Knowledge, Practice and Perception regarding Micronutrient Powder among Mothers attending a Tertiary Hospital in Chitwan District,Nepal

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ABSTRACT

Introduction: Under-nutrition causes approximately 3.5 million deaths of children under five annually in developing nations, with many of these deaths linked to micronutrient deficiency. Thus, the purpose of the study is to assess the knowledge, practice and perception of mothers with children 6-23 months regarding micronutrient powder (Baal Vita) at tertiary hospital of Chitwan district.

Methods: A cross-sectional study was conducted in Chitwan Medical College Teaching Hospital among mothers of children age 6-23 months from June 10, 2025 to 30 June, 2025. Convenience sampling method was used to select the sample of 380. A structured questionnaire was used to collect data through face to face interview with mothers. Descriptive analysis was performed using IBM SPSS version 20. Ethical approval for this study was taken from Chitwan Medical College Institutional Review Committee.

Results: Out of 380 mothers, 290(76.3%) had heard of micronutrient powder and out of 290 respondents, 124(42.7%) respondents' child accepted micronutrient powder and of those who did not accept, the reason was bitter taste 52(31.3%). Most of the respondents 266(91.7%) prepared micronutrient powder by mixing with food. More than half of the mothers 154(53.1%) perceived health benefit of micronutrient powder to their child.

Conclusions: Most of the mothers had knowledge about the micronutrient powder; however in practice, child's acceptance of micronutrient powder was low because of its bitter taste and perceived health benefits of it in their child was also low among the mothers.

Keywords: Knowledge; Micronutrient powder; Practice; Perception

INTRODUCTION

World Health Organization recommends home fortification of foods with micronutrient powder to improve the iron status of the body and reduce iron deficiency anemia among children aged 6-23 months.[1] Micro-nutrient powders (MNP) are single-dose packets containing a variety of essential vitamins and minerals in powder form, designed to be sprinkled over any semi-solid meal.[2] An intervention project called the "Integrated Infant and Young Child Feeding (IYCF) and Micro-Nutrient Powder (Baal Vita) project" was implemented by the Nepal government in 2009 (2065/66), targeting the children aged 6-23 months.[3] Globally, it's estimated that over half of children under five years old are micronutrient deficient (in at least one of iron, zinc, and vitamin A).[4] It is estimated that 40-50% of under-five children in low-income countries are suffering from iron deficiency.[1] In Nepal, 43% of children under five suffer from anemia, with a striking 65.7% among those aged 6-23 months. Only 40.9% of children in this age group have received at least one cycle of Baal Vita, a supplement tackling nutritional deficiencies. Madhesh province leads with 53.1% coverage, while Bagmati province lags at 27.7%. Just 5.1% of children receive three cycles of Baal Vita, with Sudurpaschim Province at 8.8% and Koshi at 2.5%.[3]

The provided information indicates that a small percentage of children in Bagmati Province are receiving the recommended dosage of Baal Vita. The low compliance with the three-cycle recommendation suggests that further efforts may be needed to increase awareness and access to this important supplement. Therefore, the proposed study aims to assess the knowledge, practice and perception of mothers with children 6-23 months regarding micronutrient powder at a tertiary hospital of Chitwan district.

METHODOLOGY

A cross-sectional study was conducted in the Chitwan Medical College Teaching Hospital's paediatric outpatient department and immunization clinic among mothers of children age 6-23 months. Non-probability convenience sampling method was used to select the sample of 380. Sample size was calculated using Cochran's formula as n=z2pq/d2

Self -constructed structured questionnaire was used for the data collection which contained four sections that included socio-demography, knowledge, practice and perception domains. Face and content validity of the tool was maintained through extensive literature review, and expert consultation. Data was collected through face to face interview with mothers visiting paediatric outpatient department and immunization clinic. Interview was conducted in the intern room at paediatric ward with seating arrangement. Interview lasted 20-30 minutes for one respondent. Data was collected from June 10, 2025 to June 30, 2025 and data entry was done on same day of data collection, simultaneously. Data was entered and analysed using IBM SPSS version 20. Descriptive analysis was performed using frequency, percentage and central tendency. Ethical approval for this study was taken from Chitwan Medical College Institutional Review Committee (Ref: CMC-IRC/081/082/114). Informed written consent was taken from all respondents participating in the study. Data was collected in enclosed setting to maintain the privacy of the respondents. Participants could withdraw from the study at any point if they wished to and such data was not included in the analysis.

RESULTS

Out of 380 mothers, 290(76.3%) had heard of micronutrient powder. Of mothers who had heard of micronutrient powder, 282(97.2%) mothers knew the nutritional benefit of micronutrient powder to their child. Out of 290 mothers, almost all of them 289(99.7%) had knowledge on place of access of micronutrient powder and nearly two-thirds of mothers(65.2%) heard about MNP from health posts

Table 1: . Knowledge on micronutrient powder among mothers (n=380)

Variables	f	%
Heard of micronutrient powder		
Yes	290	76.3
No	90	23.7
Know nutritional benefits of micronutrient powder, n=290		
Yes	282	97.2
Don't' know	8	2.8
Know the place of access of micronutrient powder, n=290		
Yes	289	99.7
No	1	0.3
Source of information on micronutrient powder, n=290		
Health post	189	65.2
FCHV/Health worker	96	33.1
Ayurvedic clinic	5	1.7

Out of 290 respondents, 124(42.7%) respondents' child accepted micronutrient powder while of those who did not accept, the reason was bitter taste 52(31.3%). Most of the respondents 266(91.7%) prepared micronutrient powder by mixing with food. Most of the mothers 208(71.7%) administered MNP one time a day to their child. (Table 2)

Table 2: Practice of micronutrient powder

Variables	f	%
Child's acceptance of micronutrient powder		
Yes	124	42.7
No	166	57.2
Reason for non-acceptance of micronutrient powder**(n=166)		
Tasteless	31	18.6
Bad smell	20	12
Bitter taste	52	31.3
No idea	67	40.3
Ways to prepare micronutrient powder, n=290		
Mix with food (Jaulo, Lito, Khir, Mashed Fruits)	266	91.7
Given as it is	2	0.7
Other	22	7.6
Frequency of administering micronutrient powder to the child		
One time a day	208	71.7
Two times a day	64	22.1
Three times a day	12	4.1
Four times a day	6	2.1

Of 290 mothers, majority of the mothers 234(80.7%) and 228(78.6%) did not have misconception regarding the use of MNP and did not have health related concern or fear associated with using MNP respectively. Only 4.1% of the mothers perceived accessing MNP as being very difficult. Also 240(82.8%) perceived current communication strategy being effective in conveying information. More than half of the mothers 154(53.1%) perceived health benefit of MNP to their child. (Table 3)

Table 3. Perception on micronutrient powder among the participants

Variables	Frequency	Percentage
Perceived misconception regarding the use of MNP		
No	234	80.7
Yes	56	19.3
Perceived health-related concern or fear associated with using MNP	228	78.6
No		
Yes	62	21.4
If yes		
Bloating	7	11.3
Cause loose stool	1	1.6
Constipation	7	11.3
Damage of some packet	1	1.6
Decrease health status	1	1.6
Diarrhoea	21	33.9
Harm to health	6	9.7
Vomiting	18	29.2
Perceived easiness to access MNP in community		
Very difficult	12	4.1
Difficult	36	12.4
Neutral	55	19
Easy	122	42.1
Very easy	65	22.4
Perceived effectiveness of current communication strategies		
Do not effectively convey inform	50	17.2
Effectively convey information	240	82.8
Perceived health benefits of MNP in their child		
Yes	154	53.1
No	136	46.9

DISCUSSION

A descriptive cross-section study with aim to find out the knowledge, practice and perception of micronutrient powder among the mothers of children age 6-23 months was carried out. In this study, 76.3% of mothers had heard about micronutrient powder, which is comparable to findings from Makwanpur and Palpa districts.[6,7] The study showed that 97.2% know the nutritional benefits of micronutrient powder similar to the finding of Makwanpur district whereas contrast to findings of Sindhupalchowk and Palpa district of Nepal.[6,5,7] In this study 99.7% mothers knew the place of access of micronutrient powder however, 52.1% mothers knew the source of receiving Baal Vita as per study from Nepal which is lower than in this study.[7] The finding from this study revealed that health facility was the major source of information on micronutrient powder followed by FCHVs/Health worker which is in contrast with the finding of study from Mankawanpur, Sindupalchowk and Palpa district of Nepal.[6,5,7]

This might be due to the current accessibility of health facility in the form of urban health centre, basic health centre along with health post and PHC in urban settings.

As per the study, child's acceptance of micronutrient powder was 42.7%. This is lower than the finding from the studies from Philippines (55%) and Nepal (60.25% and 51.7%).[8,7,9] Reason for non-acceptance of micronutrient powder in this study was bitter taste -31.3% which is similar to results of studies from Sindupalchowka and Palpa while it is lower than the studies from Philippines and Nepal (Kapilvastu and Achham district).[5,7,8,9] The study depicted that 91.7% prepared the micronutrient powder mixing it with food like jaulo, rice, porridge. The find is similar to Nepal and Zimbabwe.[6,9,10] The finding of administering micronutrient twice a day is similar to finding from Makwanpur district of Nepal; however majority of mothers in this study administer one time a day.[6]

There was lesser misconception regarding the use of micronutrient powder in the study, however, study from four district of Ghana revealed that caregiver refuse to feed the micronutrient powder because of what they think are side effects.[11] Perceived health-related concern with using micronutrient powder in this study is 21.4% which is similar to study conducted in Palpa district and lower than the finding from two district of post-pilot, scale-up of the integrated IYCF-MNP programme in Nepal.[7,9] The study reported vomiting 29.2% as the health concern which is similar to the finding from rural Bangladesh but higher than result of Nepal.[13,7] The study revealed that accessing the micronutrient powder in community was easy, however, in rural district of Zimbabwe it was difficult to access as it was only available through health facility and have to travel 10 KM to reach health facility.[10] Moreover, regarding the current communication strategies, 82.8% perceived information is effectively conveyed but the finding is in contrast with finding from Zimbabwe which revealed that the information is not conveyed effectively on where micronutrient powder is available, on its use, importance and potential side effect.[10] In this study, 53.1% of mothers perceived health benefits of micronutrient powder in their child which is similar to finding from rural setting of Bangladesh, Kapilvastu and Achham district of Nepal, however findings from Philippines, Nepal, Ghana, and review article showed higher perceived health benefits.[13,7,8,6,11,12]

Since the study has been conducted in a single hospital center, the findings cannot be generalized. However, these findings can be the basis for further studies which can be done in community settings regarding acceptance and associated factors regarding micronutrient powder intake in children.

CONCLUSION

The study revealed that majority of mothers knew about micronutrient powder and its nutritional benefits, place of access and sources of information regarding micronutrient powder. The child's acceptance of micronutrient powder was lower and reason for it was bitter taste. Most of the mothers mix the micronutrient powder with food and feed one time a day. There is low misconception regarding the use of micronutrient powder among the mothers. The perceived health-related concern was low with vomiting as major health issue among them. It was easy to access the micronutrient powder, however, perceived health benefits was lower among the mothers. Therefore, to increase the acceptance of the micronutrient powder to the child, government needs to work on increasing the acceptance of micronutrient powder.

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