediatric outpatient and immunization clinics were recruited using consecutive sampling. Ethical clearance was obtained from Institutional Review Committee KMCTH (Ref no.03122025/06). Data were collected using structured questionnaire. Data were entered in Excel sheet and data analysis was done in SPSS version 26. Binary logistic regression analysis was performed to identify factors associated with good knowledge of growth monitoring and results were expressed as adjusted odds ratios (AOR) with 95% confidence intervals (CI) followed by p- value 0.05 as statistically significant.

Results: Only 18% of mothers had good knowledge on growth monitoring of children. Mothers from joint families were more likely to have good knowledge compared to those from nuclear families (AOR=2.05; 95%CI:1.18–3.57). Higher monthly family income was also significantly associated with good knowledge (AOR=4.18;95% CI:1.95–8.93). Maternal age, education and occupation were not significantly associated after adjustment.

Conclusion: Knowledge of growth monitoring among mothers were sub-optimal. Family structure and household income were key determinants, highlighting the need for strengthened counseling and targeted educational interventions.

Keywords: Child; Growth Monitoring; Maternal Knowledge; Tertiary Hospital

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INTRODUCTION

The first 1,000 days of life (from conception to a child's 2nd birthday) are a critical window for growth, survival, and development, particularly in low and middle income countries.^{1,2} Growth Monitoring and Promotion (GMP) is key preventive strategy involving regular measurement of weight and height, comparison with WHO growth standards, and counseling to support timely interventions.²⁻⁴ Globally, child under nutrition remains a major public health problem.^{5,6} In Nepal, despite progress, malnutrition continues to affect many children under five, driven by poverty, poor feeding practices, infections, food insecurity, inadequate sanitation, and psycho-social stress.^{7,8}

Optimizing child growth and nutrition is a key strategy for reducing under-five mortality and under nutrition, while also addressing the emerging challenge of childhood over nutrition in low- and middle-income

countries (LMICs).⁹⁻¹¹ GM serves as an entry point for preventive and curative care, enabling early detection of growth faltering and overnutrition.¹²⁻¹⁵ However, effective GM depends heavily on maternal knowledge and consistent participation.^{16,17} In Nepal, gaps persist in mothers' understanding of the purpose, interpretation, and importance of GM, influenced by education, prior child-rearing experience, age, and cultural practices.^{17,18} The hypothesis is Mothers' knowledge on growth monitoring is sub-optimal and varies according to sociodemographic factors. Therefore, this study aims to assess mother's knowledge of GM for under-five children.

METHODOLOGY

This hospital-based cross-sectional study was conducted among 384 mothers at Kathmandu Medical College Teaching Hospital (KMCTH), Kathmandu, Nepal over the period of one month (9th December 2025-8th January 2026). Mothers of children aged 0–59 months attending the outpatient/immunization clinic of Paediatrics Department were recruited using convenient sampling. Pre-testing was conducted in Duwakot among mothers of children aged 0–59 months. Internal consistency was evaluated using Cronbach's alpha. Ethical clearance was obtained from Institutional Review Committee KMCTH (Ref no. 03122025/06). Participation was voluntary and informed consent was obtained and they were free to withdraw at any time without affecting their care. Privacy and confidentiality maintained. Sample size was calculated on the basis of 50% prevalence of good maternal knowledge on GM with 5% error. Hence the calculated sample size with the formula $n = z^2pq/d^2$ was 384 under five yers children. The mothers who were critically ill or unable to communicate were excluded. A self-structured, pre-tested questionnaire including Socio-demographic information (age, education, number of children, residence) and Knowledge of GM were used. Seven multiple-choice questions were used to measure knowledge of growth monitoring. Correct responses were scored '1', while erroneous responses were scored '0'. Total scores varied from one to seven. Based on the distribution of results and prior research testing knowledge in similar populations, two categories of knowledge were established: poor/moderate (1-5) and good (6-7). Sociodemographic variables included age categorized in three groups 20-30 years, 31-40 years, 41-45 years on reproductive age distribution. Respondents' age was entered into the regression model as a continuous variable. Ethnicity, categorized as Brahmin/Chhetri, Janajati, Dalit, Madhesi, Muslims and others. Residence was categorized as urban or rural. Education was

dichotomized as no education and education (primary and above) for the binary variable used in regression for statistical analysis. Family type had two categories: nuclear (husband and wife and unmarried children) or joint (husband/wife, unmarried/married adult children, and/or in-laws). Marital status was recorded married, unmarried, widowed, divorced. Mother's occupation was categorized into income-generating (unskilled/skilled/professional) and non-income-generating groups (not working) to reflect economic activity and including both paid and subsistence income-generating work. Child age was categorized in <36 months and >36 months. The estimated family income was divided into two categories: <NCRs1,00,000/- and > NC Rs1,00,000/-. For analysis, the data were entered into Excel sheet and then exported to statistical package for social sciences, IBM SPSS Statistics for Windows version 26 (IBM Corp., Armonk, N.Y., USA). To characterize the results, descriptive statistics like percentages and frequencies were computed and displayed in text and tables. A binary logistic regression was carried out. The relationship between independent and dependent variables were investigated using binary logistic regression. To account for possible confounding variables, multivariable logistic regression analysis was used. The 95% confidence intervals for the crude and adjusted odds ratios (COR and AOR) and Chi-square test were computed. The previous studies showed their significance in influencing maternal knowledge with age, education, occupation, type of family and family income thus were included in the multivariable model despite not being significant in bivariate analysis in this study¹⁹.

RESULTS

The present study demonstrated 18% of mothers of children aged 0-59 months have good knowledge on growth monitoring. Mothers living in a joint family and socioeconomic status were important predictors of growth monitoring. These findings highlight knowledge of growth monitoring which are the important predictors in child health services.

Most of the mothers 216 (56.3%) were between the ages of 31-40, and nearly two-thirds of the children 240 (62.5%) were < 36 months old. The vast majority of mother were educated 369 (96.1%), came from nuclear households (63.8%), and did not work (58.9%). The majority of participants lived in urban cities (90.1%) and were Brahmin/Chhetri (51.6%). Almost all participants (99.5%) were married, and 90.9% were Hindu. Most of the family (91.1%) have estimated family income of < NC Rs 100,000/- (Table 1).

This study identified the majority of the mothers 306 (79.9%) know the definition of growth monitoring. Only 84 (21.9%) of mothers informed that children under two years should be weight monthly. Most of the mothers 307(79.9%) knew the meaning of growth faltering. Respondents' answers to the study's knowledge-related questions are displayed in (Table 2).

The knowledge of growth monitoring was significantly associated in a bivariate analysis. Mothers living in a joint family and mother's whose family income were more than 100000 were likely to have the association with knowledge of growth monitoring (COR = 2.09 (1.23-3.53), $p=0.00$), COR=4.32(2.07-9.03, $p <0.001$) respectively.

Whereas, there was not a significant association observed between the knowledge of growth monitoring with the mother's age, occupation and education. After adjusting for potential confounders in multivariable logistic regression, mothers from joint families had two times higher knowledge of growth monitoring compared to nuclear family (AOR 2.05; 95% CI: 1.18-3.57; $p = 0.01$). Similarly, expected family income NC Rs.> 1,00,000/- had four times higher knowledge of growth monitoring (AOR 4.18; CI 1.95-8.93; $p <0.001$). Mother's education, occupation and age had no significant relationship with the knowledge of growth monitoring after adjusting for covariates (Table 3).

Table 1: Socio-demographic characteristics of the participants

Socio-demographic characteristics		n (%)
Mother's age (years)	20-30 years	162 (42.2)
	31-40 years	216 (56.3)
	41-50 years	6 (1.6)
Child's age (months)	< 36 months	240 (62.5)
	>36 months	144 (37.5)
Mother's education	No education	15 (3.9)
	Education	369 (96.1)
Family type	Nuclear	245 (63.8)
	Joint	139 (36.2)
Mother's occupation	Not working	226 (58.9)
	Unskilled/semiskilled/professional	158 (41.1)
Residence	Urban	346 (90.1)
	Rural	38 (9.9)
Ethnic group	Brahmin/Chhetri	198 (51.6)
	Janajati	151 (39.3)
	Dalit	12 (3.1)
	Madhesi	17 (4.4)
	Muslim	5 (1.3)
	Others	1 (0.3)
Religion	Hindu	349 (90.9)
	Muslim	6 (1.6)
	Buddhist	24 (6.3)
	Christian	4 (1.0)
	Others	1 (0.3)
Marital status	Married	382 (99.5)
	Divorced	2 (0.5)
Estimated monthly family income	< NCRs 1,00,000/-	350 (91.1)
	> NCRs 1,00,000/-	34 (8.9)
Knowledge of growth monitor	Poor/Moderate knowledge	315 (82)
	Good knowledge	69 (18)

Table 2: Knowledge of mothers on different aspects of growth monitoring

Knowledge of growth monitoring	Category	n (%)
What is growth monitoring used for	Only to give vaccines	60 (15.6)
	To check child's weight and overall growth	306 (79.7)
	To check mother's health	7 (1.8)
	None of above	11 (2.9)
How often should children under two years be weighed	Every 6 months	210 (54.7)
	Only once when sick	79 (20.6)
	Monthly	84 (21.9)
	Yearly	11 (2.9)
What does "growth faltering" mean	Child growing faster than peers	55 (14.3)
	Child weight dropping or stagnating	307 (79.9)
	Child running and playing more	15 (3.9)
	Child having fever	7 (1.8)
Which of these is a sign of undernutrition	Steady weight gain	105 (27.3)
	Weight falling across two visits	273 (71.1)
	Talking more	4 (1.0)
	Laughing more	2 (0.5)
A growth chart helps the health worker to	Plot weight against age	164 (42.7)
	Predict future height exactly	193 (50.3)
	Decide child's school grade	18 (4.7)
	None of the above	9 (2.3)
What part of the record do you check to see if growth is normal?	Immunization dates only	32 (8.3)
	Growth chart curve	341 (88.8)
	Mother's name	3 (0.8)
	Clinic address	8 (2.1)
Why is regular growth monitoring important	Detect malnutrition early	86 (22.4)
	Advise feeding practices	88 (22.9)
	Refer for treatment if needed	34 (8.9)
	All of the above	176 (45.8)

Table 3: Association between sociodemographic variables (family type, education of mother, mother's occupation, mother's age) and knowledge of growth monitoring

Independent variables		p-value	COR (95% CI)	p-value	AOR (95%CI)
Family type	Nuclear	1			
	Joint	<0.001*	2.09 (1.23-3.53)	0.01 [†]	2.05 (1.18-3.57)
Education of mother	No education	1			
	Education	0.75	0.73 (0.74-0.76)	0.86	1.14 (0.24-5.30)
Occupation of mother	Not working	1			
	Unskilled/semiskilled/professional	0.86	1.04 (.61-1.77)	0.69	0.89 (0.51-0.56)
Expected monthly family income	< NCRs 1,00,000/-	1			
	>NCRs 1,00,000/-	<0.001*	4.32 (2.07-9.03)	<0.001 [†]	4.18 (1.95-8.93)
Age of mother		0.12	1.48 (0.89- 2.46)	0.13	1.04 (0.98-1.11)

p – value significant at <0.05, *=bivariate logistic regression, [†]= multivariate logistic regression

Adjusted for age of mother, family type, occupation of mother, education of mother, estimated monthly family income

DISCUSSION

This study assessed the knowledge of growth monitoring and the various factors among mothers of children aged 0–59 months attending a tertiary care hospital. This study, revealed 18% of mothers demonstrated a good knowledge of growth monitoring, reflecting a low degree of overall knowledge, while previous studies have indicated a 66.66% awareness of growth monitoring,²⁰ additionally a different study evaluated knowledge using a continuous scoring method revealed a moderate average score of 46.83 ± 5.44 ²¹ indicating considerable differences in maternal knowledge. This implies that in Nepal, growth monitoring tends to be conducted as a standard procedure, with insufficient focus on educating and counseling caregivers.

In this study, 88.8% of mothers noted the growth chart curve as reflective of the child's growth, a figure that surpasses the 28.0% reported in a study conducted in Ethiopia.²² The increased proportion noted in this study relative to Ethiopia might indicate variations in study environment and access to growth monitoring services. Counseling provided in facilities, along with Nepal's standard Growth Monitoring and Promotion initiative, may improve mothers' understanding of how to interpret growth charts. When participants were questioned regarding the importance of growth monitoring, 45.8% provided correct responses, which is lower than the 58.7% and 93.7% reported in another study respectively.^{21,22} This variation might indicate differences in counseling methods and the focus on educating caregivers during standard growth monitoring services.

This research found a notable association between family type (AOR =2.05; 95% CI:1.18–3.57) and monthly

family income (AOR=4.18; 95% CI:1.95–8.93) with maternal knowledge of growth monitoring. On the other hand, studies in African nations have indicated that educational level and job status are significant predictors of maternal knowledge. This difference implies that in Nepal, the joint family and financial resources may enhance the sharing of information and the accessibility of child health services.

This study was conducted in only one tertiary hospital. Recall bias among mothers of children ≥ 3 years and self-report information bias may exist, though structured questionnaires were used to reduce these potential errors.

CONCLUSION

Although this study indicated a low level of knowledge about growth monitoring, the importance and purpose of the growth monitoring chart were clearly recognized. Proper counseling for mothers about growth monitoring is essential.

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