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Assessment of Nutritional Literacy in Mothers of Malnourished Children under Five-Year-Old in Puli Khumri City, Baghlan Province – Afghanistan

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Abstract

Background: Worldwide, about a half of mortalities in children are directly or indirectly attributable to malnutrition in Afghanistan, especially among children is a very high public health concern. estimated that malnutrition is responsible for 45% of child deaths among all under five mortalities, therefore, this study sought to found out the contributing factors of malnutrition among children <5 Y in Baghlan Afghanistan, this study was conducted to evaluated the nutritional literacy in mothers of malnourished children <5 Y.

Methods: Descriptive HF based cross-sectional research was conducted and evaluated nutritional literacy in mothers of malnourished children <5, all children under five who brought for checkup at Baghlan PH and screened for nutrition status by anthropometric measurements those children who screened for malnutrition the interview was conducted with the mother of the malnourished child and the questionnaire was used for data collection.

Results: Among 100 mothers who participated in the study their children was diagnosed malnutrition at the provincial hospital (80% Severe & 20% moderate). The 84% of the mothers were illiterate and 16% literate. Approximately all of them (99%) were jobless. The 52% of the mothers did not know about the nutrition and 65% did not start breastfeeding within one hour after birth. The 65% of the mothers not followed exclusively breastfed for the last six months. The 66% did not start complementary feeding and 95% did not continue breastfeeding for at least 2 years. The nutritional literacy in mothers of malnourished children under five-year-old evaluated very weak (38.4%).

Conclusion: The research documented that, the nutritional literacy of mothers improves the nutrition status of their children and illiterate mothers could not do efficient breastfeeding, use nutrient foods, and did not use properly HFs. And their children are more prone to malnutrition. There is the need to promote and encourage female in the communities in order to empower them to know the right type of food and the right way to give it in the right quantity.

Keywords: Malnourishment; World Health Organization; Provincial hospital; Nutritional literacy

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Abbreviations

AKDN: Aga Khan Development Network; AKHS-A: Aga Khan Health Services for Afghanistan; CSO: Central Statistical Office; GDP: Gross Domestic Product; HAZ: Height-for-Age Z-score ; HF: Health Facility; IC: Informed Consent; MAU: Maulana Azad University; MoPH: Ministry of Public Health; MUAC: Mid-Upper Arm Circumference; NGO: Non-Government Organization; PH: Provincial Hospital; SOP: Standard Operational Procedure; USA: United State of America; USAID: United State Agency for International Development; UNICEF: United Nation International Children's Emergency Fund; VIF: Variance Inflation Factor; WAZ: Weight for Age Z-score; WHO: World Health Organization

Introduction

Afghanistan is one of the world's poorest countries with poor health statistics and indicators; the health situation of the country has been devastated due to more than 30 years armed conflicts. An estimated 6 million people have no or limited access to health care, moreover approximately 7 million people rely on food aids to survive, unfavorable factors such as poverty, the loss of access to productive assets, food insecurity and poor access to basic health and social services have

significantly impacted the health indicators of the country [1].

Malnutrition is a very serious concern especially among children in Afghanistan, according to WHO classifications, there are sever consequences of stunting among children in short term as well as long term for the health and development of the individuals as well as development and economic status of the society. It is estimated that malnutrition (all forms of malnutrition including inappropriate breastfeeding) is responsible for 45% of child deaths among all under five mortalities. Studies also indicate that countries with high stunting rate among children loss about 2% to 3% of their GDP each year and their economic growth rate decrease by 8%. Malnutrition is one of the leading causes of childhood mortality worldwide [1]. Deficiency of macronutrients or micronutrients or both can lead to malnutrition. Each year, more than 6million children under the age of five die around the world; 45% of these deaths are attributed to malnutrition [2,3].

Afghanistan is among countries with the highest burden of malnutrition [2,4]. The 40.9% of children under five-year-old are stunted, 9.5% are wasted, and 24.6% are underweight. The 9.2% of women in reproductive age are undernourished and on the other hand rate of obesity among women is increasing. Only 22% of children 6 to 23 months receive complementary food with minimum accepted quality and frequency, 42% of children are not exclusively breastfed and only 58% of children started breastfeeding within first hour of life. Instead of progress in micronutrients, still 26% of children and 24% of women are iron deficient, which is a "very high public health concern.

According to the most recent estimates, child under nutrition contributes to more than one third of child deaths. Undernourished children who survive may enter, the vicious cycle of recurring illness and faltering growth, with irreversible damage to their growth, cognitive development, school performance, and future productivity as adults, [5].

Demographic characteristics such as the child's age and sex, birth intervals (both preceding and following), associated with child nutrition. The three main indicators used to define under nutrition, i.e., underweight, stunting, and wasting, represent different histories of nutritional insult to the child. Low weight-for-age indicates a history of poor health or nutritional insult to the child, including recurrent illness and/or starvation, while a low weight-for-height is an indicator of wasting and is generally associated with recent illness and failure to gain weight or a loss of weight [1,5].

Socio-cultural practices such as less consideration for supplementary child feedings, late weaning and poverty are major causal factors of malnutrition among under-five year children [6]. Child health nutritional indicators are used to assess the quality of available health services as well as the general health condition of the entire population. Similarly, childhood nutritional status also determines the health and disease conditions of children in the future life.

Better nutrition means stronger immune systems, less illness, better health and a productive community. Freedom from hunger and malnutrition is a basic human right and their alleviation is a fundamental prerequisite for human and national development [4,7].

Objective

The objective of this study is to assess the effect of maternal nutritional literacy on the nutritional status of children under 5 years of age in Baghlan province-Afghanistan.

Secondary objective

- To provide evidence-based recommendations for local health authorities and stakeholders of the province toward betterment of the status.
- To identify the relationship between awareness/education level of mothers and nutrition status of their children.

Literature Review

DH Survey, February-2013: The impact of maternal education on child nutrition, evidence from Malawi, Tanzania, and Zimbabwe [1,8]. The results show that in all three countries the three measures of child nutritional status significantly decrease with increased levels of mother's education. The analysis also shows that, after controlling for other factors, maternal education reduces the odds of the three measures of child nutrition in all three countries. The threshold level of maternal education above which it significantly improves child stunting and underweight is 9 years of schooling in Malawi and 11 years of schooling in Tanzania and Zimbabwe.

Syed Sanawar Ali, December 2005: Association of literacy of mothers with malnutrition among Children - in Rural Area of District Malir, Karachi [9]. Mother's literacy status has a definite association with the malnutrition of the children <3 years, there was a significant difference regarding underweight between the children whose mothers were illiterate or had education up to primary level in comparison to the children whose mothers had education to more than primary level (P<0.016), but in significant difference regarding stunting and wasting was found.

Farah Batool, Meshal Margrate, Munazza, February 2020-Lahore-PAK [10]: Literacy level of mothers and its association with nutritional status of children under five years of age, in rural area of Lahore. Pure and applied biology results illustrate a significant association among mothers' literacy level to child nutritional status (p-value 0.020). Majority of the mothers with high school and above educational level have had high proportion of children with standard nutrition status while the children whose mothers had stumpy level of education were presented with stunting.

Sukandar Cited by 19-2015 Indonesia: Nutrition knowledge, attitude, and practice of mothers and children nutritional status Improved after five months nutrition education intervention [11]. Based on the General Linear Model analysis, the intervention in the forms of nutrition education had a significant effect on nutritional knowledge, attitude and practices among mothers and nutritional status of children less than five years based on the Z-score of body weight for age. Intervention did not have significant effects on the nutritional status according to Z-score of height for age or Z-score of weight for height. This is possible because the five-month intervention was not yet enough to improve the nutritional status.

Francesco Burchi© 2012- License 2.0 Germany: Whose education affects a child's nutritional status? From parents to household's education [12]. In line with previous studies, we find that one year of mother's education increases their children's height-for-age and weight-for-age z-scores by nearly 0.025 and 0.015. The presence of another literate household member has a significant, though limited, effect on child height while it has no influence on child weight. Lastly, there is no statistically significant difference in the effect of parents'

education on the two indicators while our measure of proximate literacy has a significantly larger impact on child height.

Rita Abbi Parul Christian, September 1st, 1988. The role of maternal literacy and nutrition knowledge in determining children's nutritional status, Parul Christian, Rita Abbi, Sunder Gujral, and Tara Gopaldas [13], literate mothers had better nutrition knowledge and to elicit specifically the impact of mothers' nutrition knowledge on their children's nutritional status, controlling for their literacy status and for family income, which is a well-established factor affecting child nutrition status.

Vani K Borooah, 2004-India: The role of maternal literacy in reducing the risk of child malnutrition in India [14]. Literate mothers make more effective use of health-care institutions, like Anganwadis and Hospitals. Consequently, the benefits to children from expanding the supply of such institutions are greater when these institutions interact with mothers who are literate.

Mu'awiyyah Babale Sufiyan 2012: Effect of maternal literacy on nutritional status of children under 5 years of age in the Babban-Dodo community Zaria city, Northwest Nigeria [15]. Maternal literacy has a significant relationship with the nutritional status of children. Therefore, there is the need to promote and encourage female/girl child education in the communities in order to empower them to know the right type of food and the right way to give it in the right quantity. This will help to prevent the occurrence of malnutrition among children, especially those under the age of 5 years.

Umme K Khattak, Saima P Iqbal, August 2017: The role of parents' literacy in malnutrition of children under the age of five years in a semi-urban community of Pakistan [16]. A case-control study, literacy is functional to obtain something else such as health information from pamphlets or other written documents, the person could use the "literacy services" of another member of the family.

Barrera et al. 1990: There is abundant empirical literature on the effect of a mother's or parents' schooling on children's malnutrition. Most of the results were achieved applying the following methodology. First, the broad effect of mother's schooling was estimated, controlling only for children, household, and context factors. Among these factors, biologists suggest including parents' nutritional indicators referring to the period in which the child was conceived; omitting these variables risks leading to an overestimation of the effect of mother's education on children's nutritional status.

Glowed et al. 1999: After considering this set of variables, mother's education was still a key determinant of children's nutrition. These results were, for example, found in Morocco for children under five years of age.

Morales, Aguilar and Calzadilla 2004: As well as in Bolivia for children under three years of age Since many scholars have (rightly) argued that education could simply reflect the effect of household economic welfare on child health, most of the authors have also controlled for economic factors. The result, in many cases, is that the positive effect of mother's education remains significantly different from zero.

Strauss and Thomas 1995: There is also some empirical evidence of this relationship in Mozambique. In the studies conducted with 1996 to 1997 data, Sahn and Alderman and Garrett and Ruel concluded that the effect of mother's education is significant and independent from that of household income/wealth in the case of 0 to 2-year-old children while non-significant for 2 to 5-year-old children. In the first study the result is also robust to the inclusion of mother's nutrition, while such a variable was not available in the second study. The work of Burchi, carried out on the basis of more recent data, has highlighted that the influence of mother's education is important for the nutritional status of preschool children, even after controlling for a large set of confounders including the mother's anthropometric status. In the available literature on this topic, different pathways of influence have been identified to explain this robust relationship between a mother's schooling and children's nutrition. This relationship is likely to operate through a traditional economic channel because, in a functioning labor market, qualified people should obtain a better job, thus having more income to use for their children's wellbeing. Moreover, schools can be a place where students directly obtain information on nutrition and health. Another important channel is information acquisition: for example, literate mothers can read the instructions of medicines and understand nutritional and health information. Disseminated by media like newspapers. Finally, a fundamental but often neglected in empirical studies- pathway specifically connecting a mother's education and child nutrition is empowerment more educated women are more self-confident and participate more in household and community decision making. Since women are usually the primary child caregivers of a family in many parts of the world and are responsible for allocating a higher share of household resources to children's' wellbeing, empowerment is likely to result in better health and nutritional status for children. Due to the complex interaction among these factors, only few studies have attempted to empirically investigate the relative weight of each channel, leading to mixed results. New insights have been offered on the potential role of education in enhancing a series of socio-economic outcomes resulting from the spill-over effects of education at the household level. Basu and Foster argue that the traditional way of measuring illiteracy is valid as long as literacy is needed, for example, to obtain a qualified job; in this case it is indispensable that the person herself is at least literate. When, instead, literacy is functional to obtain something else such as health information from pamphlets or other written documents, the person could use the "literacy services" of another member of the family. "Proximate" literacy, in this case, is as important as "individual" literacy. It follows that "literate household members generate a positive externality or a kind of public good for illiterate members" (Basu and Foster 1998, 1734, emphasis in original). To incorporate the externality generated by the education of other household members, the authors have further divided the illiterate persons in isolated illiterate (those that do not live with other literate people) and proximate illiterate (those living with at least one other literate person) Based.

Methodology

The study was conducted in Pulkhumri city of Baghlan province-Afghanistan and the sample size of the research was selected at the provincial hospital catchment area, before conducting the research based on the faculty of MAU requirement, an approval letter was issued from the Institutional Review Board (IRB) ministry of health Afghanistan, that the latter shared with provincial public health directorate and also with the Baghlan provincial hospital directorate and based on the letter the hospital nutrition ward informed that to facilitate and support researcher in term of data collection that, secondary data collected and based on the data an interview conducted with the eligible mothers.

The principal investigator conducted an orientation about the

research and questionnaire for the staff of the nutrition ward at the Provincial Hospital (PH).

The principal investigator was present at the time of checkup and screening of the children on daily bases and when any child diagnosed malnutrition interview was conducted with the mother of the malnourished child and the study questionnaire was used to collect the nutritional literacy related information from the mothers.

Descriptive health facility -based cross-sectional design was used to found out the relationship between the mothers' nutritional literacy and nutrition status of their children under -5 years old. One hundred mothers enrolled in the study, the exclusion criteria were mothers who had children more than 5 years of age, children with congenital deformity, and children with chronic diseases/disorders (e.g., tuberculosis, sickle cell anemia, etc.). Mother who does not consent is also excluded. The mothers who visited Baghlan Provincial Hospital (PH) for screening of their children nutrition status were the target group, the health care providers at the nutrition department of the PH used growth monitoring equipment (Scale, Measuring board and MUIA) anthropometric status of the children measured at the Hospital, Height Weight (HW), Mid Upper Arm Circumference (MUAC), HW measurements were taken from under five and bi-pedal edema measurements also were obtained at the health facility health care providers to determine nutrition status of different target age groups.

The measurement of the mid upper arm provides a measure of both the fat and the lean muscle mass of the upper arm, during the progress of malnutrition as lean mass is lost the risk of death becomes greater. This activity conducted systematic for all children under five years old admitted to the hospital and only those children was enrolled to the study that, their mothers were present and was eligible to the study.

The child who screened as malnutrition the nutritionist nurse recorded the child nutrition status in register books and on other formats, the researcher used to collect the secondary data from the register books and conducted interview with the mother of each child at the hospital. And the specific questionnaire applied while informed consent presented in place. The mother those who literate and can read the written informed consent gave to the mother to read and the researcher read the IC to the mother who were illiterate and got their agreement to participate in the study, all data were entered in Microsoft Access and then exported to SPSS 19.0 software for analysis.

Sample Size

based on the faculty guideline in secondary data analysis study design and sampling method are not needed, secondary data of the malnourished children collected from register books of Baghlan provincial hospital and 100 mothers of the malnourished children were selected for interview and their nutritional literacy assisted to described the knowledge and awareness of mothers in terms of importance of nutrition in children for the purpose of providing evidence-based recommendations for local health authorities and stakeholders of the province.

Results

The study enrolled 100 mothers of them 100 children under five-year screened malnutrition at the PH; at the time of interview from each mother one child was admitted at the Nutrition Department.

Demographic characteristics such as the child's age and sex and anthropometric measurement height weight, Mid Upper Arm Circumference (MUAC) data was collected from the hospitals' registration books.

The proportion of male study children was higher as compared to female gender. More than half of the participants (52%) were male whereas, 48% were female. The age group sorted out from 1 to 56 months, most of the participants (53%) were under one year, and 37% were in 2 years whereas 10% were from 3 to 5 years of age.

The 78% of the children screened severe malnutrition and 22% moderate, evidence of severe malnutrition is 75% in male and 83% in female and status of moderate malnutrition 25% in male and 15% in female Children (Figure 1).

Nutritional literacy in mothers of malnourished children

Near to all the participants were illiterate (84%), they were unable to read or write anything. While 16% of the mothers were educated.

Primary school 11%, (1 to 3 years of schooling) secondary school 2%, high school 2% and 1%. Mothers had acquired college/university level education (14 to 16 years). Approximately all of the participants (99%) were jobless and working at home (housewife) (Figure 2).

More than half of the participants (52%) did not know the sign and symptom of malnutrition, 30% of the mothers did not breastfed and 70% of the mothers did breast feeding, 65% of the mothers did not start breast feeding within one hour after the birth but 35% of them started breastfed in the first hour after birth, average age of exclusively breastfeeding of their children were 7 months, 65% of the mothers did not exclusively breastfeed of their child for the last six months, 62% mothers breastfed their child less than 8 times during 24 h that is not enough, 48% of mothers breastfed their child completely (8 to 12) times in 24 h, 66% of the mothers started complementary feeding late that, 34% of the mothers started with complementary feeding in the age of 6 month. More than half (52%) of the mothers did not feed enough their children. The 95% of the mothers did not continue breast feeding for at least 2 years. The 62% of the participants known the foods that are benefit for the nutrition of the child and

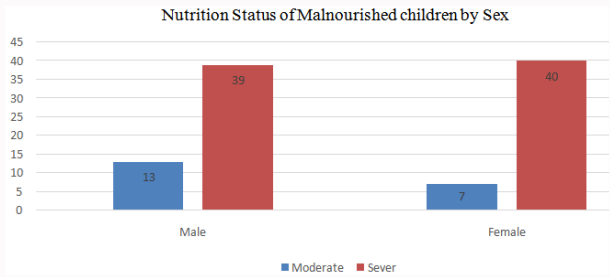

Figure 1: Nutrition status of malnourished children by sex.

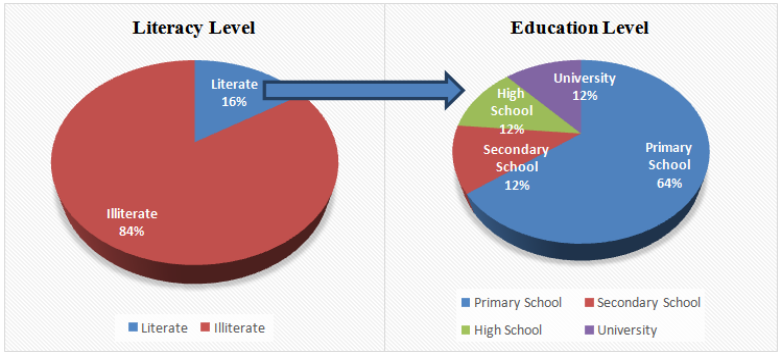

Figure 2: Literacy and educational level of the mothers of malnourished children.

Table 1: Mother's nutritional literacy score.

Description of Nutritional Literacy	Eligible Participants	Yes		No	
		n	%	n	%
To know sign and symptom of malnutrition	100	48	48%	52	52%
Breast feeding	100	70	70%	30	30%
Started breast feeding within one hour after the birth	100	35	35%	65	65%
Exclusively breast feeding of child for the last six months	100	35	35%	65	65%
Enough time breast feeding	76	29	38%	47	62%
Started with complementary feeding in the age of six months	77	26	34%	51	66%
Enough time feeding (meal)	89	43	48%	46	52%
Continued breast feeding for at least 2 years	20	1	5%	19	95%
What kind of foods are benefit for child	100	62	62%	38	38%
What kind of foods containing vitamins	100	12	12%	88	88%
Information about vitamin (name of vitamin)	100	6	6%	94	94%
Referral of child to health center for screening by mother	100	41	41%	59	59%
Total mother's nutritional literacy score	1062	n=408	38.40%	n= 654	61.60%

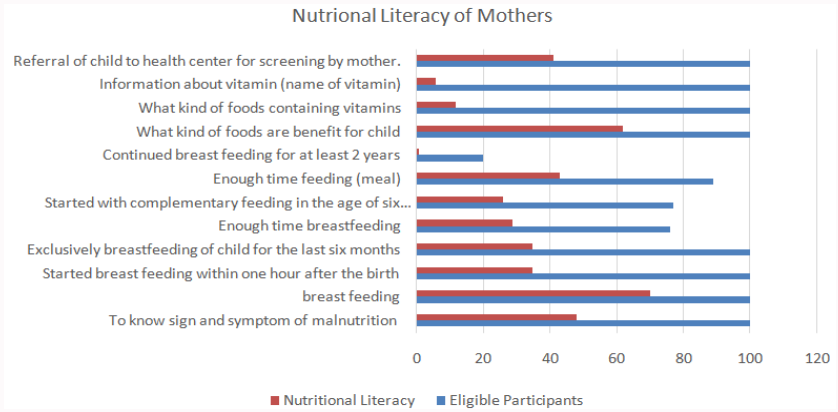

Figure 3: Nutritional literacy of mother of malnourished child.

they have access for, and 38% of them not used the food for their children. The 88% of participants did not know what kind of foods containing vitamins and near to all 94% not understood the name of any vitamins. The 59% of the mothers did not refer their children for health problem checkup and nutrition screening. The 39% of the children referred by their mothers. The range number of children of each mother in this study was from 1 to 11 children and the average number is 5 children (Table 1).

Considering to analysis of nutritional knowledge, the nutritional literacy in mothers of malnourished children under five-year-old in Puli Khumri city, Baghlan province-Afghanistan. Evaluated very weak (38.4%), there is the need to promote and encourage female/girl child education in the communities in order to empower them to know the right type of food and the right way to give it in the right time and quantity (Figure 3).

Discussion

While finding show that, the mother who has low nutritional literacy their children are more prone to malnutrition, and nutritional awareness of mother improves the nutrition status of their children and low knowledge and illiterate mothers could not do effective breastfeeding, use efficient nutrient foods and did not use properly health-care facilities. The study proved that nutritional literacy of mothers strongly affects the nutritional state of the children. In the study of DH Survey, Feb-2013, the impact of maternal education on child nutrition, evidence from Malawi, Tanzania, and Zimbabwe child nutritional status significantly decreases with increased levels of mother's education [8].

Similar findings were reported in http://dx.doi.org/10.19045/bspab.2020.90170 [10]. Results illustrate a significant association among mothers' literacy level to child nutritional status majority of the mothers with high school and above educational level have had high proportion of children with standard nutrition status while the children whose mothers had stumpy level of education were presented with stunting. In the study of Rita Abbi, Sunder Gujral, and Tara Gopaldas et al. [13], literate mothers had better nutrition knowledge and to elicit specifically the impact of mothers' nutrition knowledge on their children's nutritional status, the result of a study India, Vani K. Borooah et al. [14] indicated that, literate mothers make more effective use of health-care institutions it is as same as this research result.

The research recommended to improve the nutritional literacy of the mother it also indicated in the study Babban-Dodo community Zaria city, Northwest Nigeria [15], to promote and encourage female/girl child education in the communities in order to empower the mother nutritional literacy, where illiterate mothers are a risk for the development of malnutrition in children <5 years of age [16-21]. This coincides with the studies of Bouvier et al. [22], Tum wine et al. [23] and Chen et al. [24] all of them have identified illiteracy of mothers as a strong risk factor for malnutrition in children <5 years of age.

The research indicates that, 84% of mothers of malnourished children were illiterate and their nutrition literacy assessed very poor, that affected nutrition of the children like start breastfeeding within one hour after the birth, exclusively breastfeeding for the last six months, complementary feeding and continue breast feeding for at least 2 years.

In this study highest number of children i.e. 80% were found severe malnutrition. And near to all the mothers were illiterate. A feature of interest was the role of maternal literacy in reducing the risk of child malnutrition and, more specifically, the channels through which this risk reduction might operate. The results indicated that illiterate mothers could not use effectively nutrient foods and did not use effectively health-care institutions.

Conclusion

The research documented that, the nutritional literacy of mother improves the nutrition status of their children and low knowledge and illiterate mothers could not do efficient breastfeeding, use effectively nutrient foods and did not use properly health-care institutions. And their children are more prone to malnutrition. This study provided evidence-based recommendations for local health authorities and stakeholders of the province toward betterment of the nutrition status of the children under five-year old.

Prevention of malnutrition is the most critical and essential part of public nutrition interventions and require a lot of attention which one is awareness and nutritional literacy of mothers that can improve the child nutrition status and prevent malnutrition. Therefore, there is the need to promote and encourage female/girl child education in the communities in order to empower them to know the right type of food and the right way to give it in the right quantity, This will help to prevent the occurrence of malnutrition among children, especially those under the age of 5 years.

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