



# NUTRITIONAL STATUS; ASSOCIATION OF CHILD'S NUTRITIONAL STATUS WITH IMMUNIZATION AND MOTHER'S NUTRITIONAL KNOWLEDGE.

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## INTRODUCTION

### Background of the Problem

Nutrition is the cornerstone of socioeconomic development of a country and it is a vital component of Primary Health Care as well. Freedom from hunger is a basic human right and its alleviation is an essential prerequisite for human and national development.<sup>1</sup> Sufficient nutrition is essential in early childhood to ensure healthy growth, strong immune system, proper organ formation, and neurological as well as cognitive development. Financial progress and human development require well-nourished populations who can think critically and contribute in their communities as well as country. Studies are evident that malnutrition impairs cognitive function of children consequently contributes to poverty through impeding individuals ability to lead productive

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**ABSTRACT... Background:** Malnutrition is one of the major public health concerns in developing countries. In Pakistan more than 38% of the children are under weight and stunted. Malnutrition in children has been found associated with nutritional knowledge of mothers. The current study has been conducted to assess the nutrition status of children from 6 months to 5 years of age. **Objectives:** To determine the association of child's nutritional status to immunization and maternal nutritional knowledge. **Study Design:** Cross sectional descriptive study design was used. **Setting:** Mustafa Abad, District Kasur, Pakistan. **Period:** April to June 2018. **Methods:** Convenient sampling technique was used. For data collection a self-structured questionnaire was used. Nutritional status of children was measured in term of stunting, wasting and underweight, according to the WHO's criteria of malnutrition. Data were entered in SPSS version-20 and analyzed. **Results:** There was significant association (p-value <0.05) between child's nutrition status with mothers' nutritional knowledge. The majority of the mothers with adequate knowledge had children with normal nutrition status whereas the children whose mothers had poor nutritional knowledge were presented with stunting. The immunization coverage of this area was good as it was 99%. **Conclusion:** Malnutrition is prevalent in our children at alarming level. There is a need to improve the nutritional knowledge of mothers because it has a definite association with nutritional status of children under the age of five years.

**Key words:** Malnutrition, Under Nutrition, Nutritional Knowledge, Anthropometry, Stunting, Wasting, Underweight, Immunization.

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life.<sup>2</sup> Since it is a pathological state resulting from absolute or relative deficiency or excess of one or more of the essential macro or micro nutrients that is referred to both under and over nutrition.<sup>3</sup> In this study, the term malnutrition has been used for the condition of under nutrition only.

It is a well-known fact that malnutrition lowers the ability of the body to resist infection by impairing the function of the main immune-response mechanism. Moreover, it is directly or indirectly related to more than half of the morbidity and mortality in children under five years of age.<sup>4</sup> Globally, about 20 million children under five year of age suffer from severe malnutrition, which contributes to deaths about one million children per year due to malnutrition in developing countries.<sup>5</sup> While, this percentage is highest in South Asia with 70% of malnourished children.

Particularly, in Pakistan, 33.03% of children under the age of 5 years are underweight, 53.38% of the children having stunted growth and wasting is reported in 11.52% of the children under the age of five years, which clearly shows the poor nutritional status of children in Pakistan.<sup>6</sup> The causes of malnutrition are multi factorial and complex. Causes recognized in different studies are late initiation of breast feeding, improper weaning, incomplete vaccination, low birth weight, maternal education and mother's nutritional knowledge.<sup>7</sup> Mothers are the foremost providers of primary care for children. Their awareness of basic nutrition and health measures strongly influence the care they provide. Maternal nutrition knowledge is associated with nutritional status after controlling the effects of other significant variables like socioeconomic status, hygiene or infections. Although, maternal education is not independently associated with nutritional status but mother's practical knowledge about nutrition is more important than formal maternal education for child nutrition outcome.<sup>8</sup> Promoting maternal nutritional knowledge may be an important avenue for improving nutrition even in children from low socio-economical status because mothers with poor nutrition knowledge can put their children at high risk of getting childhood malnutrition.<sup>9</sup> And mothers with good nutritional knowledge have mentally alert and physically strong children.<sup>10</sup>

Along with maternal nutritional knowledge, immunization is also the most powerful cost-effective measure of preventing some of the fatal diseases of childhood. It is recognized that under-nutrition enhances the risk of infectious diseases and recurring bouts of illness. So, immunization is the single option which prevents from infectious diseases and can promote child's growth.<sup>11</sup> Children who are missed by childhood immunization are at higher risk to be malnourished, anemic and also have higher prevalence of morbidity and mortality.<sup>12</sup> Furthermore, children who do not receive the complete immunizations scheduled for their first year of life, are nine times more likely to die from infectious diseases and the child suffering with such diseases will find it difficult to retain essential nutrients which put the child in dangerous state of malnutrition.<sup>13,14</sup>

Although, in 1980s preventive health and nutritional interventions have become a major component of the health policies like GOBI (Growth monitoring, oral rehydration, Breastfeeding and Immunization). A step forward in 1990s micronutrient vitamin A interventions with immunization are promoted by many international agencies but still Pakistan is facing problem in combating with malnutrition especially in rural areas.<sup>15</sup>

The prevalence of malnutrition is very high across the globe especially in developing countries but the children from rural areas are at high risk of getting it. So, it was imperative to assess the nutritional status and its association with immunization status and mother's nutritional knowledge among children less than five years of age in Pakistan as it is a developing country and its population under five years of age is more prone to develop malnutrition. Because there is diverse family, social and economical system in Pakistan and each family use to give value to their nutritional and health care needs according to their resources as well as awareness. So the studies conducted in dissimilar background may be consistent across divergent setting but still further research is needed in demanding area.

## METHODOLOGY

### Study Design

A descriptive cross sectional study design was used. Non-probability convenient sampling was used for this study. The target population for this study was mothers having children 6-59 months of age in selected study area. Calculated sample size was 100 mothers.

### Selection and Development of the Instrument

The study tool used for this study was a self administered structured questionnaire on aspects of nutritional knowledge of mothers who have children 6-59 months of age. The stuff for the tool was generated from the literature and from informal discussion with colleagues and seniors. The questionnaire had three parts: Part 1 was the socio demographic data sheet which elicited responses to describe the participants'

socio demographic overview. Part 2 included immunization status and nutritional status of children, in term of stunting, wasting and under weight. Part 3 contained 15 questions for mothers about their nutritional knowledge. There were four scaled response questions using a Likert-scale in questionnaire. The research tool was translated into Urdu for the understanding and convenience of mothers.

**Anthropometric Measurements**

Weighing scale and measuring tape was used for anthropometry data collection. Weight and length (height) was taken to assess the nutritional status of the children. Children were weighed with minimal clothing, and the weight was recorded to the nearest of 0.1kg. Recumbent lengths of the children were noted. Each child was made to lie on an adjustable wooden measuring board and length measurements were recorded to the nearest of 0.1 cm.

**Validity and Reliability of the Research Instruments**

The study tool was tested for validity by experts. The validated instrument was pilot tested. Reliability of the tool was computed using Cronbach'. The result of the pilot study showed an internal consistency of 0.80 implying that the tool was reliable for data collection. Study tool (questionnaire) was then disseminated to the participants after taking permission of their concerned organizations. All the variables including demographic variables were analyzed accordingly through the software.

**Methods Used to Analyze the Data**

The data was entered and analyzed using Statistical Package for Social Sciences (SPSS Version 20) and MS Excel. Weight and height were transformed to weight-for-age, weight-for-height and height-for-age using WHO Anthro (v for personal computers 3.2.2). The indices were expressed by using the international reference population as Z scores(10). Children were classified as stunted, wasted or underweight if the z-scores fell below -2SD of the reference population respectively for the age and sex.<sup>16</sup> Descriptive statistics (means, standard deviations,

percentages and range) were computed for socio demographic data. Analysis was stratified by age, sex, knowledge score, and other characters. A P-value of <0.05 was considered significant in the entire analyses. A chi-square and Fisher Exact test was used for association of child’s Nutritional status to immunization and mother’s Nutritional knowledge.

**RESULTS**

**Section A**

This section presents socio demographic data especially about age of the participants under study both mothers and their children. In this study 100 mothers with their children were included. The mean age of mothers was 28.6 ± 4.5 years and the mean age of their children was 2.6 ± 1.3 years. 55 (55%) of the children were from the age group of 13 to 36 months, 33% were within the range between 37 to 60 months of the age.

Age	Mother	Children
Mean	28.6	2.6
Std. Deviation	4.5	1.3
Minimum	20	0.5
Maximum	44	5

**Table-I. Showing mean age of mothers and their children**

Age group	Frequency	Percent
6 - 12 Months	12	12.0
13 - 24 months	29	29.0
25 - 36 months	26	26.0
37 - 48 months	17	17.0
49 - 60 months	16	16.0
Total	100	100.0

**Table-II. Showing frequency of the age group of children**

From the sample size of 100, 55% of the children were having the age of 06 to 36 months, 33% were within the range between 37 to 60 months of the age.

**Section B**

Describes the immunization and nutritional status of the children under study.

■ Complete Immunization ■ Partial Immunization

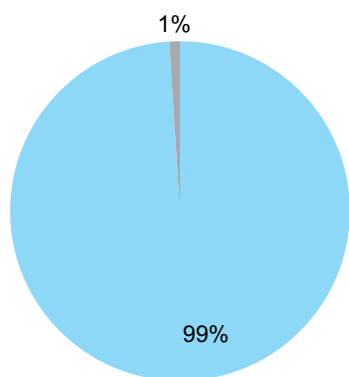


Figure-4.1. Immunization status of children

Out of 100 children, 99 (99%) of the children were completely immunized according to age and only 1 (1%) child was partially immunized.

A total of the 46 (46%) children were normal while 30 (30%) children had have stunting, 17 (17%) were found underweight and only 7 (7%) children were caught up with wasting.

■ Underweight ■ Stunting ■ Wasting ■ Normal

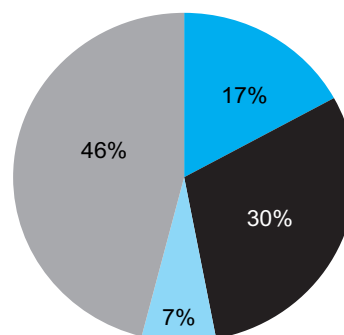


Figure-4.2. Distribution of children according to nutritional status

**Section C**

Section- 3 contained 15 questions for mothers about their nutritional knowledge. There were four scaled response questions using a Likert-scale in questionnaire.

S. No	Statements	Strongly Disagree N (%)	Somewhat N (%)	Strongly Agree N (%)	Neutral N (%)
Q.1	Nutrition is essential for growth of your child.	4 (4%)	-	96 (96%)	-
Q.2	Breast milk has special things in it that protect a baby which formula milk doesn't have.	8 (8%)	-	92 (92%)	-
Q.3	Solid foods should only be given to babies who are at least 4 to 6 months old	13 (13%)	20 (20%)	67 (67%)	-
Q.4	Sources of body building foods are meat, eggs and beans.	6 (6%)	27 (27%)	67 (67%)	-
Q.5	Eating only energy foods is good for your baby like roti, rice, oil.	22 (22%)	26 (26%)	46 (46%)	6 (6%)
Q.6	Children should eat a lot of fat at every meal.	59 (59%)	13 (13%)	23 (23%)	5 (5%)
Q.7	Vitamin A is high in vegetables and fruits like carrot	5 (5%)	20 (20%)	24 (24%)	51 (51%)
Q.8	Vitamin A deficiency may cause night blindness	3 (3%)	7 (7%)	22 (22%)	68 (68%)
Q.9	Foods high in iron are liver/spinach/beans.	8 (8%)	11 (11%)	34 (34%)	47 (47%)
Q.10	Iron deficiency may cause blood deficiency	2 (2%)	19 (19%)	41 (41%)	38 (38%)
Q.11	Iodine salt is good for the prevention of goitre.	3 (3%)	15 (15%)	33 (33%)	49 (49%)
Q.12	Sunlight is essential for proper growth of child's bones.	11 (11%)	13 (13%)	66 (66%)	10 (10%)
Q.13	Sick children need more food to help them stay strong	31 (31%)	8 (8%)	61 (61%)	-
Q.14	If your baby is sick you should stop breastfeeding.	58 (58%)	14 (14%)	27 (27%)	1 (1%)
Q.15	Thick foods give more energy to infants.	13 (13%)	22 (22%)	58 (58%)	7 (7%)

Table-III. Mothers' responses to the questionnaire

As a self-administered structured questionnaire was designed to measure nutritional knowledge of mothers who had children 6-59 months of age with maximum score of 15. Higher scores indicate better nutritional knowledge of mothers. The overall mean score of nutritional knowledge measured by questionnaire was  $8.0 \pm 2.9$  with range from 2 to 14. Knowledge status was also categorized as follow;

- **Adequate Knowledge:** if the respondents give above than 70% correct answers from the structured questionnaire.
- **Average Knowledge:** If the respondents give 50%- 70% correct answers from the structured questionnaire.

- **Poor Knowledge:** If the respondents give < 50% correct answers from the structured questionnaire.

The result of current study showed that 43 (43%) mothers had poor knowledge, 40 (40%) mothers had average and only 17 (17%) mothers showed adequate knowledge about the child’s nutrition.

Chi square test was used to determine the association of child’s nutrition status with immunization status of the child. No significant association was found between children’s nutrition status with immunization status, as p-value is 0.502 (p-value > 0.05).

Child’s Nutrition Status	Immunization Status According to Age		Total n (%)
	Complete Immunization n (%)	Partial Immunization n (%)	
Underweight	17 (100.0%)	0 (0.0%)	17 (100.0%)
Stunting	29 (96.7%)	1 (3.3%)	30 (100.0%)
Wasting	7 (100.0%)	0 (0.0%)	7 (100.0%)
Normal	46 (100.0%)	0 (0.0%)	46 (100.0%)
p-value	0.502		

Table-IV. Association of child’s nutrition status with immunization

Child’s Nutrition Status	Mothers’ Nutritional Knowledge			Total n (%)
	Poor n (%)	Average n (%)	Adequate n (%)	
Underweight	10 (58.8%)	5 (29.4%)	2 (11.8%)	17 (100.0%)
Stunting	22 (73.3%)	7 (23.3%)	1 (3.3%)	30 (100.0%)
Wasting	5 (71.4%)	2 (28.6%)	0 (0%)	07 (100.0%)
Normal	6 (13%)	26 (56.5%)	14 (30.4%)	46 (100.0%)
p-value	< 0.001			

Table-V. Association of child’s nutrition status with mothers’ nutritional knowledge

**Fisher’s exact test**

Fisher’s exact test was used to determine the association of child’s nutrition status with mothers’ nutritional knowledge, which revealed that there was significant association (p-value < 0.05) between child’s nutrition status and mothers’ nutritional knowledge. The majority of the children with mothers having adequate knowledge had normal nutrition status whereas the children with mothers having poor nutritional knowledge were presented with highest prevalence of stunting.

**DISCUSSION**

The global fight against malnutrition needs to be complemented with sustainable and concerted

efforts against infectious diseases and with critical nutritional management such as promoting optimal breastfeeding practices, improving mothers’ nutritional knowledge, encouraging micronutrient supplementation and better access to safe water and sanitation services.<sup>2</sup> Malnutrition in children under five years of age is a major public health concern especially in developing countries and Pakistan is no exception. Our study identified more than half of the children (54%) had some form of malnutrition. In the total observed number of malnourished children 55.5% were with stunting. These findings are comparable with<sup>4</sup> and National Nutritional Survey (2011) who recognized 41% and 46% stunting in their

studies respectively in rural areas. The NNS, 2011 revealed that stunting in fact had worsened in the last 10 years. While, 13.5% of the children under current study were observed with wasting which was lower than the national figures of National Nutritional Survey, 2011 in which 16% of the children were considered under wasting category of malnutrition and 31% were found underweight. The findings of present study are congruent with<sup>17,18,19</sup> who conducted community-based studies and reported almost same prevalence of the problem in Sri Lanka, KPK (Pakistan) & India respectively.

In contrast,<sup>2</sup> documented that malnutrition in developing countries is declining due to great emphasis on nutrition promoting interventions. This discrepancy in findings may be due to increased awareness of breast feeding, ensuring preventive health practices and effective healthcare facilities and immunization coverage in certain areas but the rural areas are still deprived of all the optimum health care facilities. Maternal nutritional knowledge can play an important role in improving child health status because it has frequently been observed as significant objective for nutrition promoting interventions throughout the literature and it contributes to overall development of the children.

Current study has assessed mother's nutritional knowledge of breast feeding, weaning diet, macro/micronutrients & diet during illness. The study results indicated that only (17%) of the mothers possess adequate nutritional knowledge, while, (40%) showed average nutritional knowledge and poor nutritional knowledge was assessed in 43% of the mothers. The researcher of present study also observed that majority of the malnourished children (34/54) were with those mothers whose nutritional knowledge was rated poor. Our findings are in line with<sup>15,10</sup> whose study results revealed the same picture that mother with inadequate nutritional knowledge, produced malnourished children. In present study, the researcher also observed that despite poor/ average nutritional knowledge majority of the mothers were aware of the benefits of breast feeding and they were used to breast feed their children.

These findings supported by NNS, (2011) who reported that breast feeding behavior is now changing in Pakistan and mothers had started to understand the importance and benefits of breastfeeding. The present study demonstrated that mothers did not have sufficient knowledge about nutritional needs of their children as majority of the mothers were unaware of the use and importance of macronutrients like Protein, Carbohydrates and fat and micronutrients, like Vitamin A, iodine and iron. That's why they were found unable to choose acceptable food choices for their children. As for Immunization Status of the children in present study, 99% children were fully immunized in our study population. Despite full coverage of immunization 54% children were recognized malnourished. These findings represent that complete immunization although prevents from infectious diseases and helps to achieve normal growth and development of children but certain other factors like low socio economical status, large family size, low birth spacing, cultural beliefs and poor maternal nutritional knowledge can be contributory factors in the development of malnutrition. Thus, implementation of health education programmes particularly in rural areas is the need of the hour to improve maternal knowledge regarding contributing factors of malnutrition to protect children less than five years of age from malnutrition.

## CONCLUSION

The present study demonstrated that mothers in our study population did not have sufficient knowledge about nutritional needs of their children as majority of the mothers were unaware of the use and importance of macronutrients like Protein, Carbohydrates and fat and micronutrients, like Vitamin A, iodine and iron. That's why they were found unable to choose acceptable/adequate food choices for their children. As for Immunization Status of the children in present study, 99% children were fully immunized. Despite full coverage of immunization 54% children were recognized malnourished. These findings represent that complete immunization although prevents from infectious diseases and helps to achieve normal growth and development

of children but certain other factors like low socio economical status, large family size, low birth spacing, cultural beliefs and poor maternal nutritional knowledge can be contributory factors in the development of malnutrition because most of the families in present study were having poor socio economical status, low educational level of parents and poor maternal nutritional knowledge. So, this study recognized translucent association between nutritional status of children with mother's nutritional knowledge but it was unable to reveal any association between malnutrition and immunization status of children due to the absence of adequate number of children with partial or no immunization status in study population.

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## REFERENCES

- Lodhi HS, Lodhi FS, Wazir S, Jadoon H. **Assessment of nutritional status of 1–5 year old children in an urban union council of Abbottabad.** Journal of Ayub Medical College Abbottabad. 2010;22(3):124-7.
- Chakraborty A, Dasgupta U, Mondal K, Das I, Sengupta D, Mundle M. **Poor maternal education and incomplete immunization status are key predictors in development of under nutrition'-a descriptive study among under five children attending a tertiary care hospital in Kolkata, West Bengal.** Indian J Prev Soc Med. 2014;45(1-2):23.
- Gul R, Kiramat MA. **A profile of nutritional status of under five year old children in internally displaced persons (idps) camp, Jalozai District Nowshera.** Journal of Postgraduate Medical Institute (Peshawar-Pakistan). 2011;26(1).
- Ali SS, Karim N, Billoo AG, Haider SS. **Association of literacy of mothers with malnutrition among children under three years of age in rural area of district Malir, Karachi.** Journal-Pakistan Medical Association. 2005;55(12):550.
- Laghari ZA, Soomro AM, Tunio SA, Lashari K, Baloach FG, Baig NM, et al. **Malnutrition among children under five years in district Sanghar, Sindh, Pakistan.** Gomal Journal of Medical Sciences. 2015;13(1).
- Asad N, Mushtaq A. **Malnutrition in Pakistani children, its causes, consequences and recommendations.** JPMA The Journal of the Pakistan Medical Association. 2012;62(3):311.
- Darteh EKM, Acquah E, Kumi-Kyereme A. **Correlates of stunting among children in Ghana.** BMC public health. 2014;14(1):1.
- Appoh LY, Krekling S. **Maternal nutritional knowledge and child nutritional status in the Volta region of Ghana.** Maternal & child nutrition. 2005;1(2):100-10.
- Williams L, Campbell K, Abbott G, Crawford D, Ball K. **Is maternal nutrition knowledge more strongly associated with the diets of mothers or their school-aged children?** Public health nutrition. 2012;15(8):1396-401.
- Gichana MB. **Nutritional knowledge of Mothers and nutritional status of their children 6-59 Months under Malezi Bora Programme in Kawangware Sub Location, Dagoretti, Nairobi County:** University of Nairobi; 2013.
- Anekwe TD, Kumar S. **The effect of a vaccination program on child anthropometry: Evidence from India's Universal Immunization Program.** Journal of Public Health. 2012;34(4):489-97.
- Semba RD, de Pee S, Berger SG, Martini E, Ricks MO, Bloem MW. **Malnutrition and infectious disease morbidity among children missed by the childhood immunization program in Indonesia.** 2007.
- Anekwe TD, Kumar S. **The effect of a vaccination program on child anthropometry: Evidence from India's universal immunization program.** Journal of Public Health. 2012:fds032.
- Irshad M, Hayat M, Ahmad A, Khalil B, Hussain M. **Case fatality rate and etiological factors of malnutrition in children less than 5 years of age.** Journal of Postgraduate Medical Institute (Peshawar-Pakistan). 2014;28(1).
- Biswas T, Mandal P, Biswas S. **Assessment of health, nutrition and immunisation status amongst under five children in migratory brick kiln population of periurban Kolkata, India.** Sudanese Journal of Public Health. 2011;6:7-13.
- Leung E, Weil DE, Raviglione M, Nakatani H. **Bulletin of the world health organization.** Bulletin of the World Health Organization. 2011;89:390-2.
- Peiris T, Wijesinghe D. **Nutritional status of under 5 year-old children and its relationship with maternal nutrition knowledge in Weeraketiya DS division of Sri Lanka.** Tropical Agricultural Research. 2011;21(4).
- Hirani S. **Malnutrition in young Pakistani children.** J Ayub Med Coll Abbottabad. 2012;24(2):150-3.
- Damor R, Pithadia P, Lodhiya K, Mehta J, Yadav S. **A study on assessment of nutritional and**

immunization status of under-five children in urban slums of Jamnagar city, Gujarat. Healthline, Journal

of Indian Association of Preventive and Social Medicine. 2013;4(2):35-9.





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A drowning man is not troubled by rain.

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“Unknown”

**AUTHORSHIP AND CONTRIBUTION DECLARATION**

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Farah Batool	Primary Author, Involved in all step of study: proposal writing to conclusion.	
2	Samina Kausar	Involved in all step of study: proposal writing to conclusion, conception of ideas, synthesis, methodology & write up.	
3	Shaier Khan	Tool development, data collection & peer review.	
4	Mansoor Ghani	Write up, data collection & peer review.	
5	Meshal Margrate	Tool development, data collection & peer review.	