Empowerment of Women's and Its Influence on Child Nutritional Outcomes in Rajkot district of Gujarat state

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ABSTRACT

Women's empowerment involving power, control, and decision-making, is crucial for the well-being of communities. This study examines the socio-economic profiles of rural families, the empowerment levels of women, and the nutritional status of their children in Dhoraji, Gujarat. Involving 60 women with children aged 6-60 months, the research highlights significant findings. Most women lived in joint families and had a normal BMI. Nutritional assessments revealed issues of stunting and underweight in children, with women's empowerment levels linked to better child health outcomes. In Patanvav and Nani Parabadi, 78% of mothers lived in joint families, and 63% had a monthly income of Rs. 5000-9999. While 83% of children had normal weight-for-height, 17% were moderately to severely undernourished, and 60% were stunted. Among mothers, 63% had a normal BMI, highlighting the nutritional challenges faced. The study highlights significant nutritional challenges necessitating targeted interventions to improve child and maternal health in these villages.

Keywords: Nutrition; Malnutrition; Child health; Stunting

INTRODUCTION

Women's empowerment is a complex construct and there is no university accepted definition of the term or agreement regarding which domains and sub domains comprise one's empowerment. According to Folaranmi (2013), Empowering women is also instrumentally valuable to achieve the well-being of men, women and children and also for developmental issues. Women's empowerment is intangible and latent, and is expressed in several ways, such as mobility, decision-making power, control and the command of household resources. Economic status and education are considered enabling factors that strongly affect the empowerment of women. Self-Help Groups (SHGs) play a crucial role in women empowerment by providing a platform for financial independence, skill development, and collective action which has positive impact on the overall development of their child. (Sharma et al. 2019)A study by Gupta and Kumar (2023) revealed that women who have greater control over household resources and decision-making processes are more likely to ensure their children receive adequate nutrition and healthcare. This finding aligns with the broader literature that emphasizes the instrumental role of women's empowerment in achieving positive health outcomes for children.

The concept of women's empowerment is central to improving child health and nutrition. Empowered women are more likely to prioritize their children's health, seek healthcare services, and make informed decisions about nutrition. According to Chipili et al, (2023), there is a strong positive association between women's empowerment and the nutritional status of their children. The study found that women with greater autonomy and decision-making power tend to have children with better health outcomes, including higher rates of adequate nutrition.

Furthermore, the nutritional status of children aged six to sixty months is crucial for their overall development. The World Health Organization (WHO, 2023) reports that malnutrition during this critical period can lead to stunting, wasting, and underweight, which are associated with long-term physical and cognitive impairments. Early childhood is a window of opportunity where proper nutrition can have a significant impact on a child's future health, education, and productivity. The persistence of malnutrition in many rural areas underscores the need for targeted interventions that address both the immediate and underlying causes.

Malnutrition, especially in children aged six to sixty months, can have long-lasting effects on physical and cognitive development. Women's particularly low social status and disempowerment, create barriers to social development and result in severe consequences for child health and nutrition, including intra-uterine growth retardation, low birth weight and sub optimal child growth. Kitchen gardening is an ideal

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medium to give experience of nature to children and also maintain their health. (Shaheb et al. 2014) These results were also aligned with findings of Sharma *et al.* (2022) that it helps in reducing malnutrition in children by providing a consistent source of fresh, nutrient-rich vegetables and fruits, ensuring a balanced diet and improving overall health.

Child health showed a positive relationship with the education of mother, age of the mother, income, household size, access to safe drinking water, the location of the house, and a negative relationship between the education of the father, ownership between the education of the father, ownership of the assets, the age of the child, the gender of the child in Ghana. (Zereyesus *et al.* 2017) Additionally, it was also found by Jones et al. (2023) that educated mothers are more likely to be knowledgeable about nutrition, practice healthy feeding habits, and seek medical care when needed.

Understanding the socio-economic profiles of rural families is essential for identifying vulnerable populations and tailoring interventions to their specific needs. Socio-economic factors such as income, education, employment, and household composition influence access to resources and opportunities for health and nutrition. For example, a study highlighted that households with higher income levels and better educational attainment of parents have lower rates of child malnutrition. (Mehta *et al.* 2022) The research also pointed out that socio-economic disparities contribute to unequal health outcomes, making it imperative to address these disparities through comprehensive policy measures.

Given the interconnectedness of socio-economic status, women's empowerment, and child nutrition, this research aims to provide a comprehensive analysis that integrates these dimensions. By examining the socio-economic profiles of respondents, measuring the empowerment levels of rural women, and determining the nutritional status of their children, this study seeks to offer insights that can inform effective policy interventions. The goal is to contribute to the broader efforts of improving child health and nutrition, reducing socio-economic disparities, and promoting women's empowerment in rural communities. The findings are expected to contribute to the development of targeted strategies that enhance child nutrition and support the empowerment of women, ultimately leading to healthier and more resilient rural communities.

MATERIALS AND METHODS
Study Area
The study was conducted in Dhoraji taluka of Rajkot district in Gujarat State. Twelve villages from the taluka were selected randomly considering the proximity (20 km from taluka place).

Sample Size
The sample size was sixty women having children age six to sixty months. Five women respondents were selected randomly from each village constituted 60 respondents. When mother had more than one child aged six to sixty months, the older child was excluded.

Data Collection and Statistical Analysis
Tools for data collection were digital weighing scale, height board or statue meter and also structure questionnaire to find out the social demographic details of the mother. The precision of the digital weighing scale was 100 gm. The height was recorded to the nearest 0.1 cm. The weight was undertaken on barefoot and minimal cloths. For child less than 1 year of age, the "mother-and-baby function" was used that enabled determination of the body weight of child while being held in the arms of the mother. Z-score was used to determine underweight, stunting and wasting based on WHO Growth standard. Individual face to face interview of mothers having children aged 6-60 months will be taken by using teacher made well-structured Gujarati version interview schedule. Questionnaires was extensively field tested, revised, translated and back-translated to ensure data quality. The anthropometric measurement will be carried out as per WHO guideline. Anthropometric calculation will be done in WHO Anthro Version 3.2.2. Children whose weight for age Z Score (WAZ), height for age Z Score (HAZ) and weight for height Z score (WHZ) will be below minus two standard deviations (-2SD) from the median of the WHO reference population will be classified as underweight, stunted (short for their age) or chronically malnourished respectively. Health status of women will be measured by Body Mass Index (BMI). Women's empowerment will be assessed using women empowerment Index (WEI).

The five indicators as described in results will be taken for measurement of the women's empowerment Index. These five indicators will be weighted by the experts and on the basis of weightage and using following formula Empowerment Index will be worked out for individual respondents.

Empowerment Index =
$$\{(A1/B1) \times W1\} + \{(A2/B2) \times W2\} + \{(A3/B3) \times W3\} + \{(A4/B4) \times W4\} + \{(A5/B5) \times W5\}$$

A= Actual obtained scores of individual indicator
B= Maximum obtainable scores of individual indicator
W=Weightage given by expert for individual indicator

1. Women's involvement in household decision making (Include 3 decisions: access to health care, child rearing, freedom to visit or mobility)

2.   Women's membership in community groups
3.   Women's Cash earnings
4.   Women's ownership of house/land/livestock
5.   Women's education

Data Analysis

WHO Anthro Software was used to compute Z Score (Weight for age, height for age and weight for height) according to WHO reference standard taking -2SD as cut-off points (underweight, stunting and wasting). The appropriate statistical tools were used and results were calculated viz percentage, mean, correlation coefficient etc.

RESULTS AND DISCUSSION

The results in Table 1 presents the percentage distribution of respondents based on their demographic characteristics in the specified area. The data indicates that the majority of women (78%) resided in joint families, while 22% lived in nuclear families. The results concluded that more than half of the respondents (65%) were in the age group of more than 25 years of age whereas 35% of the mother were lie in the age group of 18-25 years of age, these 35 percent mother may be the mother of first index child whose child came in the age group of 6-60 months. More than half of the respondents (63%) had monthly income around ₹ 5000-9999, the reason may be as the group is young and educative so they might be indulged with some sort of job opportunities either government or private or else doing some self-employment generation activities like tailoring, value added products selling at village level, running parlour etc. at a village level or nearby city level. While meagre percentage i.e. 7% and 8% were holding with a monthly income of ₹ 10,000-19,999 and more than ₹ 20,000 respectively. Majority (63%) of women were doing help to their husband apart from household chores in their day today life. The reason may be that all women were from villages and their main occupation is farming in leisure time, all women must help their husband in farming related activities. Very few (7%) mothers were self-employed whereas 22% of the respondents were unemployed. Regarding education, 40% of the women had completed secondary education, 27% had primary education, 13% were illiterate, 12% had completed higher secondary education, and 8% were graduates. The age distribution of the index children showed that 23% were aged 6-11 months, 23% were 12-23 months, 14% were 24-35 months, 20% were 36-47 months, and 20% were 48-59 months. In terms of gender, 58% of the children were boys and 42% were girls. Finally, 60% of the families had only one child, while 40% had two or more children. These characteristics provide a comprehensive overview of the demographic and socio-economic background of the respondents in the study.

The nutritional status of the children (Table:2), as assessed by three key indicators, reveals notable findings. For underweight (weight for age), the mean Z score was -0.97 with a standard deviation of 1.09 among the 60 respondents, indicating that, on average, the children were below the median weight for their age, suggesting a tendency towards being underweight. In terms of stunting (length for age), the

Table 1: Distribution of the Respondents According to Their Selected Characteristics

Characteristics	Frequency	Percentage
		(n=60)
1. Type of Family		
a. Nuclear	13	22
b. Joint	47	78
Total	**60**	**100**
2. Age of Mother		
a. < 18 years	00	00
b. 18 to 25 Years	21	35
c. > 25 Years	39	65
Total	**60**	**100**
3. Income in Rs. (Monthly)		
a. < 5000	13	22
b. 5000 to 9999	38	63
c. 10000 to 19999	04	07
d. > 20000	05	08
Total	**60**	**100**
4. Occupation		
a. Help to husband	38	63
b. Job	05	08
c. Self employed	04	07
d. Unemployed	13	22
Total	**60**	**100**
5. Education		
a. Illiterate	08	13
b. Primary (1 to 7th std.)	16	27
c. Secondary (8 to 10th std.)	24	40
d. Higher Secondary (11th to 12th std.)	07	12
e. Graduate (Above 12th std.)	05	8
Total	**60**	**100**
6. Age of Index Child (in Months)		
a. 6 to 11	14	23
b. 12 to 23	14	23
c. 24 to 35	08	14
d. 36 to 47	12	20
e. 48 to 59	12	20
Total	**60**	**100**
7. Gender of Index Child		
a. Boy	35	58
b. Girl	25	42
Total	**60**	**100**
8. Number of children in family		
a. Single	40	60
b. Two and More	20	40
Total	**60**	**100.00**

Table 2: Nutritional Status of the Children

Indicator	Number of Respondents	Mean Z Score	Standard Deviation
Underweight (Weight for age)	60	-0.97	1.09
Stunting (Length for age)	60	-2.78	2.14
Wasting (Weight for length)	60	1.11	2.07

mean Z score was -2.78 with a standard deviation of 2.14, showing a significant deviation below the median length for age, which indicates a high prevalence of stunting. This reflects chronic undernutrition and its long-term impact on growth. Conversely, for wasting (weight for length), the mean Z score was 1.11 with a standard deviation of 2.07, suggesting that the children were above the median weight for their length, indicating a tendency towards normal weight or overweight rather than wasting. These findings highlight the varied nutritional challenges faced by the children, with significant issues in chronic malnutrition reflected in stunting, alongside a lack of acute malnutrition as indicated by the wasting scores.

The nutritional status of the women, classified according to BMI, is summarized in Table 3. Among the 60 respondents, 12% (n=7) were underweight with a BMI of less than 18.40. The majority of the women, 63% (n=38), fell within the normal BMI range of 18.50 to 24.90. A smaller number of the respondent, 13% (n=8), were classified as overweight, having a BMI between 25 and 29.90. Additionally, 12% (n=7) were categorized as obese, with a BMI greater than 30. These results indicate that while the majority of the women had a normal BMI, a significant portion of the population faces nutritional challenges, with a combined 37% being either underweight, overweight, or obese.

Table 4 found the nutritional status according to weight for age based on NCHS reference. The National Center for Health Statistics (NCHS) reference is currently used in the national programme of about 100 countries (Chipili *et al.* 2018). Among the 60 respondents, 49 children (82%) were classified as having normal nutritional status (Z score between -2 and +2), with a mean Z score of -0.97. Specifically, in Patanvav, 26 out of

Table 3: Nutritional Status of Women with BMI Classification

Nutritional status	BMI	Number (n=60)	Percentage
Underweight	< 18.40	07	12
Normal	18.50 to 24.90	38	63
Overweight	25 to 29.90	08	13
Obese	>30	07	12
Total		**60**	**100**

30 children (87%) were in the normal range, while in Nani Parabadi, 23 out of 30 children (77%) fell within this category. Moderate undernutrition (Z score between -2 and -3) was observed in 10 children (17%) with a mean Z score of -1.11. In Patanvav, 4 children (13%) were moderately undernourished, compared to 6 children (20%) in Nani Parabadi. Severe undernutrition (Z score less than -3) was rare, with only 1 child having a mean Z score of -3.79, and this case was found in Nani Parabadi (3%). There were no cases of severe undernutrition reported in Patanvav. These findings indicate that while a majority of the children fall within the normal weight for age range, a significant portion still suffers from moderate to severe undernutrition, with Nani Parabadi children showing slightly higher rates of undernutrition compared to Patanvav village of Rajkot district. The reasons might be due to poor dietary diversity and mother's lack of education especially regarding balanced diet, meal planning, may be sometimes unavailability of food due to various reasons and other lacunas in important healthy dietary lifestyles.

The nutritional status of the children, according to height for age based on the NCHS reference, is summarized in Table 5. Out of the 60 respondents, 24 children (40%) were categorized as normal (≤-2 to +2 Z score) with a mean Z score of -1.75. In the village of Patanvav, 10 children (33%) fell into the normal category, while in Nani Parabadi, 14 children (46%) were in this category. For moderate under nutrition (-2 to -3 Z score), 12 children (20%) had a mean Z score of -2.74. In Patanvav, 4 children (13%) were moderately undernourished, compared to 8 children (27%) in Nani Parabadi. Severe under nutrition (<-3 Z score) was observed in 24 children (40%) with a mean Z score of -4.93. This severe category included 16 children (54%) in Patanvav and 8 children (27%) in Nani Parabadi. These

Table 4: Nutritional Status according to Weight for Age (Based on NCHS Reference)

Grade of under nutrition	Number (n=60) Mean Z score	Patanvav (n=30)	Nani Parabadi (n=30)
Normal (=-2 to +2 Z Score)	49 (-0.97)	26 (87%)	23 (77%)
Moderate (-2 to +3 Z score)	10 (-1.11)	04 (13%)	06 (20%)
Severe (<-3 Z score)	1 (-3.79)	00 (00%)	01 (3%)

Table 5: Nutritional Status According to Height for Age (Based on NCHS Reference)

Grade of under nutrition	Number (n=60) Mean Z score	Patanvav (n=30)	Nani Parabadi (n=30)
Normal (=-2 to +2 Z Score)	24 (-1.75)	10 (33%)	14 (46%)
Moderate (-2 to +3 Z score)	12 (-2.74)	04 (13%)	08 (27%)
Severe (<-3 Z score)	24 (-4.93)	16 (54%)	08 (27%)

results indicate significant differences in the nutritional status between the two villages, with a higher prevalence of severe under nutrition in Patanvav. These differences in the distribution of undernourished children might be due to genetic reasons, gender differences and physical activity performed by the children.

The nutritional status of the children according to weight for height based on the NCHS reference, is detailed in Table 6. Out

Table 6: Nutritional Status according to Weight for Height (Based on NCHS Reference)

Grade of Under nutrition	Number (n=60) Mean Z Score	Patanvav (n=30)	Nani Parabadi (n=30)
Normal (=-2 to +2 Z Score)	50 (0.68)	24 (80%)	26 (87%)
Moderate (-2 to -3 Z Score)	4 (-2.14)	3 (10%)	1 (3%)
Severe (<-3 Z Score)	6 (-3.01)	3 (10%)	3 (10%)

As per table 6, severe undernutrition (<-3 Z score) was also observed in 6 children (10%) with a mean Z score of -3.01. Both Patanvav and Nani Parabadi had 3 children (10%) each in the severe category. These findings indicate that the majority of children in both villages had a normal nutritional status based on weight for height, with a slightly higher proportion of normal cases in Nani Parabadi. However, moderate and severe undernutrition were still present in a small but notable proportion of children in both locations.

Table 7 shows that women empowerment is increasingly viewed as an important strategy to reduce maternal and child under nutrition (Desale *et al.* 2016). Table 7 further reflects the distribution of respondents according to their overall empowerment based on women empowerment index score. Table depicts that amongst respondents, 68% of them were in category of moderate empowerment level followed by 16% of them in both category of low and high level of empowerment.

of the 60 respondents, 50 children (83%) were classified as normal (≤-2 to +2 Z score) with a mean Z score of 0.68. In Patanvav, 24 children (80%) were in the normal category, while in Nani Parabadi, 26 children (87%) fell into this category. For moderate undernutrition (-2 to -3 Z score), 4 children (7%) had a mean Z score of -2.14. In Patanvav, 3 children (10%) were moderately undernourished, compared to 1 child (3%) in Nani Parabadi.

Table 7: Distribution of Respondents According to Their Overall Empowerment Based on Women Empowerment Index Score

Sr. No.	Women Empowerment Index (Scores)	Frequency (n=60)	Percentage
1.	Low (>5.60)	10	16%
2.	Moderate (5.61-10.82)	40	68%
3.	High (<10.83)	10	16%

CONCLUSION

This study examined the nutritional status of children and women in Patanvav and Nani Parabadi of Rajkot Village. Most respondents lived in joint families, were over 25, and had monthly incomes between ₹ 5000-9999. While 83% of children had a normal weight-for-height, indicating good acute nutrition, 40% were severely stunted, with Patanvav showing a higher prevalence (54%) compared to Nani Parabadi (27%). The mean Z score of -0.97 indicated a tendency towards underweight children. Among women, 37% faced nutritional challenges, being underweight, overweight, or obese. These findings emphasize the need for targeted nutritional interventions to improve overall well-being in these communities.

CONFLICT OF INTEREST

All the author both individually and collectively, affirms that they do not possess any conflicts of interest either directly or indirectly related to the research being reported in the publication.

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