

Desktop Review: Association of Mother's Education and Malnutrition of Children Under the Age of 5 Years

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Abstract

The major cause of illness in children was found malnourishment and its impact was found to stunt mortality and wasting. Association of Mother's education and undernourishment of the children discovered in the selected 21 articles and reports in academic journals. Malnourishment in children under 5 years was found particularly in low-income households in different countries. There were different factors identified for malnutrition but the association of a mother's education to the malnutrition of children under the age of 5 years was missing and correlation analysis was not carried out as an important factor of malnutrition. The analysis was carried out with a convergence approach to the research design. The p-value is to find out the association of among the variables; ten articles were with p-value and the rest were not; these were 52.38 % and agreed one way or another with the association of mother's education on the issue of malnutrition, likewise another 47.61 percent were with 'p' calculation and average 'p' <value calculated in Excel program, the outcome was of $p < 0.0425$ which was less than < 0.05 (standard norm of association) and showed a strong bond (correlation/ association) of malnutrition of under 5 years children with mother's education. Mother's education is found as a vital source to reduce malnutrition among the children of Nepal and elsewhere, the targeted intervention program should be launched to educate the mothers of children on functional literacy on diet and the nutritional value of local products.

Keywords: Children; Education and Association; Malnutrition; Mothers.

Introduction

Malnutrition is a worldwide problem specifically for children below five years of age. There are many factors of malnourishment such as food insecurity, lack of a properly balanced diet, parental education, and environmental aspects and so on but mother's educational status plays a major role. 'According to the Constitution of Nepal (2015) health of the people declared as a fundamental right of the citizen and Article 35 explained the provision of free health care, information and equal access to health care. It also elaborated further on access to clean drinking water and sanitation' (MoHP, 2019/20). The Family welfare division of the Ministry of

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Health and Population (MoHP) is responsible to look after the sustenance of the population. The same division also looks after 'Extended Program on Immunization (EPI), Nutrition and Integrated Management of Childhood Illness (IMCI) and Newborn Care, Reproductive Health Care (including Safe Motherhood and Newborn Health) and Family Planning (FP). It also cares and address to foremost childhood illnesses like Pneumonia, Diarrhea, Malaria, Measles and Malnutrition among under 5 year's children in a holistic way' (MoHP, 2019/20). The report identifies the nutritional plan but it does not have a study relation of the malnutrition and education of the mother. As a part of sustainable goals of UN 2015-30 has to 'eradication of all forms of malnourishment, including completing, by 2025, the worldwide agreed objectives on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and breastfeeding mothers and elderly people' (UNSDG, 2015). The recent population of Nepal (Sunday 23 Oct 2022) is "30,343,472 based on world meter UN data and the infant mortality rate 23.4 in 1000 live birth and death 27.7 under the age of 5"(Worldometer, 2022). 'Research showed that there is a strong linkage between maternal education and children's health. Children born to educated women suffer less from malnutrition which manifests as being underweight, wasting and stunting in children. Maternal education has been associated with nutrition outcomes among children in studies in various settings including Jamaica (Hand -1999); Bolivia (Frost 2005); and Kenya: (Kabubo 2008, Abuya 2011)^{1*}. According to the WHO (2020) estimation "149 million children under 5 stunted (too short for age), 45 million wasted (too thin for height), and 38.9 overweight or obese and around 45% of deaths among children under 5 years of age were linked to undernourishment. These mostly occur in low- and middle-income countries. At the same time, in these same countries, rates of childhood overweight and obesity are rising"(WHO, 2021). SDG 2- aim for zero hunger by 2030, It was basically to 'mobilize the people to achieve the internationally agreed target to eradicate all forms of malnutrition'(Global Goals, 2022). How to achieve these targets is the main concern to all so that a healthy world population would have been developed. To end the malnutrition of children, the mother can play a major role. The research question is what the association and impact of mothers' education with children's malnutrition is.

Methodology

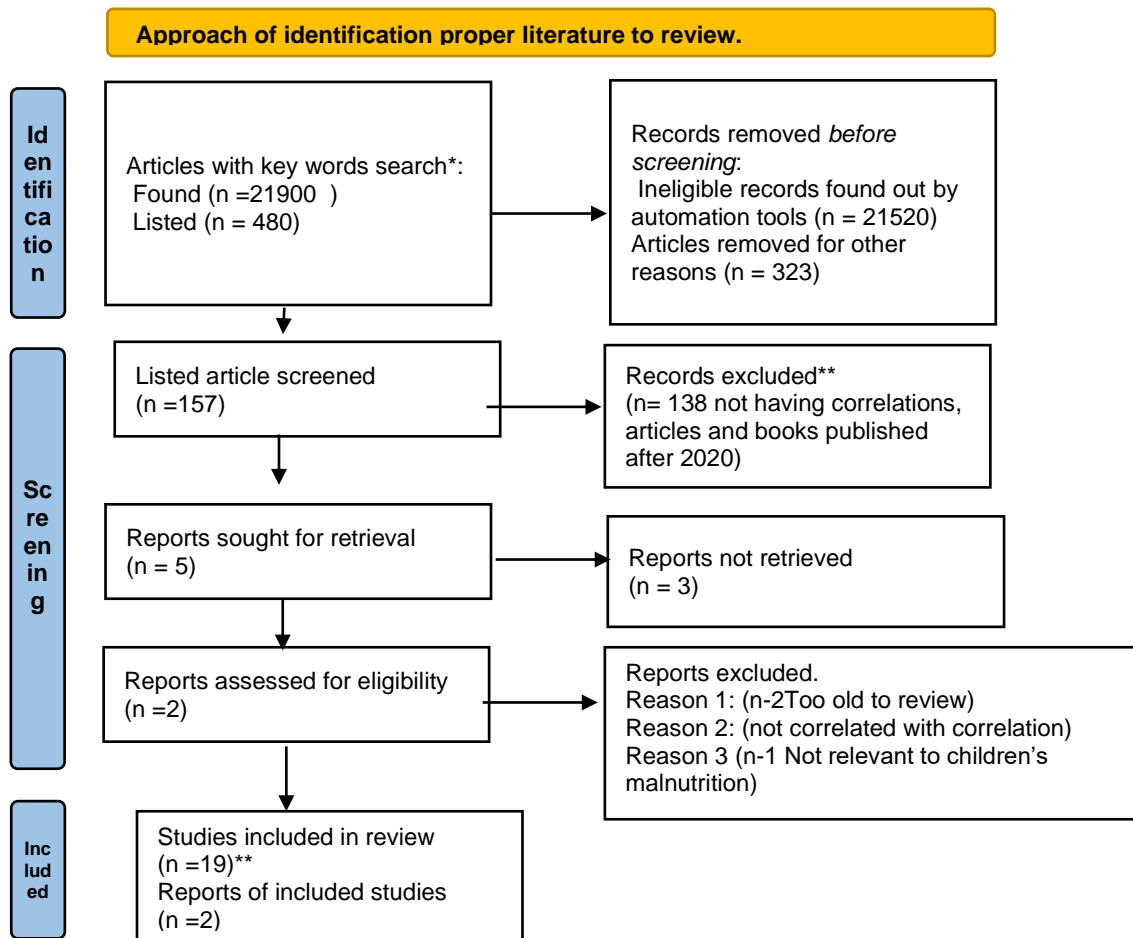
Basically, this is based on a desktop review of the published articles and the study of the report on the issue on mothers' education and malnutrition. A study is a convergence approach with systematic and desktop review. Mainly the research methods are 'qualitative and quantitative' (QUAL+QUAN; Morse, 1991)² In this case where possible the convergent method is suitable with a secondary data source. 'A convergent method of research simultaneously conducts the quantitative and qualitative elements in the same phase of the research process, weighs the methods equally, analyzes the two components independently, and interprets the results

² Morse, J. M. (1991). Approaches to qualitative & quantitative methodological triangulation. *Nursing Research*, 40(2), 120–123. <https://dx.doi.org/10.1097/00006199-199103000-00014>

together’(Creswell & Pablo-Clark, 2011).³It was said since many reports and national figures, sometimes unpublished literature has to be reviewed without following the rule of a systematic review. In this study, a convergent method of data collection was used to find out the answer of the research questions.

The study was carried out from the article published in Google Scholar, Research gate, and SSRN and Academia. These articles were filtered by using the keywords mothers’ education and malnutrition, it further filtered with the correlation/ association of mothers’ education on malnutrition under the age of 5 years.

Collection of literature an approach



** Among these reviewed article 18 articles were not emphasize the correlation of mother’s education with the malnutrition. Somehow these articles recognized the education factor associated with mother’s education that’s why these articles are included in the review.

³ Creswell, J. W., & Plano Clark, V. L. (2011). Designing and conducting mixed methods research. Thousand Oaks, CA: Sage

1. Literature Review and Data Analysis

Malnutrition has been a problem globally, particularly in developing countries. ‘In the process of study under 5 years of age remained prominent with 21 percent stunted, and 7 percent wasted in 2019. Since then, there have been recorded greater improvements worldwide in past two decades; in comparison of 40 percent in 1990 to 21 Percent in 2019’ (Khaled Al-zangabila, Sasmita Poudel Adhikari, Qingzhi Wang, & et.al, 2021)

Selected countries wise review on association of mother’s education and malnutrition in children under 5 years of age.

i. Nepal

According to Ahmad Hossain & et.al (2020) Malnutrition analyze Effect of socio-demographic factors in children severe acute malnutrition among children under-five years of age: A case-control study in Nepal, in their analysis they analyzed the effect of parents education status on malnutrition and the study clearly indicated the *p* of 0.001 which showed the significant importance of maternal education in controlling the severe acute malnutrition. In their study “37.5 % mothers were illiterate, schooling less than 8 years percentage found 10.9 % and above 8 years of schooling found 51.6 %” (Ahmed Abdallah, Mohammed & Dawit Ayele, 2021)

Table 1 Retrieved from table 2 from the study of Ahmed Hossain and et.al.

Issues	Classifications	Case (%)	Control (%)	Unadjusted OR (CI)	p-value
Mother’s Education	Illiterate	48(37.5)	20(15.6)	Ref	
	<8 years of education	14(10.9)	23(17.9)	0.25(0.10-0.58)	0.001
	>8 years schooling	66(51.6)	85(66.4)	0.32(0.17-1.07)	<0.001
Bold values significant at 5% significance level					

Source: Ahmed Abdullah and others.

Significance of *p*-value: if the *p*-value is 0.05 or less than the result is found significant and higher than this is regarded in significant. Mothers attending school more than 8 years were 51.6 percent. In the final conclusion they found out as “it is necessary to scale up services to improve the socioeconomic status which includes the education, occupation, and monthly income of the mother. Girls of age group 6–24 months were more likely to develop SAM” (Ahmed Hossain & et.al., 2020).

A study was carried out by Nepali Shah (2004) on ‘Determinants of Child Malnutrition in Nepal: A Case Analysis from Dhanusha, Central Terai of Nepal, this was uploaded on research gate on 2020. According to him ‘When the mother’s education increases the malnutrition of the children decreases. He further emphasized by referring NDHS being decrease of stunting with increasing level of mother’s education. In his analysis the *p* value found on mothers’ education 0.004 for underweight and 0.002 for stunting’ (Nepali Sah, 2020).

The study was conducted to collect data on ‘knowledge, attitude and practices related to child health and feeding practices among the family of 567 children of 0-23 month old children with the objective to predict the effect of various independent variables on underweight and stunting of children’(Nepali Sah, 2020). The article was not concentrated to view the relation of malnutrition with the mother’s education, he had identified a factor of level of education found significant role to decrease malnutrition.

A study was conducted by Bhusal, U. and Sapkota, V. (2020) researched on ‘Socioeconomic and demographic correlates of child nutritional status in Nepal: an investigation of heterogeneous effects using quintile regression’. The study focused on socio demographic study on malnutrition and they have included mother’s education on of the variables of the study. The categorization of the mother’s education is given below.

Table 2: Variables of malnutrition analysis: Mothers’ education (Bhusal and Sapkota 2022 -4:13)

S.N	Variables- Mothers ‘	Measurement
1	Mothers age at birth	Less than 20 years; 20–34 years; more than 34 years
2	Education status of a mother	No formal education; primary education (grade1-5); secondary education (grade 6–10); higher secondary and above (grade 11 and above

Source: (Bhusal and Sapkota 2022 -4:13)

“OLS regression showed that age and sex of children, education status of mother, ethnicity, province and wealth had a statistically significant association at the conditional mean of HAZ (height of age) and they found out ‘Children born to educated mothers (higher secondary and above) were on average 0.25 SD (95% CI: 0.08 to 0.43) taller compared with children born to mothers with no formal education”(Umesh P. Bhusal and Vishnu P. Sapkota, 2022). The *p-value* being identified during the analysis, which is under the quintile analysis highlighted by an asterisk. The *p-value* of mother’s education with secondary found 0.05, and higher secondary and above 0.001. The research found out the highly significant of mothers education to lower the malnutrition of the children. It also signified the correlation in between mothers education and malnutrition, lower the education level of the mother higher the malnutrition of the children.

Researcher Gaurav K and et.al, studied among the children of hill community of Nepal, their basic aim of the study was ‘To assess the burden and contributing factors for malnutrition in hill community of Ilam district in eastern Nepal. In this study they have included mothers’ education as Illiterate 57 (23.75 %) Primary 53 (22.08 %), Secondary 95 (39.58%) SLC & above 35 (14.59 %) in total sampled population of 240. The effect of mothers’ education was discussed as ‘the NDHS 2011 report demonstrated that mother with no education had more proportion of stunted child followed by wasting and underweight. Our study also demonstrated

a significant association with mother education with stunting. This defines the effect of longer period of inadequate nutrition among under – 5 children due to illiteracy in hill community and lack of information and knowledge’(Gaurav K and et.al., 2014). They did not *p* value of mothers education to show the significance of education to control stunting children even though they have highly recognized the significance of mothers education.

ii. Kenya

A study was carried out by (Benta A Abuya, James Ciera, Elizabeth K. Murage, 2012) studied in the slum of Nairobi on Effect of mother’s education on child’s nutritional status in the slums of Nairobi’they have mentioned the mothers education play a vitalrole for reducing the effect of malnutrition. The study was basically the descriptive even though they

Table3 Stunt and Mothers education (Abuya et.al 2012)

Stunt and Mothers education (Abuva et.al 2012)				
Factor	Category	Stunted %	No of subjects	%
Mother’s education level	Primary and below	43.1	2961	76.7
	Secondary +	36.9	897	23.3

have some quantification and analyzed the significance of mother’s education. The population size of the study was 5156 children aged 0–42 months. I the table below the significance of Mothers education with primary and secondary education found respectively with stunt children 43.1 % and 36 %’(Benta A Abuya, James Ciera, Elizabeth K. Murage, 2012) the difference in percent is 6.2% . ‘The univariable results presented in Table 4 show that mothers education, child gender, birth weight, place of birth, slum site, mothers’ marital status, pregnancy intentions and social economic status can significantly determine a child’s nutritional status ($p < 0.05$). In table 4 other variables of being stunt not being highlighted since the focus of the study was to identify the relation of the education to malnutrition, despite other factors of stunt malnutrition is one of the cause. In this study a *p*-value found 0.002(Benta A Abuya, James Ciera, Elizabeth K. Murage, 2012). The relation with mothers’ education to the malnutrition (stunt) found significant.

ii. Pakistan

A study was conducted by Farooq Ahmed and et.al. (2022) on ‘Determinants of Infant Young Child Feeding Among Mothers of

Factor	Category	Odd Ratio	95% CI	P Value
Others Education	Secondary (Ref)	-		
	Primary and below	1.28	(1.096,498)	0.002

Malnourished Children in South Punjab, Pakistan: A Qualitative Study. This study² concentrated on the practices of breastfeeding practices they were concentrated on the cultural practices ‘Maternal diets and so on when in the discussion they pointed out the problem of literacy, and illiteracy. ‘Mothers indicated that they could not get proper counseling at the time of delivery. Hence, breastfeeding immediacy was hindered due to the miscommunication and inappropriate counseling skills of the health staff. The study suggests that poverty, high fertility, and illiteracy make a web in which a lactating mother deprioritizes breastfeeding by presenting excuses such as the low quantity and quality of her milk’(Farooq Ahmed and et.al., 2022). In adequate feeding associated with in adequate feeding, this is primarily related to education of the mothers.

iii. South Africa

In South Africa a study was conducted by Enwelu (Omeh) CM and et.al. (2022) on ‘the nutritional status of young children 0-24 months attending clinics in Tshwane health sub-district 1, Gauteng province, South Africa with the sample size calculator with a 5% margin of error, 95% confidence level, 270 young children (0-24 months) with their mothers participated from the ten clinics selected using a random sampling technique. The have identified different factors to affect the nutritional status of 0-24 months old children according to their calculation the association found as ‘for overweight young children, there was a significant association between weight and the number of people in the households, at $P < 0.038$, There was a significant association between length and the number of persons in the households at $P < 0.047$, mothers' income at $P < 0.047$, and mother’s weekly expenditure on food at $P < 0.051$. For underweight young children, there was a significant association between weight, and weekly spend on food at $P < 0.037$. There was a significant association between length and mothers' education at $P < 0.007$ ’(Enwelu (Omeh) CM and et.al., 2022) . The article recognized the importance of mother’s education but failed to bring it in the lime light.

iv. Ghana

Toru RIKIMARU and et.al (1998) studied on ‘Risk Factors for the Prevalence of Malnutrition among Urban Children in Ghana’.The study mainly concentrated on identifying the four risk factors for malnutrition; these factors were caretakers, feeding frequencies, breast feeding, birth order, provider, mother’s education, father’s education, mother’s occupation and father’s occupation. With these variable the study was conducted and data were also conducted, these

factors could be said socioeconomic factors. “It was found that many parameters showed significant differences between the normal and severely malnourished children, but that few parameters did between the normal and the underweight children. Of these variables, birth weight and the mother's educational level are likely to be the most effective predictors of the presence of malnutrition. Other indicators, such as birth order and household size, were not associated with childhood under nutrition in this setting(Toru RIKIMARU & et.al., 1998).” The association in between mother’s education and malnutrition was calculated with p-value, which was found 0.001. It is highly related the mothers education with malnutrition.

V. Indonesia

Titih Huriah and et.al (2021) studied on “the basis factors of stunting among children in urban slums area, Yogyakarta, Indonesia and the study purpose was to analyze the determinant factor influencing the stunting incidence in children under five in urban slums area. The low anthropometric indicator in newborns is influenced by many factors, ranging from social and environmental factors. These factors are divided into three: Proximal factors (exclusive breastfeeding, complementary feeding, newborn, and health status), intermediate factors (environmental status and maternal health status), and distal factors (mother’s education and socioeconomic status)(Titih Huriah and et.al., 2021)”

Variables	Case (stunted children)-n=29 F (%)	Controls (not stunted children) n=42 F (%)	P*
Mother’s standard If education			
Low (Under secondary school)	23(79.3)	32(76.2)	0.307
High (Senior High school and above)	6(20.7)	10(23.8)	

*p<0.05 based on Chi

In this study, the mother’s education is not so significant the P value found 0. 307 which is ≥ 0.05 (Titih Huriah and et.al., 2021).

vi. Sudan

A study was conducted by Ahmed Abdallah and et.al. (2021) on the title ‘Socioeconomic and Demographic Determinants of Body Mass Index in Sudan: A Predictive Model’ the objective of the study was to identify the factors of BMI for under-five children. The impact of mothers’ education on BMI is given in the following table’(Ahmed Abdallah,Mohammed & Dawit Ayele, 2021).

Table 5: Association of BMI with the mother’s education.

Covariate	Classification of body mass index						Chi-square (P-value)
	Under weight	Normal		Overweight			
	N0	%	No	%	No	%	
Mothers education							
None	5501	85.60%	329	5.10%	600	9.30%	<0.0001

Primary	3940	86.80%	222	4.90%	376	8.30%	
Secondary	1771	85.00%	125	6.40%	169	8.60%	
Higher	643	83.90%	64	8.40%	59	7.70%	
Wealth Index							
Poor	5502	85.50%	323	5%	612	9.50%	<0.0001
Middle	2783	86.60%	154	4.80%	276	8.60%	
Higher	3485	87.70%	263	6.50%	317	7.80%	

In this table, mothers education was calculated with three different level of education of the mothers none, primary, secondary and higher, this was calculated with C.I 95%, the outcome of *p* found 0.0001 as well as the Wealth index also showed in the table. ‘The study identified that mother’s education level and wealth index were found a significant effect on BMI of mothers education to under-five age children.’(Ahmed Abdallah,Mohammed & Dawit Ayele, 2021). BMI is also a part of nutritional effect on children.

Report- I

Nepal Demographic Health Survey (NDHS) on Mother’s Education

Nepal has been conducting demographic health survey, in the interval of 4 years, the survey that was supposed to take place in 2021 is going on still the data are not available in detail.

NDHS had researched in different areas of the life of the people related directly or indirectly to their health. Education was also a part of the health related issue. The maternal education counts a lot in lowering down the malnutrition to the children of under the age of 5 years.

The percent of the women

Percent distribution of women age 15-49 by level of Schooling attended and level of literacy, and percentage literate according to background characteristic, Nepal DHS 2016									
Age	Schooling Data				No card with required Language	Blind Visually award	Total	Percentage Literate	Number of women
	SLC and Above	Can read Whole Sentences	Can read Part of a Sentence	Can not read					
15-24	35.4	42.7	6.4	15.2	0.1	0.1	100	84.5	4849
15-19	31.6	49.1	6.4	12.6	0.2	0.1	100	87.1	2598
20-24	39.8	35.3	6.5	18.2	0.1	0	100	81.6	2251
25-29	32.7	33.5	6.1	27.7	0.1	0	100	72.2	2135
30-34	18.7	39.5	10.7	31	0	0	100	69	1806
35-39	10.9	33.2	11.9	44	0.1	0	100	56	1572
40-44	10.1	25.8	12.1	51.7	0	0.3	100	48.1	1388
45-49	6.7	20.8	13.6	58.9	0	0	100	41.1	1113

found 84.5% who can read and write among the age group of 15-24 and with 45-49 age group have 41.1 percent. This figure indicates the older the generation less the education. The report identified the education of the mother when she had first child. The study found out the differences in median age of having first child in relation to education, the women who were

having SLC and above have first birth at the median age of 23.6 and with no education have the median age to have first child found 19.7 years. The age difference to have first child in

Median Age at first birth among women ages 25-49. According to background Characteristics- Nepal DHS 2016	
Background characteristic	Percentage
Residence	
Urban	20.6
Rural	19.9
Ecological Zone	
Mountain	20.6
Hill	20.9
Tarai	19.9
Province	
Province-1	21.5
Madhesh	19.2
Bagmati	21.4
Gandaki	20.6
Lumbini	20.3
Karnali	19.8
Sudur Paschhim	19.8
Education	
No Education	19.7
Primary	19.6
Some Secondary	20.7
SLC and above	23.6

between educated mother and uneducated found 3.9 years.

Malnutrition under 5 children did not analyses but the maternal education has greater impact on marriage being analyzed.

It has analyzed the 'Nutritional status of children: Thirty-six percent of children under age 5 are stunted (short for their age), 10% are wasted (thin for their height), 27% are underweight (thin for their age), and 1% are overweight (heavy for their height)

The median age of marriage of girls in urban and rural areas found respectively 20.6 and 19.9. Comparing to ecological belt of marriage age of girls, Tarai has the lowest marriage age of the girls found 19.9 years. This may affect the health of the children since the tender age, the girls may not be able to take care of their children properly.

Data Analysis

The article relevant identified and tabulated as below, this was generated by using pivot of excel program.

Table 6: Selected articles with countries, title, objectives and references, C.I and P

Countries	Authors	Topics of studies	Objectives	Ref.	CI	p (<0.05)
Kenya	Benta A Abuya, James Ciera and Elizabeth Kimani-Murage.	Effect of mother's education on child's nutritional status in the slums of Nairobi	This study sought to determine effect of mother's education on child nutritional status of children living in slum setting	Abuya et al. BMC Pediatrics 2012, 12:80 Page	0.95	0.002
Colombia	Ana Maria Osorio1, Gustavo Alfonso RomeroII, Harold BonillaIII, Luis Fernando Aguado	Socioeconomic context of the community and chronic child malnutrition in Colombia	To analyze the influence of the socioeconomic context of the community on chronic child malnutrition in Colombia	Socioeconomic context of the community and chronic child malnutrition in Colombia. Rev Saude Publica. 2018;52:73.	0.95	0.001
Indonesia	Tithi Huriyah, Putri Handayani2, Tiwi Sudyasih3, Bambang Edi Susyanto4	The Determinant Factors of Stunting Among Children in Urban Slums Area, Yogyakarta, Indonesia Tithi Huriyah, Putri Handayani , Tiwi Sudyasih , Bambang Edi Susyanto.	The research purpose was to analyze the determinant factor influencing the stunting incidence in children under five in urban slums areas.	https://doi.org/10.3889/oamjms.2021.5593 eISSN: 1857-9655 .	0.95	0.307
South Africa	Enwehi (Omeh) CM, Veldman FJ and LJ Ncube.	THE NUTRITIONAL STATUS OF YOUNG CHILDREN 0-24 MONTHS ATTENDING CLINICS IN TSHWANE HEALTH SUB-DISTRICT 1, GAUTENG PROVINCE, SOUTH AFRICA	Children between the ages 0 - 24 months are at high nutritional risk, which affects their growth and development, cognitive capacity, and productivity in adulthood. Therefore, this study aimed to determine the nutritional status of young children 0 - 24 months	https://doi.org/10.18697/ajfand.110.2140	0.95	0.007
Srilanka	Chisa Shinsugil, Deepa Gumasekara , N. K. Gunawardena , Wasanthi SubasingheID , Miki Miyoshi , Satoshi Kaneko , Hidemi Takimoto	Double burden of maternal and child malnutrition and socioeconomic status in urban Sri Lank	This study explores the associations between socioeconomic status and the double burden of malnutrition among school-aged children and within their household	https://doi.org/10.1371/journal.pone.0224222	0.95	0.05
Sudan	Ahmed Abdallah1*, Mohammed Mohammed1 and Dawit Ayel	Socioeconomic and Demographic Determinants of Body Mass Index in Sudan: A Predictive Model	The objective of the study was to identify the factors of BMI for under-five children.	https://openpublichealthjournal.com ; DOI: 10.2174/1874944502114010478,	0.95	0.0001
Nepal	: Mr. Nepali Sah.	Determinants of Child Malnutrition in Nepal: A Case Analysis from Dhanusha, Central Terai of Nepal	The purpose of this research is to predict the effect of various independent variables on underweight andstunting of children.	www.researchgate.net/publication/296491492 and DOI: 10.33314/jnhrc.v0i0.89	0.95	0.004
Burkina Faso	GHISLAIN G. PODA, CHIEN-YEH HSU. and JANE C.-J. CHAO.	Factors associated with malnutrition among children <5 years old in Burkina Faso: evidence from the Demographic and Health Surveys IV 2010	To assess the factors associated with malnutrition among children	International Journal for Quality in Health Care, 2017, 29(7), 901–908 doi: 10.1093/intqhc/mxx129	0.95	0.01
Bangladesh	Akamgir Kabir, Md Mabbubur Rashid, Kamal Hossain, Arifuzzaman Khan, Sheguftha Shefa Sikder and Heather F. Gidding.	Women's empowerment is associated with maternal nutrition and low birth weight: evidence from Bangladesh Demographic Health Surve	Our objective was to investigate the association of women's empowerment with maternal undernutrition and LBW	PLoS ONE 11(6): e0157814. doi:10.1371/journal.pone.0157814	0.95	0.001
Sudan	Ahmed Abdallah1, Mohammed Mohammedand Dawit Ayele	Socioeconomic and Demographic Determinants of Body Mass Index in Sudan: A Predictive Mode	This paper aimed to determine the socioeconomic and demographic determinants related to Body Mass Index (BMI) for children under five years in Sudan. The objective of the study was to identify the factors of BMI for under-five children.	DOI: 10.2174/1874944502114010478,	0.95	0.001
					95%	0.042566667

These articles were selected since they have either way round recognized the association of importance of mother's education to reduce malnutrition or its effects such as stunting, wasting and deficiencies of micronutrients. The articles were selected from nine countries ten articles with p value calculated.

There are article which are analyzed differently some of them are completely with the qualitative analysis. None of them have directly studied with the correlation of malnutrition with mothers' education but other way or another way they have explained the association of malnutrition with mother's education. Some of them have CI and some without p value some without CI, not included in the quantifying data. It is better to submit separately. These articles are presented below with the objectives of the study and references. Some of these articles are studied as to see how these are related with the malnutrition.

Table 7: Selected article to study on Associating of mother's education

Countries	Authors	Selected articles	objective of the study	Ref.	CI	P
Nepal	Gaurav K, et.al	Malnutrition Status Among Under - 5 Children in a Hill Community of Nepal	To assess the burden and contributing factors for malnutrition in hill community of Ilam district in eastern Nepal	Kathmandu Univ Med J 2014;48(4):264-8	n/a	n/a
Pakistan	Farooq Ahmed, et.al	Determinants of Infant Young Child Feeding Among Mothers of Malnourished Children in South Punjab, Pakistan: A Qualitative Study	In this study, we explore infant young child feeding (IYCF) and deconstruct breastfeeding barriers in mothers of severely malnourished children in one of the most marginalized districts of Punjab province of Pakistan.	Front. Public Health 10:834089. doi: 10.3389/fpubh.2022.834089	n/a	n/a
Pakistan	Farooq Ahmed et.al	Determinants of Infant Young Child Feeding Among Mothers of Malnourished Children in South Punjab, Pakistan: A Qualitative Study	In this study, we explore infant young child feeding (IYCF) and deconstruct breastfeeding barriers in mothers of severely malnourished children in one of the most marginalized districts of Punjab province of Pakistan.	https://www.frontiersin.org/journals/public-health .	n/a	n/a
Iran	Mohammad Mohseni et.al	Factors associated with malnutrition among under five-year-old children in Iran: A systematic review.	The aim of our study was to conduct a systematic review of malnutrition and its associated factors among under five-year-old children	DOI: 10.4103/ATMPH.ATMPH_668_16	n/a	n/a
Report-Nepal	MoHP	Nepal Demographic and Health Survey 2016	The primary objective of the 2016 NDHS is to provide up-to-date estimates of basic demographic and health indicators. The NDHS provides a comprehensive overview of population, maternal, and child health issues in Nepal. Specifically, the 2016 NDHS specific objective: Collected anthropometric measures to assess the nutritional status of children under age 5 and women and men age 15-4	https://www.dhsprogram.com/pubs/pdf/fr336/fr336.pdf	n/a	na

Countries	Authors	Selected articles	objective of the study	Ref.	CI	P
Nigeria	F. N. Uchendu	Micronutrient Malnutrition, A Tragedy To Childhood Growth And Education	This paper discusses the negative effect of vitamin and mineral malnutrition on childhood growth and education, and effective strategies to eliminate the	Global Journal of Medical research Volume 11 Issue 1 Version 1.0 May 2011. ISSN NoOnline ISSN: 0975-5888	n/a	na
Sub-sahara	Sesan Busayo Sandra Phiri	Prevalence and Strategies to Reduce Malnutrition Among Children of 0-5 years in Ifedore LGA, Ondo State, Nigeria. Sesan Busayo	The study was carried out to examine the prevalence and strategies to reduce malnutrition among children of 0-5 years in Ifedore LGA, Ondo state.	Academia Letters, Article 3476. https://doi.org/10.20935/AL3476 .	n/a	na
WHO	WHO Report	The double burden of malnutrition offers an important point for intervention and action	The purpose of this policy brief is to increase attention to, and action for cost-effective interventions and policies to address the double burden of malnutrition within the Decade of Action – and, through this, to contribute to achieving the Sustainable Development Goals of ending all forms of malnutrition (SDG2)	www.who.int/nutrition	n/a	na
Bangladesh	M. Shafiqur et.al	Association of Low-Birth Weight with Malnutrition in Children under Five Years in Bangladesh: Do Mother's Education, Socioeconomic Status, and Birth Interval Matter?	This study examines the association between LBW and malnutrition using data from the Bangladesh Demographic and Health Survey (BDHS) 2011 and provides practical guidelines for improving nutritional status of children	PLoS ONE 11(6): e0157814. doi:10.1371/journal.pone.0157814	n/a	n/a
Nepal	Umesh Prasad et.al	Socioeconomic and demographic correlates of child nutritional status in Nepal: an investigation of heterogeneous effects using quantile regression	In this study, quantile regression was used to understand a complete and more precise estimate of the effects of the covariates on the child nutritional status	https://doi.org/10.1186/s12992-022-00834-4	n/a	n/a

Source: Secondary data compiled.

There are many articles which are explained the factors of malnutrition, socioeconomic background, lack of micro nutrients, food insecurity, mothers education and poverty and so on. The impact of malnutrition also included as wasting, stunting and malnutrition related diseases such as diarrhea. The association of mother's education was not in major area of the research. This was a gap even though the research has mentioned on association of malnutrition with the mothers education status. With the status 10 articles being identified and other 11 articles mentioned association of malnutrition with mother's education. Among them the article from 52.38 % agreed the one way other the association of mothers education on the issue of malnutrition, like wise another 47.61 percent and $p < \text{value}$ calculated in Excel program to find out the average, the average $p < 0.042566$ found in ten articles which is less than < 0.05 . The outcome of the research showed a strong bond (correlation/ association) of malnutrition of below 5 years old children with mother's education. There were 10 countries articles were studied, all of them have found the association of mothers education with malnutrition. All of these countries were in the category of developing and under developed countries.

Conclusion

Mother's education found as vital source to reduce the malnutrition among the children of Nepal and elsewhere, the targeted intervention program should be launched to educate the mothers of children on literacy and with the value of local products on nutrition. If the mothers are educated on the diet of their children, they have the power to stop malnutrition and it will stop the death of the children by malnutrition. The research strongly urged protecting children from being malnourished by providing proper education to the mothers.

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End note.

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