

Does the Mother's Quality of Life Affect the Nutritional Status of Her Child? A Cross-Sectional Study in a Rural Area

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ABSTRACT

Background: Several physical, social, environmental and psychological factors of the mother can influence the nutritional, mental and social development of the child. The study was conducted to assess the quality of life of mothers of under five children and to assess the association between nutritional status of children and quality of life of the mothers.

Methods: It was a cross sectional study done in a sub centre area under Sarjapur PHC. The sample size was estimated to be 190 and the mothers were selected using stratified random sampling from the villages. The Quality of life (QOL) of mothers was assessed by WHO-QOL-BREF scale. The nutritional status of the children was assessed by measuring height, weight, Body Mass Index and Mid-Arm Circumference. WHO growth charts were used to categorize the nutritional status.

Results: A total of 190 mothers were interviewed with a mean age of 25.66(SD±3.85). Among the under five children, it was observed that 104 (54.7%) of children were stunted, 38(20%) were wasted, 49(25.8%) were underweight and 20(10.5%) had low BMI. The mean score in each domain of QOL were physical 81.79, Psychological 84.91, social relationship 93.67, environment 89.58 respectively. There was no significant

association between QOL and nutritional status. The mother's education and age at marriage was significantly ($p < 0.05$) associated with children who were underweight.

Conclusion: The Mother's QOL was not associated with the nutritional status of the children. Mother's age less than 25 years and higher education were positively associated with children with normal nutritional status.


Key words: Nutritional Status, Quality of Life, Rural.

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INTRODUCTION

Child malnutrition is a multifactorial disease related to the provision of basic needs such as health, nutrition, sanitation and education and has its roots in poverty.¹ Protein energy malnutrition, which is manifested as decrease in weight for age or height for age or weight for height, is the most widely prevalent form of malnutrition among under-five children.² According to Mittal et al study, more than half of the world's undernourished children lives in India of which 54% children are underweight, 52% are stunted, while 17% are wasted.³ According to National Family Health Survey-4 2015-2016 29.4% of the children are underweight, 38% are stunted, while 15% are wasted in under five age group.⁴

The factors which are responsible for the higher prevalence of malnutrition in south Asian countries including India comprise of lower age at marriage of the mother, younger age at child bearing, inadequate child spacing, low birth weight, family size patterns, relationship issues, and mother's educational status, economic status, customs and beliefs.² It has also been observed that inadequate mother - child bonding can also be a risk factor for

under nutrition. Good mental and psychological well-being of a mother is important for a healthy growth of her child. A healthy relationship between mother and child can impact the nutritional status of children.⁵ The emotional well-being of mother is influenced by many factors such as marital relationship, family support, physical health, role in the family, mental happiness etc. Many authors emphasize the importance of mental and psychological condition of the mother as a risk factor for malnutrition of her child.⁶⁻⁹ Hence it becomes imperative to recognize that the quality of life (QOL) of the mother has a strong relationship with the nutritional status of their child, and that it has a major impact on his or her health.^{10,11}

There have been studies showing how maternal depression¹² and maternal education¹³ affect the well-being of the child. There has been a dearth of studies which has seen quality of life of mothers and health of the child in rural areas. This study has been designed with the main objective to assess all the factors in the mother of the under-5 children and to assess the socio-demographic factors which can impact the child's growth.

OBJECTIVES

1. To assess the quality of life of mothers of under five children in 10 villages in the Mugalur subcentre area of Sarjapura PHC, Anekal taluk, Bangalore (U) district.
2. To assess the nutritional status of children under 5 years and the association between nutritional status of children and quality of life of the mothers

MATERIALS AND METHODS

This was a cross sectional study done during two months period in 2015. The sample size was calculated using an estimated 38% prevalence of underweight in NFHS3.⁶ Sample size was calculated using the formula: $n = z^2 (p q) / d^2$

The sample size was calculated using an estimated 38% prevalence of stunting in NFHS4.⁴ For 95% confidence limits and a relative precision of 7.6% calculated sample size as 157. Anticipating a non-response rate of 20%, the total sample size was 188. We collected 190 samples in 2 month period.

Institutional Ethical Committee approval was taken. The children under 5 years of age and their mothers were selected from the already existing Health Management Information System data of the study area. There were 411 mothers who had under five children in the study area consisting of all 10 villages under the Mugalur sub health centre. Each village was stratified based on the population proportionate to size to reach the sample size .The number of study subjects from each village was calculated proportionate to the number of mothers of under five children in each village. The study subjects were then selected by simple random sampling from the list of mothers of under five children in each village. Informed consent was obtained from all women willing to participate in the study. A Pretested, structured interview schedule was administered to collect the data.

The interview schedule was divided into 3 parts. The first part

consists of the sociodemographic detail of the women; the second part was the quality of life of mothers and the third part was the anthropometry and health status of the children.

The socio- demography details consisted of socio-economic status of the family using Standard of Living Index, education, occupation of the mother, family income, age of the mother at marriage and child bearing, child spacing, The Quality of life of mothers was assessed by WHO-QOL BREF questionnaire.¹⁴ consisting of 26 questions that was developed with the prospect of being cross-cultural, that is, considering the cultural differences in order to be used internationally. The responses for the each question is marked using a likert scale with values ranging between 1-5. The QOL assesses 4 different areas: physical (seven questions), psychological (six questions), and social relationships (three questions), and environment (eight questions) and overall QOL. This tool estimates the conditions under which the person was living in the last 15 days. The mean score of items within each domain is used to calculate the domain score. The mean scores are multiplied by 4 in order to make domain scores comparable with the scores used in WHO-QOL-100. The child's nutritional status was assessed using anthropometric measures of Height, Weight, Body Mass Index and Mid Arm Circumference (MAC). Weight was measured using a dial weighing scale, height and MAC using measuring tape. Anthropometry was put into categories based on WHO growth charts.¹⁵ (weight, height and BMI). In addition the child was also examined for other signs nutritional deficiencies like pallor, ocular signs of vitamin-A deficiency (conjunctival xerosis with Bitot's spots) angular stomatitis, cheilosis, signs of rachitic changes and bleeding gums. The data was collected by investigators using house visit to all the villages. The data was analyzed using SPSS 16. The results have been described using frequencies; associations were tested using chi-square test, Independent t test and ANOVA.

Table 1: Sociodemographic details of the mothers of the under- 5 children

Variables	Number of respondents (n=190)	
Age	Less than 19	11(5.8%)
	20-25yrs	90 (47.4%)
	More than 25yrs	89 (46.8%)
Education	No formal education	6(3.2%)
	School education	124 (65.3%)
	PUC	37 (19.5%)
Occupation	College education	23(12.1%)
	Home makers	174 (91.6%)
	Working	16 (8.4%)
Married life (years)	Less than 5 years	80(42.1%)
	5-10 years	89(46.8%)
	More than10 years	21(11.1%)
Type of family	Nuclear	88 (46.3%)
	Joint	52 (27.4%)
	Extended	43 (22.6%)
	Three generation	7(3.7%)
Religion	Hindu	168 (88.4%)
	Muslim	21 (11.1%)
	Christian	1 (0.5%)
Standard Of Living Index	Low	5(2.6%)
	Medium	124(65.3%)
	High	61(32.1%)
No: of children	Less than <=2	165(86.8%)
	More than >2	25(13.2%)
Age distribution of children(years)	<1year	33(17.4%)
	1-3years	84(44.2%)
	3-5years	73(38.4%)

Table 2: Mean score of Domains of Quality of Life Questionnaire of the mothers (n=190)

Domains of QOL	Mean ± SD
Physical	81.79 ± 10.25
Psychological	84.91 ± 8.50
Social relationship	93.67 ± 13.11
Environment	89.58 ± 9.91

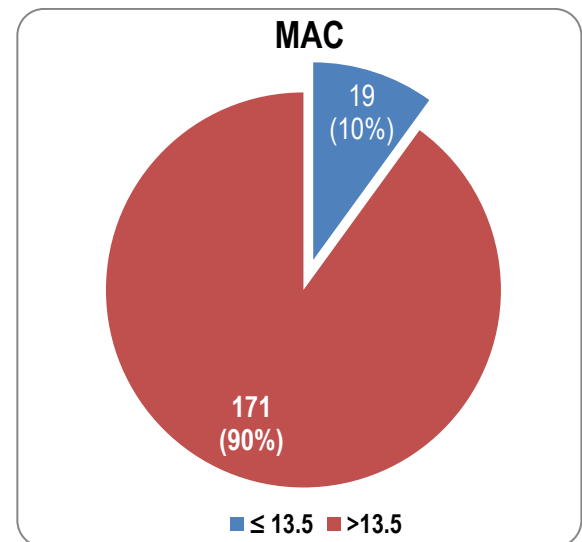
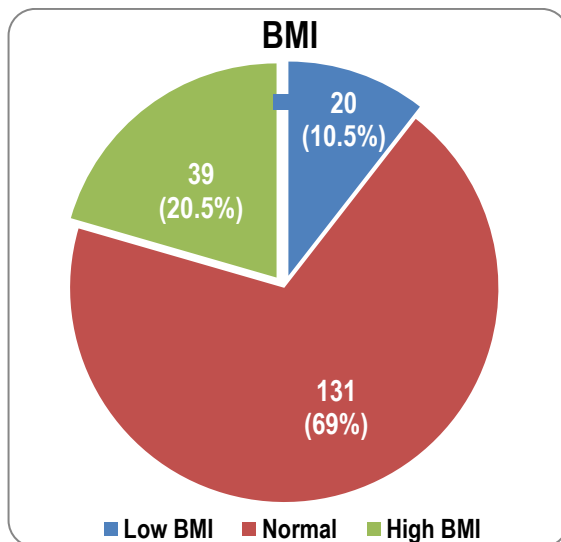
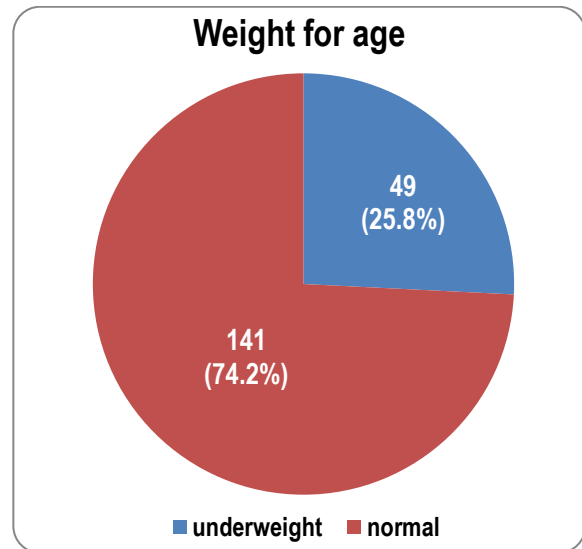
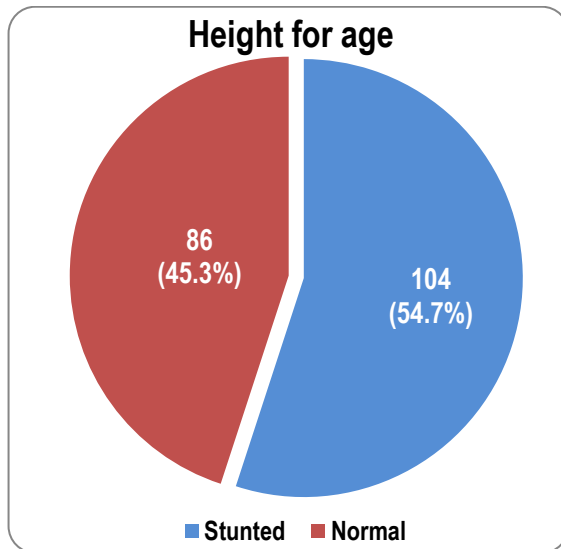


Table 3: Gender-wise distribution of nutritional status of under-5 children

Nutritional status(n=190)		Males(n=113)	Females(n=77)	p value
Weight for age	Underweight	28(24.8%)	21(27.3%)	0.7
	Normal	85(75.2%)	56(72.7%)	
Height for age	Stunted	58(51.3%)	46(59.7%)	0.25
	Normal	55(48.7%)	31(40.3%)	
Weight for Height	Wasted	24(21.2%)	14(18.2%)	0.82
	Normal	46(40.7%)	35(45.5%)	
	Above normal	43(38.1%)	28(36.4%)	
BMI centiles	Low BMI	15(13.3%)	5(6.5%)	0.018*
	Normal	82(72.6%)	49(63.6%)	
	High BMI	16(14.1%)	29(29.9%)	

*chi -square test significance at p<0.05

RESULTS

The questionnaire was administered to 190 selected mothers of under five children of the study area and the response rate was 100%. The majority of respondents were between 20-25 years of age 90 (47.3%). The youngest was 18 years and the oldest 39 years. The other demographic findings were as follows: Majority

was married for more than 5 years 89 (46.6%) and had school education 124 (65.3%).

The table 2 shows that majority of male and female children had stunting. There was a significant association between Low BMI and male gender.

The table 3 shows that majority of male and female children had stunting. There was a significant association between Low BMI and male gender.

The table 4 showed association between domains of QOL and nutritional status. We didn't find any association between domains of QOL and nutritional status.

Chi-square test was used to find the associations of socio demographic variables and nutritional statuses. There was

significant association between education of mother and age at marriage with weight for age of the child.

Children who had normal weight had mothers who were school educated. The mothers who are married at an age less than 25 years of age had children with normal weight. We didn't find any association between age of mother, married life, and type of family, religion, socio economic status and nutritional status of their children.

Table 4: Association of domains of QOL of mother and the nutritional status of the children

	Nutritional status(n=190)	Physical domain	Psychological domain	Social relationship domain	Environment domain
Weight for age	Underweight	80.32 ± 11.72	84.51 ± 8.27	93.9 ± 15.35	89.8 ± 9.86
	Normal	82.29 ± 9.69	85.05 ± 8.60	93.6 ± 12.31	89.51 ± 9.96
	p value	0.64**	0.79**	0.87**	0.84**
Height for age	Stunted	82.01 ± 11.04	84.88 ± 8.56	93.48 ± 13.53	89.36 ± 10.58
	Normal	81.52 ± 9.26	84.95 ± 8.47	93.91 ± 12.67	89.84 ± 9.08
	p value	0.31**	0.88**	0.78**	0.05**
Weight for Height	Wasted	83.49 ± 10.65	86.74 ± 7.90	96.64 ± 8.68	89.51 ± 8.35
	Normal	80.78 ± 9.50	84.26 ± 8.69	93.32 ± 13.77	89.9 ± 10.11
	Above normal	82.01 ± 10.85	84.64 ± 8.58	92.43 ± 14.26	89.27 ± 10.58
	p value	0.39#	0.30#	0.26#	0.93#
BMI centiles	Low BMI	81.7 ± 10.0	84.5 ± 8.57	97.2 ± 7.9	89.8 ± 8.95
	Normal	81.36 ± 10.7	84.47 ± 8.86	93.01 ± 14.14	89.29 ± 9.75
	High BMI	83.25 ± 8.79	86.59 ± 7.11	93.79 ± 11.5	90.46 ± 11.03
	p value	0.602#	0.386#	0.43#	0.80#

**p value calculated by Independent't' test (significant p<0.05) #p value calculated by anova test

Table 5: Association of sociodemographic variables of the mother with nutritional status

Variable		Under weight	Normal	Chi-square value	P value
Education	No formal education	3(50%)	3(50%)	7.950	0.040**
	School education	25(20.2%)	99(79.8%)		
	PUC	11(29.7%)	26(70.3%)		
	College education	10(43.5%)	13(56.5%)		
Age at marriage (years)	<25	30(21.4%)	110(78.6%)	7.694	0.021*
	25-30	19(40.4%)	28(59.6%)		
	>30	0	3(100%)		

**chi -square test significance at p<0.05 * Fischer's exact significance at p<0.05

DISCUSSION

The purpose of this study was to assess the quality of life of mothers and to determine the association between the QOL and nutritional statuses of children. In this study majority of respondents were between 20-25 years of age 90 (47.3%). The youngest was 18 years and the oldest 39 years. The other demographic findings were as follows: Majority was married for more than 5 years 89 (46.6%) and had school education 124 (65%). Majority 124 (65.3%) of study population belonged to medium Standard Of Living Index (SLI). Most 174 (91.6%) were homemakers. Out of 190 children 114 (60%) were males and 76 (40%) were females. In a study done in Iran to determine whether quality of life influence breast feeding difficulties the mean age of women was 26 and majority (58%)were primigravida and homemakers.¹⁶In a study done in Patiala the mean age of mothers were 24 and 91.9% were homemakers and 70.75% were illiterate.²

The nutritional status of children in this study was assessed using height, weight, BMI and Mid Arm Circumference and categorized using WHO growth charts.¹⁴ In our study the prevalence of underweight among children was 49 (25.8%) and stunting was

104 (54.7%). Nearly 20 (10.5%) of children had low BMI and 19 (10%) had Mid Arm Circumference <13.5cm. This was more compared to National Family Health Survey-4 done in 2015-2016 where 29.4% children were found to be underweight, 38% are stunted, while 15% are wasted.⁴ In a similar study done in urban slums in Patiala overall 38.38% (185/482) children was found to be underweight.² In a study done in Ethiopia among 316 children, 56.6% of the children under age five have chronic malnutrition, underweight (20.9%) and wasting (4.1%).¹³ The study results are also consistent with study done in urban slums.¹⁷ Children who are underweight are less compared to other studies may be due to the fact that majority of mothers were homemakers. In this study we found that stunting (chronic malnutrition) was more in children, may be due to the fact that the study is done in rural area and there may be reduction in nutritional knowledge and knowledge about health care services.

This study also showed that majority of males 58(51.3%) and females 45(59.7%) were stunted where as more males (35.29%) were affected with lower grades than females (32.85%) in another study.¹⁸ In a study done in Rajasthan, stunting (malnutrition of long duration) was observed in 53% of children and underweight

in 60%. Wasting, an indicator of short-duration malnutrition was present in 28% of children. The extent of malnutrition was significantly higher in girls than boys ($P < 0.05$).¹⁹ In a study done in Nepal among 786 students, 26% of the students were found to be undernourished and 13% stunted, 12% wasted and only 1% both stunted and wasted.²⁰ We found significant association between gender of children and BMI centiles that is majority of boys had normal BMI compared to girls, but prevalence of low BMI was also more in males. Male children are more vulnerable to early childhood disease and health problem. This explains the reason for low BMI.

In our study we didn't find any association between domains of QOL- physical, psychological, social relationship, environmental with nutritional status of children. The mean score in each domain are physical 81.79, Psychological 84.91, social relationship 93.67, environment 89.58 respectively. There was no association may be due to the fact that majority of mothers were home makers and had enough time for the needs of children and themselves. In a study done in Brazil relation to the psychic realm, for each child normal whose mother has low quality of life there is a chance of 5.4 children at nutritional risk / malnutrition of mothers in the same condition. In the environmental field, for each child normal whose mother has low quality of life there is a chance of 2.9 children at nutritional risk / malnutrition of mothers in the same condition. Regarding the educational level for each child normal whose mother has low quality of life there is a chance of 4.2 children at nutritional risk / malnutrition of mothers in the same condition.³ In this study there was a significant association ($p < 0.05$) between education of mother and nutritional status of child similar to other studies.^{13,21} This may be due to the fact that education creates knowledge regarding quality and adequate quantity of food that should be provided to children.

In this study there is significant association ($p < 0.05$) between age at marriage of mother and nutritional status of her child showing mothers who married young had children with normal weight. In a study done in Assam significant association was observed between the prevalence of under nutrition and socioeconomic status, literacy status of parents, infant, and young child feeding practices and size of the family ($P < 0.05$).²² But we didn't find any associations between these variables and nutritional status of children.

Many studies looked into the relationship between working status of mother and nutritional status of her child which showed that children of working mothers are under nourished.²³⁻²⁵

In this study majority were homemakers 174 (91.6%), so we couldn't find any association between working status of mother and nutritional status of her child.

LIMITATIONS

The mothers were not willing to disclose all the social problems faced by the family. Biases like interviewers may be present during administration of WHO-QOL BREF questionnaire. Interpersonal variation in anthropometric measurements could have occurred.

CONCLUSION

The study findings indicate that there is no significant association between quality of life of mothers and nutritional status of her child, even though many other studies showed that mothers

emotional aspect influence the physical, mental development of child. Mother's education and age at marriage was significantly associated with the nutritional status of children. Educated mother can act as a good influence and support to the growing child. The prevalence of stunting (54.7%) was more among children in the study area. As stunting is a sign of chronic malnutrition, there should be improved provision of immunization and nutritional programs in the study area. We found significant association between gender of children and BMI centiles. Prevalence of low BMI was more in male children compared to females.

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