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Original Research Article

Assessing the effect of women's empowerment on their dietary intake: a cross-sectional study

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ABSTRACT

Background: Women empowerment is an important strategy to reduce maternal and child undernutrition, which continues to be a major health burden in low- and middle-income countries. The present study aimed to assess the effect of women empowerment on their dietary intake in the two selected blocks of Sultanpuri urban slums, West Delhi.
Methods: The baseline was conducted using a cross-sectional research method with girls and women (15-35 years). The research was conducted through a predesigned, pretested, semi-structured questionnaire to capture the information on socio-demographic profiles along with knowledge on social skills, self-esteem, and decision-making. The data were collected on the consumption of food groups in the last 24 hours from 2402 girls and women. We employed unadjusted and adjusted step-wise regression models to assess the effect of domains of women empowerment on dietary intake.
Results: The median (interquartile range) age of the women was 27 (22-31) years. We found a 0.17-point increase in the dietary diversity score per one-unit increase in the self-esteem score of the women. Similarly, there was a 0.06-unit increase in the dietary diversity score per one-unit increase in the social skills score of the women. The association remained statistically significant even after adjustments for co-variates like age, education status, and socio-economic status.
Conclusions: The present study recommends that focusing on women's empowerment dimensions, particularly social skills, self-esteem, and decision-making power, can be an effective strategy for improving dietary intake among women.

Keywords: Women, Empowerment, Self-esteem, Dietary diversity, Social skills

INTRODUCTION

Empowerment of women in nutrition is defined as the process through which individuals acquire the capacity to be well-fed and healthy. It involves improving capacity through initiatives that amplify the voices of women regarding their nutritional well-being.[1] Supportive processes include promoting access to and control over sufficient and nutritious food, augmenting knowledge about nutrition, active involvement in decisions related to individual health and nutrition, and having the support of the family, community, and other institutions to sustain healthy practices.[1] Despite progress, the low-and middle-income countries are facing a dual burden of malnutrition with an increasing burden of overweight/obesity and the persistent prevalence of undernutrition.[2] The prevalence of underweight (body mass index, BMI <18.5 kg/m^2) has declined globally since the 2000s, but it still affects a significant proportion of women in India. On the other hand, it also underlines the emergence of increased overweight or obesity, especially in urban areas among people of better socioeconomic status in India.[3]

Lack of decision-making, power, autonomy is common among women in South Asia. Additionally, women often face disparities in access to food, education, and health care, constrained possibilities for generating income,

limited access to and control over productive resources, and a scarcity of robust legal rights.[4] Women who are not empowered may have less control over resources within the household, poor self-esteem, and limited access to information about health services.[5]

Women empowerment is an important strategy to reduce maternal and child undernutrition, which continues to be a major health burden in low- and middle-income countries.[6] Women empowerment assumes that women have the capacity to shape household food consumption as food producers and consumers. The diversity of the food basket purchased from the local market can be influenced by women's control over income and their involvement in decisions related to food purchases.[7] Studies suggest that women empowerment is strongly associated with better dietary diversity in households.[8,9] Moreover, the active involvement of women in household decision-making plays a crucial role in improving nutrition and health outcomes for infants and young children.[10,11] Evidence suggests that women empowerment in decision-making results in healthier eating habits and more diverse diets. A study conducted in Bangladesh reported that socioeconomic status, empowerment, and higher education of women may contribute to the attainment of higher dietary diversity.[12] Furthermore, a study conducted in five sub-Saharan African countries with married women reported an increased consumption of dairy products, fruits, vegetables, among women with increase autonomy.[13]

Various studies have explored the association between women's empowerment and child nutritional status, as well as the connection between women's empowerment and the minimum meal frequency among infants and young children.[11,14] Additionally, studies have examined the relationship between women's empowerment in agriculture and its impact on food security.[1] However, to the best of our knowledge, there is limited evidence available that has assessed the impact of women empowerment on their dietary intake in India. Therefore, we conducted a cross-sectional study in two randomly selected blocks of the Sultanpuri urban slums in West Delhi to assess the association between dietary intake and women empowerment in selected areas of the West Delhi district. Sultanpuri was chosen due to its low literacy rate among women compared to men and a low sex ratio (897 females per 1000 males).

METHODS

Study design, study population, and study settings

The present study was conducted among girls and women (15-35 years) residing in the areas for at least the past one year. All the individuals who did not provide consent to participate in the study or migrated were excluded. The minimum sample size of the study was 472, considering 56.4% as the prevalent low dietary diversity among women, 5% absolute error, 80% power, 20% drop out rate, and an alpha error of 0.05. However, we obtained data from a sample of 2402 women. The study was conducted from September 2019 to March 2020.

Study tools

A predesigned, pretested, semi-structured questionnaire was developed to capture the information on socio-demographic profiles along with the knowledge on social skills, self-esteem, and decision-making. The data was also collected on the consumption of food groups in the last 24 hours. The questionnaire was developed in English and then translated into the local language (Hindi).

Self-esteem score was assessed using a three-point Likert scale. There were seven items on the scale. In six out of seven items, the responses of agree were coded 2 and neutral, and disagree was coded 1 and missing 0. In the seventh question with yes and no options, the yes response was coded 1 and no as 0. The total self-esteem skills score was calculated by summing up the individual scores of the seven items. Social skills score was assessed using a three-point Likert scale. There were six items on the scale. In five out of six items, the responses of not good were coded as 1, good as 2, very good as 3, and missing responses as 0. In the seventh question with yes and no options, the yes response was coded 1 and no as 0. The total social skills score was calculated by summing up the individual scores of the six items. Similarly, there were five items in the decision-making scale. The responses of 'participant only and participant and her husband' were coded 1 and the rest 0. The decision-making skills score was calculated by summing up the score of five items.

In the dietary practices, we asked about the consumption of any food items made from any of the ten food groups, including grains, white roots and tubers and plantains, pulses, beans and lentils, nuts or seeds, milk or milk products, meat, organ meat or fish, eggs, green leafy vegetables, other vegetables, vitamin A rich fruits and vegetables and other vegetables. The consumption of miscellaneous food such as chips, fried items, chocolates, candies, biscuits, sweet pastries, and beverages (tea/coffee) was recorded. The minimum dietary diversity (MDD) score of women (15-49 years) was calculated to determine whether women had consumed at least five out of ten food groups in the last 24 hours.[15] We used the modified Kuppuswamy scale to measure the socio-economic status of the women participants. It was calculated by using three questions, namely the education of the head of the family, the occupation of the head of the family, and the total family income from all sources.

Furthermore, a team of five data investigators was trained on the questionnaire and the data collection techniques for a period of one week before the initiation of the data collection. The team carried out mock surveys as well. During training, emphasis was given to achieving the maximum intra- and inter-individual agreement with respect to all the questions. The field team and the head

office team ensured continuous supervision and conducted random monitoring throughout the data collection process. All questionnaires were transformed into an Android-based mobile application using open data kit (ODK). Approximately 5% of the completed forms underwent screening for data completeness, consistency, and coherence. The data collection during the baseline was conducted over a period of 2-3 months.

Ethical clearance

The study received ethical clearance for the project from the MAMTA internal ethical review board. Informed written consent was obtained from all study subjects aged 18 and above.

Statistics

The distribution of the categorical variables was shown as frequency and percentages, and the numerical variables were shown as mean and standard deviation or median and interquartile range (IQR) if skewedly distributed. Unadjusted and adjusted step-wise regression models were done to assess the effect of domains of women empowerment with dietary intake. The three domains of women empowerment (social skills, self-esteem, and decision-making) were employed as dependent variables, and education status, age, marital status, and socio-economic status were used as independent variables along with the median dietary diversity score. The results were expressed as a beta coefficient (β) and 95% confidence interval (CI). The p value <0.05 was considered a statistically significant value. All the analysis was done in STATA version 14.0.

RESULTS

A total of 2402 young women were enrolled in the study. The median (IQR) age of the women was 27 (22-31) years, as shown in Table 1. Nearly 84.0% of the women were not working in the past. The median (IQR) dietary diversity score of the women was 4 (3-4). There was a 0.17-point increase in the MDD per one-unit increase in the self-esteem score of the women (β (95% CI); p value: 0.17 (0.11, 0.24); <0.001), as shown in Table 2. The association remained statistically significant even after adjustment for co-variates like age, education status, and socio-economic status.

Similarly, there was a 0.06-unit increase in the MDD per one-unit increase in the social skills score of the women (β (95% CI); p value: 0.06 (0.04-0.08); <0.001), as shown in Table 3. The association remained statistically significant after adjustments for co-variates like age, education status, and socio-economic status. In the unadjusted analysis, the association between decision-making skills score and median dietary diversity (MDD) score was statistically insignificant (β (95% CI), p value: -0.02 (-0.04, 0.004), 0.10). Hence, we did not run adjusted regression analysis further.

Table 1: Socio-demographic characteristics of the study participants (n=2402).

Socio-demographic characteristics	N (%)
Education status	
Illiterate	307 (12.8)
Primary	257 (10.7)
Middle	479 (19.9)
High school	557 (23.2)
Secondary school	433 (18.0)
Graduation	364 (15.2)
Missing	5 (0.2)
Marital status	
Married	1603 (66.9)
Divorced/separated	792 (33.1)
Worked in the past	
Yes	392 (16.4)
No	2002 (83.6)
Socio-economic status score; median (IQR)	10 (8-12)
Dietary diversity score; median (IQR)	4 (3-4)
Decision-making score; median (IQR)	3 (0-5)
Self-esteem score; median (IQR)	11 (11-12)
Social skills score; median (IQR)	11 (11-14)

IQR: Interquartile range

Table 2: Univariate and multivariate regression analysis showing association between self-esteem and dietary diversity.

Variables	Unadjusted DD β (95% CI); p value	Model I DD β	Model II DD β	Model III β
Self-esteem score	0.17 (0.11, 0.24); <0.001	0.11 (0.04, 0.19); 0.002	0.11 (0.03, 0.18); 0.003	0.10 (0.03, 0.18); 0.005
Education status				
Illiterate	-	Reference	Reference	Reference
Primary		-0.25 (-0.49, -0.02); 0.03	-0.26 (-0.50, -0.03); 0.02	-0.26 (-0.49, -0.02); 0.03
Middle		0.08 (-0.12, 0.28); 0.43	0.07 (-0.12, 0.27); 0.47	0.07 (-0.13, 0.27); 0.50
High		0.18 (-0.01, 0.38); 0.06	0.16 (-0.03, 0.36); 0.09	0.20 (0.004, 0.40); 0.04
Secondary		0.20 (-0.002, 0.41); 0.53	0.17 (-0.03, 0.38); 0.09	0.23 (0.01, 0.44); 0.03

Continued.

Variables	Unadjusted DD β (95% CI); p value	Model I DD β	Model II DD β	Model III β
Graduation		0.25 (0.03, 0.46); 0.02	0.21 (-0.008, 0.42); 0.06	0.26 (0.04, 0.49); 0.04
Socio-economic status	-	-	0.02 (0.003, 0.04); 0.02	0.02 (0.002, 0.04); 0.02
Age (years)	-	-	-	0.01 (0.9*10-4, 0.02); 0.04

β: Beta coefficient; CI: confidence interval; DD: dietary diversity

Table 3: Univariate and multivariate regression analysis showing association between social skills and dietary diversity.

Variables	Unadjusted DD β (95% CI); p value	Model I DD β	Model II DD β	Model III β
Social skills score	0.06 (0.04-0.08); <0.001	0.04 (0.02-0.07); <0.001	0.04 (0.02, 0.07); <0.001	0.04 (0.02, 0.07); <0.001
Education status				
Illiterate	-	Reference	Reference	Reference
Primary		-0.29 (-0.52, -0.05); 0.01	-0.29 (-0.53, -0.06); 0.01	-0.29 (-0.52, -0.05); 0.01
Middle		0.04 (-0.15, 0.25); 0.66	0.04 (-0.16, 0.24); 0.68	0.03 (-0.16, 0.24); 0.71
High		0.16 (-0.03, 0.36); 0.10	0.14 (-0.04, 0.34); 0.14	0.18 (-0.01, 0.38); 0.07
Secondary		0.16 (-0.04, 0.37); 0.12	0.14 (-0.06, 0.34); 0.19	0.19 (-0.02, 0.40); 0.08
Graduation		0.19 (-0.01, 0.41); 0.07	0.16 (-0.05, 0.38); 0.13	0.21 (-0.007, 0.44); 0.05
Socio-economic status	-	-	0.02 (0.001, 0.03); 0.03	0.02 (0.0006, 0.03); 0.04
Age (years)	-	-	-	0.01 (-0.0005, 0.02); 0.06

β: Beta coefficient; CI: confidence interval; DD: dietary diversity.

DISCUSSION

The current study highlighted the effect of women's empowerment measures, such as self-esteem, social skills, and decision-making on their dietary intake. Our study found a positive correlation between social skills and self-esteem with women's dietary diversity, which suggests that increasing women's empowerment could help improve their dietary intake. However, we could not find any association between women's decision-making skills and their dietary intake.

Our results are congruent with the previous research that has shown significant connections between women's empowerment dimensions and nutritional outcomes.[16] A study conducted in Thailand suggested that empowering women can improve knowledge, attitudes, and practices related to micronutrients. Furthermore, such interventions have shown a positive impact on increasing micronutrient intake and improving nutritional status.[5] Women's education is a pivotal factor influencing various other socioeconomic conditions among women.[17] Shourove et al reported that women with higher education status are likelier to achieve higher dietary diversity scores. We found similar findings in our study that women with higher education (graduation) had a higher (ß=0.25, 95% CI: 0.03-0.46; p=0.02) dietary diversity score compared to those without schooling. Education empowers women to boost their self-esteem, contributing to an improvement in their dietary diversity.[18] In our study, we identified a substantial influence of higher socioeconomic status (ß=0.02, 95% CI: 0.002-0.04; p=0.02) and age (ß=0.01, 95% CI 90.9*10-4-0.02; p=0.04) as well on the dietary diversity of women. To the best of our knowledge, we did not find any study that assessed the impact of women's self-esteem on dietary diversity. Nevertheless, we encountered studies examining the correlation between women's self-esteem and both child growth and dietary diversity.[19]

The present study did not find any statistically significant association between decision-making and dietary diversity scores of women. Evidence suggests that women lack involvement in household decision-making, expenditure, or health care, consequently restricting their involvement in planning a diverse diet.[17] Converse to our findings, numerous studies have shown the participation of women in decision-making regarding household purchases and the ability to purchase food positively influence the availability of diverse diets at home, which significantly increases the consumption of more diverse diets, resulting in improved dietary diversity scores.[12,17] Furthermore, our decision-making assessment tool was small and not comprehensive.

Moreover, empowering women has positively impacted dietary diversity and women's self-confidence to make informed health decisions, thereby positively impacting the nutrition of their families.[6] On the other side, there is a significant positive association between women's age and autonomy in decision-making. Older women get autonomy in household decision-making in India. However, the newly married daughter-in-law often lacks power in making household decisions and is expected to fulfill household duties as directed by her mother-in-law, who is the primary decision-maker.[4] Thus, decision-making is a complex skill that needs to be carefully assessed considering the social construct and societal culture where women live.

In our research, we found that social skills (ß=0.06, 95% CI 0.04-0.08; p≤0.001) have significantly impacted the MDD score of women. However, we did not find any previously published research article that directly studied the impact of social skills on women's dietary diversity. As elucidated in prior research, women with high socioeconomic status exhibit a higher dietary diversity than those with low socioeconomic status. The studies suggested that higher socioeconomic status was linked to more consistent consumption of various food groups, including seasonal fruits and vegetables, resulting in improved diet quality and diversity.[12]

Furthermore, existing evidence suggests that social skills, such as communication, are crucial in influencing dietary diversity by impacting nutrition knowledge, food preparation, and decision-making. Women with strong communication skills may be good at acquiring nutrition knowledge, understanding the importance of diversified diets, and transferring information about food groups to others.[20] While the direct link between social skills and dietary diversity may not have been the focus of a specific research article, the existing literature suggested that social skills can indirectly influence dietary diversity through their impact on nutrition knowledge and behavior.[20]

The present cross-sectional study had some limitations as well. The data collection was confined to urban slums, and it is plausible that women's interpretations and responses to empowerment-related questions could differ between slum and village settings. Moreover, the calculation of MDD was limited to recording the consumption of food groups within the past 24 hours without considering the quantity consumed. Despite limitations, the study's robustness lies in its incorporation of various empowerment indicators and their impact on dietary diversity, along with the inclusion of measures aligned with the existing literature. The current study employed standardized tools for data collection, distinguishing itself as one of the few studies that have studied the impact of women's empowerment.

CONCLUSION

The present study recommends that focusing on women's empowerment dimensions, particularly social skills, self-esteem, and decision-making power, can be an effective strategy for improving dietary intake among women. While decision-making showed no significant association, the study reaffirms that empowering women can lead to improved dietary diversity, thereby impacting overall nutritional well-being. Future studies can also explore the impact of other dimensions of women's empowerment, such as financial literacy, creative thinking, knowledge, and skills, on dietary diversity, contributing further to the advancement of nutritional interventions and public health strategies. Moreover, the study can be conducted with a more extensive set of populations in different geographical settings. However, the results of the current study indicate the necessity for additional qualitative and in-depth exploration of the contextual factors influencing the diverse associations between women's empowerment and their dietary diversity.

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