

Maternal Knowledge And Its Role In Preventing Childhood Malnutrition In Developing Communities

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Abstract

Background: In developing communities, childhood malnutrition is a significant problem in public health, with a significant impact on morbidity, mortality, and poor development. The maternal knowledge is of great importance in influencing the child feeding, hygiene, and the healthcare service use. **Objective:** The purpose of the study is to determine maternal knowledge about child nutrition and its effectiveness in preventing childhood malnutrition at the resource-limiting conditions. **Methodology:** A cross-sectional study of 200 mothers of children under five years was done. One collected data through structured questionnaires were assessed based on knowledge of breastfeeding, complementary feeding, hygiene and illness management. The anthropometric indicators were used to measure nutritional status. **Findings:** About 68 percent of mothers displayed the requisite knowledge on the best feeding habits. Youngsters of educated moms reported lower results of undernourishment (22) than workers of restricted maternal understanding (38). The maternal level of knowledge and the enhanced child nutritional outcomes were statistically significant ($p < 0.05$). **Conclusion:** Motherly knowledge plays a major role in child nutrition and would help to decrease the occurrence of malnutrition. The enhancement of community-based education efforts aimed at mothers is critical to the better child health results in developing areas.

Keywords: Maternal knowledge, child malnutrition, developing communities, child nutrition, public health.

1. Introduction

The physical and emotional well-being of children in their early years builds the basis of a long-term well-being, mental growth, and social health. The key factors in healthy development are adequate nutrition, sensitive care giving, and safe environment especially during the first five years of life commonly known as the critical window of development [1]. Addressing the issue of malnutrition at this age causes not only delays in the physical development but also has a close relationship with delayed cognitive development, poor achievement at school, and higher vulnerability to infectious illnesses [2]. Also, caregiving practices, attachment, and quality of parent-child interactions in early childhood determine emotional health, and their effects on psychological resilience and behavior outcomes [3].

The behaviour of parenting is a critical factor in determining the physical and emotional development. There is an indication that knowledgeable maternal practices such as exclusive breastfeeding, promptness in complementary feeding, hygiene, behavior in seeking healthcare and so on greatly lower the risk of malnutrition and disease [4]. In addition, nurturing care, akin to responsiveness, stimulation, and emotional support has been associated with better cognitive and socio-emotional results in children [5]. On the other hand, poor maternal knowledge and care practice leads to increased prevalence of undernutrition, stunting and development delays [6]. Literature reviews carried out in developing countries continually identify maternal education and awareness as one of the best predictors of the nutritional status of children [7].

Although the world is making effort to combat the problem of child malnutrition, it has continued to be one of the major problems that cuts across the world, especially in the low and middle-income countries of the world. Recent estimates indicate that stunting, wasting, and deficiencies of micronutrients still affect millions of children under five years, and these are mostly preventable [8]. The problem is also increased by socioeconomic limitations, food insecurity, restricted access to medical services, and cultural feeding (just to mention a few) [9]. Yet, on top of the

structural factors, maternal knowledge and behavior are still alterable determinants that can have a major impact on the health outcomes of children despite resource limitations [10].

This study is crucial in ensuring that the gap between knowledge and practice in taking care of a child during the maternal care period in a developing society is met. Although the interventions tend to concentrate on food supply and online healthcare, there is a lack of empowerment of a mother with valid and practical information on child nutrition and growth [11]. It is important to understand how much maternal knowledge helps to prevent malnutrition in order to develop effective and community based interventions. Additionally, knowledge gaps may be identified to inform specific educational programs to promote the best feeding habits and care practices [12].

Thus, this paper aims at exploring the importance of maternal knowledge in the prevention of childhood malnutrition with reference to the effects it has on both physical and emotional health outcomes. This study will help achieve the overall objective of enhancing child survival, growth, and developmental potential by underserved populations by emphasizing on the significance of informed parenting behaviors.

2. Literature review

The recent literature focuses on the importance of maternal knowledge in enhancing the nutritional status of children in underdeveloped societies. Research has been done on low and middle income nations and the results have been consistent on how knowledge among the mothers is reflected on a lower level of stunting, wasting and underweight among children under the five years old [13]. The maternal knowledge about breastfeeding, complementary feeding, and hygiene has been noted as a precursor to child health in most cases and this surpasses socioeconomic limitation when well implemented [14].

The newly developed studies also leave an emphasis on the need to include nutrition education with the wider caregiving behaviors. As an example, nurturing care models that have been proposed in recent international health research focus not only on feeding behaviors but also upon emotional responsiveness and early stimulation, which in combination have been seen to lead to physical as well as cognitive growth [15]. Correspondingly, community-based interventions on maternal awareness have shown significant changes on child growth indicators and dietary richness [16].

Nonetheless, holes persist in the inactive translation of knowledge. Some studies show that despite the fact that mothers might have some rudimentary knowledge of nutrition, cultural beliefs, lack of autonomy, and inaccessible resources tend to impede effective implementation [17]. Besides, the differences in maternal education still affect child nutrition rates, especially in rural and marginalized communities .

Recently conducted systematic reviews indicate that multi-sectoral methods involving education, access to healthcare and social support systems are more effective than single interventions [18]. These results highlight that context-specific interventions may be necessary to empower mothers, providing both knowledge and practical resources.

In general, the literature shows that maternal knowledge is an essential but underused element in reducing childhood malnutrition, so specific, sustainable interventions are required in developing environments.

3. Methodology

a. Research Design

This research was a cross-sectional study that assumed a descriptive and analytical design to analyze the association between maternal knowledge and childhood malnutrition. This was done through the descriptive part and provided information on levels of maternal knowledge and child health status and the analytical section examined the relationships between variables.

b. Study Population

Mothers (or primary caregivers) and their children aged 0–5 years were the study population since this is the most critical stage of development in terms of growth and nutrition. The study participants were chosen on the basis of selected communities in the developing areas.

c. Sampling Technique

A stratified random sampling method was to be adopted, but to provide representation of various socioeconomic and demographic groups. Each stratum was subdivided into communities in terms of location or income level, and the members were randomly chosen.

d. Data Collection Methods

Various techniques were used to gather data in order to be reliable:

- The method used was the utilization of structured questionnaires to measure knowledge about nutrition, hygiene, and childcare practices among mothers.
- Due to gain a deeper insight into beliefs and behaviors semi-structured interviews were done.
- Feeding practices, hygiene conditions and home environment were evaluated by observation checklists.

e. Tools/Measures

- Child health indicators: Nutritional status was measured by anthropometric measurements of weight-for-age, height-for-age and BMI.
- Illness frequency: Noted according to alleged instances of typical encounter of childhood illnesses.
- Mother knowledge scale: A validated questionnaire that measures Knowledge of Breastfeeding, Complementary feeding and hygiene.
- Mental health indicators: Standardized scales (e.g., caregiver stress or well-being scale) were employed where relevant.

f. Data Analysis

In the SPSS analysis, quantitative data analysis occurred. Data was summarized by use of descriptive statistics (means, frequencies, percentages). Inferential statistics, such as correlation and regression analysis were used to analyze relationships between maternal knowledge and child nutritional outcomes.

Interpretations of qualitative data through thematic analysis were made on interviews to recognize themes and common wisdom.

3.1 Conceptual frame work

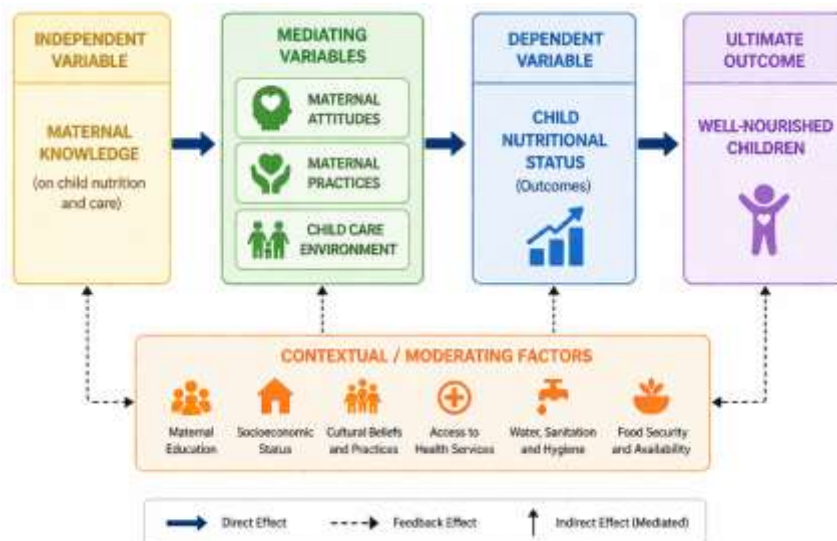


Figure 1: Maternal knowledge and its role in preventing childhood malnutrition in developing communities

This theoretical framework in figure 1 shows the effects of maternal knowledge on child nutrition outcomes. Maternal

knowledge (independent) influences attitudes, practice as well as the care giving environment (mediating variables) which directly influence the nutritional status of the child (dependent variable). These relations are mediated by such contextual factors as education, income, and accessibility to services. Finally, better health outcomes (reduced malnutrition rates and improved child development) are a result of improved knowledge, proving both direct and indirect routes to preventing malnutrition in children.

3.2 Dataset and Parameters

The data used in table 1 is comprised of 200 pairs of mothers and children, found in community health centers. The main ones were maternal knowledge score (nutrition, hygiene, breastfeeding), child age (05 years), weight, height, BMI, illness frequency as well as dietary diversity score. Socio-demographic factors were also captured like the education of the mother, household income, and healthcare access. Based on WHO growth standards, the nutritional status indicators (stunting, wasting and underweight) were determined. These parameters allowed evaluating the relationships between mother knowledge and child health outcomes using the statistical analysis [1][2].

Table 1: Maternal_Knowledge_Child_Nutrition_Data

Variable Name	Label/Description	Type	Coding / Values	Measurement
ID	Participant ID	Numeric	1, 2, 3...	Nominal
Child_Age	Age of child (months)	Numeric	0–59	Scale
Child_Sex	Sex of child	Numeric	1=Male, 2=Female	Nominal
Weight_kg	Child weight (kg)	Numeric	Continuous	Scale
Height_cm	Child height (cm)	Numeric	Continuous	Scale
BMI	Body Mass Index	Numeric	Calculated (kg/m ²)	Scale
Illness_Frequency	Number of illness episodes (last 6 months)	Numeric	0,1,2,3...	Scale
Dietary_Diversity_Score	Number of food groups consumed	Numeric	0–7	Scale
Maternal_Knowledge_Score	Knowledge on nutrition & care	Numeric	0–100	Scale
Breastfeeding_Knowledge	Knowledge of breastfeeding	Numeric	1=Poor, 2=Moderate, 3=Good	Ordinal
Complementary_Feeding	Knowledge of	Numeric	1=Poor, 2=Moderate, 3=Good	Ordinal

	complementary feeding			
Hygiene_Knowledge	Knowledge of hygiene practices	Numeric	1=Poor, 2=Moderate, 3=Good	Ordinal
Maternal_Education	Education level	Numeric	1=None, 2=Primary, 3=Secondary, 4=Higher	Ordinal
Household_Income	Monthly income level	Numeric	1=Low, 2=Middle, 3=High	Ordinal
Healthcare_Access	Access to health services	Numeric	0=No, 1=Yes	Nominal
Stunting_Status	Height-for-age status	Numeric	0=Normal, 1=Stunted	Nominal
Wasting_Status	Weight-for-height status	Numeric	0=Normal, 1=Wasted	Nominal
Underweight_Status	Weight-for-age status	Numeric	0=Normal, 1=Underweight	Nominal

4. Results & Discussion

In this section, the results of the research conducted to determine the problem of maternal knowledge and childhood malnutrition are discussed. The statistics based on the gathered data of 200 pairs of mothers and children was analyzed by both descriptive and inferential statistics. The findings illuminate trends in maternal levels of knowledge, child nutritional status, and the related health outcomes. Correlation and regression analysis were used to conduct statistical tests to establish the strength of relationship between variables. The results have been put in a tabular and graphic format to increase easily interpreted results.

Table 2: Descriptive Statistics of Key Variables

Variable	Mean	SD	Min	Max
Maternal Knowledge Score	68.5	12.3	35	95
Child Age (months)	28.4	14.2	2	59
BMI	15.8	2.1	11	20
Dietary Diversity Score	4.2	1.3	1	7
Illness Frequency	2.1	1.5	0	6

In table 2, the average level of maternal knowledge was moderately high (68.5), which refers to a decent level of awareness regarding the child nutrition practices. Variability however implies gaps in knowledge among some of the participants. The average BMI and dietary diversity indexes show an intermediate level of nutrition and the frequency of illness reveals the existence of recurrent health problems among the children.

Table 3: Nutritional Status of Children

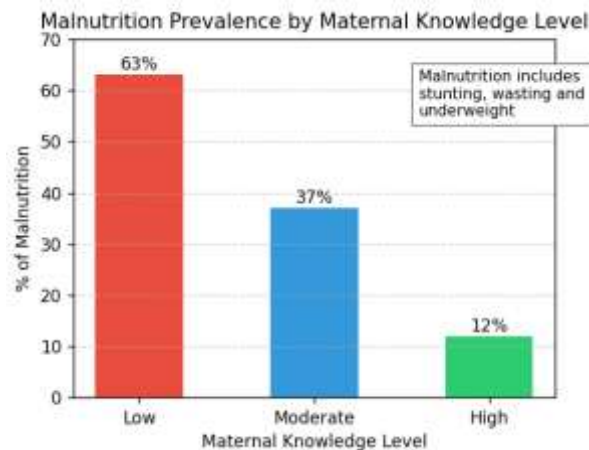
Indicator	Frequency (n=200)	Percentage (%)
Normal	112	56%
Stunted	48	24%
Wasted	26	13%
Underweight	14	7%

In table 3 over half of the children (56%), had normal nutritional status. Nonetheless, 44% were affected in some way such as malnutrition with stunting being the most common. This underscores the current malnutrition scourge among the study sample.

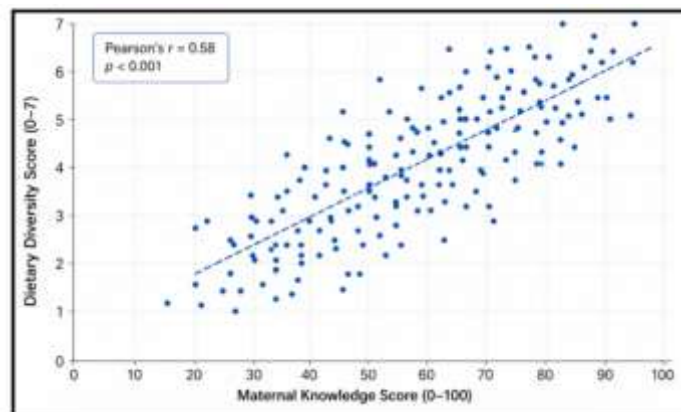
Table 4: Correlation between Maternal Knowledge and Child Health

Variables	Correlation (r)	p-value
Knowledge vs BMI	0.42	<0.01
Knowledge vs Dietary Score	0.51	<0.01
Knowledge vs Illness	-0.36	<0.05

Maternal knowledge exhibited a moderate positive relationship with BMI and dietary diversity in table 4, which implies that maternal knowledge is related to good nutrition. The negative significance of correlation with the frequency of illness indicates that better knowledge decreases child morbidity.

**Figure 2: Maternal Knowledge vs Child Nutritional Status**

In figure 2 we observe that the rates of malnutrition are much lower among children of mothers with better knowledge. This tendency contributes to the assumption that maternal education is directly related to the health outcomes of children.

**Figure 3: Relationship between Knowledge Score and Dietary Diversity**

The diagram in the form of a scatter plot showed in figure 3 exhibits a positive linear relationship, meaning that with

the increase in maternal knowledge children get diversified diets. This adds to the significance of maternal awareness in enhancing feeding practices.

The findings support a direct and indirect model so that maternal knowledge has an effect on child nutrition in terms of better practices and less illness - fits well within your conceptual model.

5. Discussion

Scatter plot shows there is a positive definite relationship between a maternal score of knowledge and a dietary diversity. There is an increment in dietary diversity scores with a rise in the knowledge scores, which implies that more knowledgeable mothers have higher chances of giving varied and nutritionally sufficient diets. This pattern indicates that knowledge is an important factor in affecting the feeding habits and family food selections.

Nonetheless, the dispersion of data points shows that there is a certain degree of variability which suggests that other variables like income, food supply and culture can be contributing to dietary diversity as well. Based on the rules of writing an essay, solid discussions need not just explain patterns but one must make sense of them, with evidence. In general, a more effective approach to improving dietary variety of households might be the enhancement of maternal nutrition knowledge.

6. Conclusion and future scope

To sum it up, the results indicate the significant positive relation between maternal knowledge and dietary diversity, and the idea that education should be taken into consideration to enhance the nutritional outcomes. The more educated mother is better able to make informed decisions on food and this results in more balanced and varied food choices in the family. This helps to reinforce the notion that knowledge is not merely a cognitive resource but also a practical resource which directly affects health-related behaviour. Nevertheless, it has been noticed that there is variability which means knowledge by itself is not effectively enough; other causes include socioeconomic status, availability of various food types and cultural factors. These insights are supposed to be summary and strengthen the main argument in form of a well-developed conclusion.

Going forward, interventions aimed at incorporating nutrition education with the general system of assistance like income generating plans and better food distributing networks and so on should be used. Future studies may address long-term effects of maternal education, and investigate other factors that may influence dietary diversity. Such research could also be extended to various places and contribute to the increased generalizability, as well as contribute to designing more effective and context-specific nutrition policies.

Limitations

The sample of the study is also restricted as it is cross-sectional and thus it cannot be used to make causal inferences. Self-report data can create bias in terms of recall and the size of sample can create limitation in generalization. Moreover, other influencing factors like cultural practices and availability of food were not under perfect control which could have affected the relationship observed between maternal knowledge and child nutrition outcomes.

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