SHORT REPORT

Correlates of mothers' nutritional status in developing economies: Evidence from demographic and health surveys

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Abstract

The study investigates the determinants of the nutritional status of mothers in developing countries. For a panel of 38 developing countries, data were obtained from the nationally representative Demographic and Health Surveys (DHS). Married women of reproductive age group (15 to 45 years), currently living with their husbands were selected as the target population. Body mass index was used as a proxy measure to gauge the nutritional status. Both bivariate and multivariate statistical analyses were employed to assess the socioeconomic determinants of mothers' nutritional status. The findings from both descriptive and probability analyses identified the mothers' poor educational status, early marriage, high fertility rate, low birth interval, low women empowerment status, household poverty, and belonging to rural areas as the main determinants of poor nutritional status of mothers in developing countries; hence, there is a need to focus more on this group in order to stop the sustained transmission of intergenerational malnutrition.

Keywords: Malnutrition, early marriages, high birth rates, poverty, women's empowerment.

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Introduction

In developing countries, most of the women suffer from protein-energy malnutrition, micronutrient malnutrition and vitamin-A deficiency. These deficiencies reduce the chances of weight gain during pregnancy, which results in inadequate growth of the foetus.[1-3] Mothers with low body mass index (BMI<18.5kg2) or those who are underweight face adverse effects such as low blood pressure, fatigue, low bone mineral density, anorexia nervosa, and bulimia nervosa, which further leave adverse effects on their physical and mental health.[4,5]

In the literature, women's age, education, and familial wealth status are known to have a significant effect on their BMI.[6,7] Women's health and women empowerment are complementary to each other.[8] Poverty causes malnutrition in countries where inequalities regarding health, education and economic resource between men and women exist.[9] Gender inequality is also a major cause of hunger and malnutrition in women.[10] A woman's freedom of movement and mobility, her paid work and access to resources play an important role not only in improving her own nutritional status but also of her children.[11-13] Women's participation in decision-making is positively associated with their good nutritional outcomes.[5,11,12,14-16]

This paper attempts to investigate the impact of biological, demographic, and socioeconomic determinants of nutritional status of mothers in developing countries.

Subjects and Methods

Taken from nationally representative Demographic and Health Surveys of 38 developing countries, secondary data (215,940 respondents) has been used for this study. Mother's nutritional status was proxied through her BMI. The value of BMI below 18.5 kg^2 was classified as undernourished whereas BMI value above or equal to 18.5 kg^2 was classified as not malnourished. The explanatory variables such as mother's age, education, age at first marriage, husband's education and employment status, number of children ever born, number of children alive, household wealth and locality are self-explanatory and given by the data set. However, women's empowerment was measured through constructing an index capturing the information on 17 indicators relating to five dimensions of women empowerment. The index was generated through principal component analysis (PCA) by using SPSS. Due to the dichotomous nature of the dependent variable, binary logistic regression was applied as the estimation technique. The Study was conducted in the Islamia University of Bahawalpur, Pakistan.

Results

The results of the study are the outcomes of two types of analyses. Column A (Table) presents the descriptive statistics (in the form of frequency distribution) and column B presents the probability of malnutrition. Here, we present the findings of binary logistic regression. According to the logistic regression results, women between the age of 15 and 19 years have more chances of being undernourished (OR=1.158, 95% CI=1.056-1.270) as compared to reference

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category of women above 35 years.

The probability of mother's BMI (<18.5 kg/m^2) or malnutrition was negatively related to the level of education as compared to the reference category of no education. The probability of not been malnourished was the lowest (OR=0.655, 95% CI=0.607-0.708) among the women with secondary level education and the highest (OR=0.397, 95% CI=0.341-0.462) among the mothers with higher education. The literature shows the positive impact of education on women's health.[17] The probability of

Table: Women's Body Mass Index (BMI) in Association with their Background Characteristics: The Results of Logistic Regression.

Characteristics	Explanatory Variables Names/ Categories	Multivariate Logit Regression Results			
		Coefficient (Std. Err.)	OR	95% C.I. for OR	
				Lower	Upper
Women's Age (years)	15-19	.147***(.047)	1.158	1.056	1.270
	20-25	-0.085**(.037)	0.919	0.855	0.988
	26-35	-0.028**(.033)	0.973	0.913	1.037
	Above than 35		Reference category		
Women Education	No Education		Reference category		
	Primary	-0.599***(.036)	0.549	0.512	0.589
	Secondary	-0.422***(.040)	0.655	0.607	0.708
	Higher Education	-0.924***(.077)	0.397	0.341	0.462
Women's Age at first Birth (years)	15-19	0.106***(.033)	1.112	1.043	1.186
	20-25	0.024(.035)	1.024	0.955	1.098
	26-35	0.001(.051)	1.001	0.906	1.106
	Above than 35		Reference category		
No. of visits for Antenatal care during pregnancy	No Visit	.324*** (.040)	1.724	1.669	1.782
	1-2	-0.245***(.040)	0.782	0.723	0.846
	3-4	-0.311***(.034)	0.733	0.685	0.784
	5-6	-0.254***(.036)	0.776	0.723	0.833
	7-8	-0.082**(.039)	0.921	0.853	0.994
	More than 8 visits		Reference category		
Birth Interval	1 Year	0.003(.086)	1.003	0.848	1.188
	2 Years	-0.109***(.031)	0.896	0.844	0.952
	3 Years	-0.141***(.028)	0.869	0.822	0.918
	4 Years	-0.103***(.033)	0.902	0.845	0.963
	5 years and Above	Reference category			
Women Empowerment (Empwtt.)	Low Empwtt.	Reference category			
	Medium Empwtt.	-0.369***(.030)	0.691	0.652	0.733
	Higher Empwtt.	-1.175***(.051)	0.309	0.280	0.341
Husband's Education	No Education		Reference category		
	Primary	-0.285(.032)	0.752	0.706	0.801
	Secondary	0.080(.033)	1.084	1.016	1.156
	Higher Education	-0.139(.053)	0.870	0.784	0.966
Husband's Employment Status	Did not work	Reference category			
	Did Work	-0.139***(.071)	0.870	0.757	1.000
Total Number of Children Ever Born	≤4		Reference category		
	>4	0.229***(.025)	1.795	1.757	1.836
Household's Wealth Index	Poorest		Reference category		
	Poorer	-0.167***(.031)	0.846	0.796	0.899
	Middle	-0.217***(0.033)	0.805	0.755	0.858
	Richer	-0.241***(0.036)	0.786	0.733	0.843
	Richest	-0.483***(0.045)	0.617	0.564	0.674
Place of residence	Rural Area		Reference category		
	Urban Area	-0.277***(.028)	0.758	0.717	0.801
Constant	-0.260***(.058)	0.466			
Cox & Snell R Square		0.046			
Nagelkerke R Square		0.084			
Total Number of Observations		215940			

Note: Level of significance *** $p<0.001$; ** $p<0.01$; * $p<0.05$; Ref = Reference category

malnourishment was the highest (OR=1.112, 95% CI=1.043-1.186) among women who had their first child between 15-19 years of age. Women empowerment indicates women's awareness, decision making, self-esteem and self-confidence. There is an evidence of such type of relationship in the literature.[18-20] Highly empowered women were least likely to be malnourished and moderately empowered women are less likely to be malnourished against the reference category of least empowerment. Except for mothers whose husbands had secondary level of education, women were less likely to be malnourished if their husbands had a high level of education as compared to the reference category of no education. Similarly mothers whose hubands were employed were less malnourished and less likely to be malnourished. Women who had given birth to more than four children were 31.7 percent more likely to be malnourished. In comparison with the women of the reference category, the probability of being undernourished was high (OR=1.724, 95% CI=1.669-1.782) among women who had not seen a doctor for antenatal care during pregnancy. The probability of being malnourished was (OR=1.003, 95% CI=.848-1.188) high among the women who had given birth at an interval of one year.

Wealth status of the household — to which a mother belonged — showed an inverse relationship with the prevalence of malnutrition among mothers. The probability of being malnourished for women belonging to the poorest households as compared to the women belonging to relatively well-off households reduced as the wealth status of the household improves. More rural mothers were suffering from malnutrition than the urban ones, i.e., the probability of malnutrition was high in rural women as compared to urban ones. It was noted that women with fewer children and living in the urban areas are healthier.[21] Similar kind of explanatory variables have been embraced in the studies — on sufficient maternal iron supplementation[22] and tetanus toxoid vaccination[23] as the components of maternal healthcare — and for better maternal healthcare, the awareness and education of a woman, her husband's participation, and cash transfer programmes have been proposed as the strategies to target mothers from the marginalised households of India.

Conclusion

The nutritional status of mothers is one of the prime concerns of the nations as healthy mothers give birth to healthy nations. To evaluate the nutritional status of mothers, it is proposed from the analysis that laws regarding the minimum age for marriage should be strictly implemented. Early marriages needs to be discouraged through campaigns. Women empowerment and education should be a part of policy formulation for the long run and sustainable nutritional status of the mothers. The fertility behaviour needs improvement for mothers' nutritional status.

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