

Exposure to intimate partner violence and malnutrition among young adult Bangladeshi women: cross-sectional study of a nationally representative sample

Exposição à violência entre parceiros íntimos e desnutrição entre mulheres jovens de Bangladesh: um estudo transversal de uma amostra nacional representativa

Exposición a la violencia doméstica y malnutrición entre mujeres adultas jóvenes bangladesíes: estudio transversal de una muestra representativa nacionalmente

Jannatul Ferdos ¹
Md. Mosfequr Rahman ¹

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Abstract

This study explores the relationship between malnutrition and intimate partner violence (IPV) among 1,086 young adult Bangladeshi women aged 15-24 years using a cross-sectional data from the 2007 Bangladesh Demographic Health Survey (BDHS). About one-third (33.4%) young adult women experienced physical and/or sexual IPV, 14.5% experienced only sexual IPV and 29% experienced only physical IPV by husbands. About 32.6% young adult women were reported as being underweight (BMI < 18.5) and 6.2% were overweight (BMI ≥ 25). Underweight women experienced more physical IPV (OR = 1.39; 95%CI: 1.09-2.71) and physical and/or sexual IPV (OR = 1.48; 95%CI: 1.12-2.75) than normal range women. Results also indicate a positive association between being overweight/obese and all the forms of IPV. The study findings indicate that the IPV experience plays a significant role in underweight and overweight/obese young adult women and support that younger women's health and nutrition program and policies need to address IPV.

Intimate Partner Violence; Malnutrition; Body Weight; Body Mass Index

Correspondence

Md. M. Rahman
Department of Population Science and Human Resource
Development, University of Rajshahi.
Rajshahi / Northern – CEP 6205 – Bangladesh.
mosfeque@gmail.com

¹ University of Rajshahi, Rajshahi, Bangladesh.



Introduction

Malnutrition, both undernutrition/underweight and overnutrition/overweight, remains a pervasive and damaging condition in under developed and developing countries. Undernutrition is the leading risk factor for mortality in the world, contributing to nearly 3.5 million deaths¹ and 16% of all disability-adjusted life years (DALYs) lost globally². It is also an important determinant of maternal and child death³. In Bangladesh, 24% of ever married women aged 15-49 years are undernourished (body mass index – BMI < 18.5kg/m²) and women in the age group 15-19 years are more likely to be thin or undernourished than other age cohorts⁴. Even among the wealthiest quintile of society, 8.4% of women are underweight⁴. Undernutrition in Bangladesh continues to be a serious public health problem.

Overnutrition or obesity have significant health and economic consequences and are associated with an increased risk of developing various non-communicable diseases (NCDs), including hypertension, coronary heart disease, diabetes, stroke and some types of cancer⁵. Although overnutrition in Bangladesh is still not a major problem, the prevalence of overweight women is increasing. The proportion of women who are overweight or obese (BMI ≥ 25kg/m²) has increased from 2.7% in 1996-1997 to 10.1% in 2007, and 16.5% in 2011⁶. Therefore, it is evidently important to determine the prevalence of overnutrition as well as its consequences on woman's health along with measuring the consequences of undernutrition, particularly in developing countries.

The literature on the relationship between being underweight or overweight/obese and experience of intimate partner violence (IPV) is limited. IPV is considered one of the main psychosocial factors that might influence women's nutritional status⁷. IPV increases psychological stress among women, which, in turn, increases oxidative stress⁸ and metabolic level⁹, risk factors for undernutrition. IPV against women can provoke an eating disorder, unhealthy weight control practices and poorer treatment outcomes for the disorders¹⁰, as well as chronic fatigue, physical inactivity, and disabilities preventing work and daily activities¹¹. Some recent studies in Bangladesh¹² and India¹³ indicate the association between IPV and undernutrition among reproductive-aged women. However, a study in Egypt found a significant relationship between the IPV experience and obesity in adulthood¹⁴. These studies have examined only the relationship between the experiences of IPV and undernutrition/obesity in different settings. A research conducted in Bangladesh indicates that young women experience more IPV than their older counterparts¹⁵. This study, therefore, assessed the association between being underweight or overweight/obese and the experience of IPV among young adult women aged 15-24 years in Bangladesh.

Methods

Sample

This cross-sectional study used data from the 2007 *Bangladesh Demographic Health Survey* (BDHS), conducted by the National Institute of Population Research and Training of the Ministry of Health and Family Welfare of Bangladesh, from March to August 2007¹⁶. The survey used a sample drawn from the total population of Bangladesh residing in private dwellings. A stratified, multistage cluster sample of 361 primary sampling units was conducted, 227 in rural areas and 134 in urban areas. A total of 11,178 eligible women aged 15-49 years were identified to participate in the survey; 10,996 were interviewed, a response rate of 98.4%. Data collection procedures for the BDHS were approved by the ORC Macro Institutional Review Board. Details of data collection and management procedures are described elsewhere¹⁶. In our analyses, we included only currently married young adult women aged 15-24 years (N = 1,086), who were not pregnant at the time of the survey.

Measures

The BMI, calculated as weight in kilograms divided by height in meters squared, was used to assess undernutrition and overnutrition in this study. BMI is chosen to assess underweight and overweight

mothers because it does not require a reference table from a well-nourished population. To fulfill the requirement of this study, variable was created to define the categories underweight, normal and overweight/obese for BMI < 18.5kg/m², between 18.5 to 24.99kg/m², and ≥ 25kg/m², respectively ¹⁷.

Women's experience of IPV was the main exposure of interest in this study. The survey measured IPV with a shortened and modified *Conflict Tactics Scale* (CTS) ¹⁸. Each married woman was asked "(Has) your (last) husband ever done any of these things to you: (i) pushed you, shaken you, or thrown something at you; (ii) slapped you; (iii) twisted your arm or pulled your hair; (iv) punched you with his fist or with something that could hurt you; (v) kicked you, dragged you, or beaten you up; (vi) tried to choke you or burnt you on purpose; (vii) threatened or attacked you with a knife, gun, or any other weapon; (viii) physically forced you to have sexual intercourse with him even when you did not want to?" A positive answer to any of these questions [(i)-(vii)] indicated physical perpetration and a positive answer to question (viii) indicated sexual IPV perpetration. Again, questions [(i)-(iv)] indicate experience of minor physical violence and questions [(v)-(vii)] indicate experience of severe physical violence.

Several socioeconomic and demographic variables were included in the analysis as potential confounding factors, which were associated with the experience of IPV in previous studies ^{12,13,19,20}. Age at marriage was categorized as being married before 18 years vs. 18 years or older. The women's educational level was classified as: no education (0 year), primary (1-5 years), secondary or higher (6 years or more). Place of residence was categorized as rural vs. urban. The wealth variable categorized respondents into quintiles according to the household's score on the DHS wealth index, which is based on the household's amenities, assets and living conditions ²¹. The sample was then divided into quintiles with 1 = poorest and 5 = wealthiest, 20% of household. Total numbers of household members were classified as (2-4, 5-6 or ≥ 7). Maternal working status was created as classifying women according to whether they were working at the time of the survey or not. Maternal height was categorized into two categories: < 145 or ≥ 145cm.

Statistical analysis

Descriptive statistics were used to describe the distribution variables of interest. Descriptive data were presented as standard deviations means for continuous variables, and frequencies and percentages for categorical variables. Chi-square tests were used to investigate associations between IPV and sociodemographic variables. Multivariate logistic regression was performed to examine the relationship between undernutrition and overnutrition/obesity and maternal experience of IPV. The multicollinearity of the variables was verified by examining the variance inflation factors; in all cases, the values were lower than 2.0, indicating that multicollinearity was low. In all the analyses, the level of significance was p-value < 0.05. All statistical analyses were conducted using IBM SPSS 20.0 for Windows (IBM Corp., Armonk, USA) to accommodate the complex sampling design of BDHS.

Ethical considerations

The 2007 BDHS follows a standard protocol and was given complete approval by the ORC Macro Institutional Review Board. The protocol of the survey was also reviewed and approved by the National Ethics Committee of the Bangladesh Ministry of Health and Family Welfare. Informed consent was obtained from each respondent for this survey. This study was exempt from full review as it was based on secondary use of anonymous data set with no identifiable information on the survey participants.

Results

The mean age of the respondents was 20 ± 2.54 (mean ± SD), 83.7% were married before reaching their 18th birthday, 89.9% had less than two children, 64.6% were from the rural background, 15.2% had no education, and 76.1% were not working (Table 1). From the total sample of young adult women, 61.2% had normal weight (BMI 18.50-24.99), 32.6% were underweight (BMI < 18.50) and

Table 1

Sociodemographic, nutritional and intimate partner violence (IPV) characteristics of married Bangladeshi women aged 15-24 years. *Bangladesh Demographic Health Survey (BDHS), 2007* (N = 1,086).

Characteristics	n	% (95%CI)
Mean age	1,086	20.0 ± 2.54 (mean ± SD)
Age at marriage (years)		
< 18	909	83.7 (81.4-85.7)
≥ 18	177	16.3 (14.2-16.3)
Number of household members		
2-4	557	51.3 (48.3-54.3)
5-6	268	24.7 (22.2-27.3)
≥ 7	260	24.0 (21.5-26.6)
Data missing	1	
Children ever born		
< 2	976	89.9 (87.9-91.5)
≥ 2	110	10.1 (8.4-12.0)
Place of residence		
Rural	702	64.6 (61.7-67.4)
Urban	384	35.4 (32.5-38.2)
Wealth quintile		
Lowest	190	17.5 (15.3-19.8)
Second	227	20.9 (18.6-23.4)
Middle	218	20.1 (17.8-22.5)
Fourth	225	20.7 (18.4-23.2)
Highest	226	20.8 (18.5-23.3)
Respondents' education		
No education	165	15.2 (13.1-17.4)
Primary	352	32.4 (29.7-35.2)
Secondary and higher	569	52.4 (49.4-55.3)
Currently working		
No	826	76.1 (73.4-78.5)
Yes	260	23.9 (21.5-26.5)
Ever used modern contraceptives		
No	256	23.6 (21.1-16.1)
Yes	830	76.4 (73.8-78.8)
Mean BMI	1,086	20.0 ± 2.9 (mean ± SD)
Respondents' BMI		
Underweight	354	32.6 (29.8-35.4)
Normal	665	61.2 (58.3-64.0)
Overweight/Obese	67	6.2 (4.9-7.7)
Respondents' height (cm)		
< 145	180	16.6 (14.4-18.9)
≥ 145	906	83.4 (81.1-85.5)
Physical and/or sexual IPV		
No	713	65.7 (62.8-68.4)
Yes	372	34.3 (31.5-37.1)
Data missing	1	
Physical IPV only		
No	770	71.0 (68.4-73.6)
Yes	315	29.0 (26.4-31.8)
Data missing	1	

(continues)

Table 1 (continued)

Characteristics	n	% (95%CI)
Sexual IPV only		
No	928	85.5 (83.2-87.4)
Yes	158	14.5 (12.5-16.7)
Minor physical IPV		
No	587	54.1 (51.0-57.0)
Yes	499	45.9 (43.0-48.9)
Severe physical IPV		
No	938	86.4 (84.2-88.2)
Yes	148	13.6 (11.7-15.8)

95%CI: 95% confidence interval; BMI: body mass index; SD: standard deviation.

6.2% were overweight/obese ($BMI \geq 25$). Approximately one-third (34.3%) of the young adult women reported they had experienced physical and/or sexual violence from their husbands in the 12 months preceding the survey: 29% reported physical violence only in the absence of sexual violence, 14.4% reported sexual violence only in the absence of physical violence (Table 1).

The bivariate analyses revealed several significant differences in the experience of IPV across various sociodemographic groups (Table 2). Age at marriage was significantly associated with all forms of IPV. Higher percentages of women who were married before 18 years of age experienced significantly more physical IPV, physical and/or sexual IPV, minor physical IPV, and severe physical IPV. Women whose height fell below the cutoff of 145cm were also more likely to report physical IPV, sexual IPV, physical and/or sexual IPV and severe physical IPV. Physical IPV, physical and/or sexual IPV, minor physical IPV and severe physical IPV were significantly associated with the BMI of women. A higher percentage of underweight women reported experiencing IPV than the normal and overweight/obese category (Table 2).

Results from multivariate analyses indicated that undernutrition or overnutrition/obesity was associated with all the forms of IPV (Table 3). Underweight ($BMI < 18.50$) women were 1.39 times, 1.48 times, 1.31 times, and 2.11 times more likely to report the experience of physical IPV, physical and/or sexual IPV, minor physical IPV, and severe physical IPV, respectively, than normal weight range women ($BMI 18.5-24.99$). However, overweight/obese ($BMI \geq 25.00$) women were significantly more likely to report physical IPV (OR = 1.45; 95%CI: 1.12-2.88), sexual IPV (OR = 1.29; 95%CI: 1.02-3.24), physical and sexual IPV (OR = 1.51; 95%CI: 1.09-2.88), minor physical IPV (OR = 1.24; 95%CI: 1.01-2.26), and severe physical IPV (OR = 2.39; 95%CI: 1.35-7.19) than normal weight range women. Moreover, results also indicated that women who married at 18 years old or later, were member of the highest wealth quintile, and had secondary or higher education were significantly less likely to experience violence from husbands. Urban residents reported to experience more physical IPV (OR = 1.53; 95%CI: 1.09-2.13), physical and/or sexual IPV (OR = 1.38; 95%CI: 1.08-1.98), minor physical IPV (OR = 1.81; 95%CI: 1.31-2.50), and severe physical IPV (OR = 1.89; 95%CI: 1.24-2.88) than rural residents (Table 3).

Discussion

This article presents the association between being both under- and overweight and experience of IPV among young adult Bangladeshi women aged 15-24 years. Our study findings indicate that one-third of young adult women are suffering from chronic undernutrition and 6.2% of women are overweight or obese. Young Bangladeshi women are more likely to be underweight than older women but less likely to be overweight/obese^{4,6,16}. These findings suggest that both underweight and overweight/obese women coexist and accounted for two-fifths among young adult Bangladeshi women. The fact that this population is often at the bottom of the food chain, with little or no decision-making power

Table 2

Descriptive statistics of young adult Bangladeshi women aged 15-24 years, by different form of intimate partner violence (IPV) experienced. *Bangladesh Demographic Health Survey (BDHS), 2007 (N = 1,086).*

Characteristics	Physical IPV only % (95%CI)	Sexual IPV only % (95%CI)	Physical and/or sexual IPV% (95%CI)	Minor physical IPV % (95%CI)	Severe physical IPV % (95%CI)
Age at marriage (years)					
< 18	31.3 (28.3-34.3)	15.0 (12.8-17.4)	36.2 (33.1-39.4)	49.6 (46.3-52.8)	15.0 (12.8-17.4)
≥ 18	17.5 (12.6-23.7)	12.4 (8.3-18.1)	24.3 (18.5-31.1)	27.1 (21.1-34.1)	6.8 (3.9-11.4)
p-value	< 0.001	0.382	0.002	< 0.001	0.004
Number of household members					
2-4	34.9 (31.0-38.9)	14.7 (12.0-17.9)	39.2 (37.0-45.1)	52.8 (48.6-56.9)	17.6 (14.6-20.9)
5-6	25.7 (20.8-31.3)	14.6 (10.8-19.2)	30.6 (25.4-36.3)	44.0 (38.2-50.0)	11.9 (8.6-16.3)
≥ 7	19.6 (15.2-24.8)	14.2 (10.5-19.0)	27.3 (22.2-33.0)	33.1 (27.6-39.0)	6.9 (4.4-10.6)
p-value	< 0.001	0.983	0.001	< 0.001	< 0.001
Children ever born					
< 2	28.3 (25.5-31.1)	14.4 (12.3-16.8)	33.7 (30.8-36.7)	44.2 (41.0-47.3)	12.8 (10.8-15.0)
≥ 2	35.8 (27.4-45.1)	15.5 (9.8-23.6)	39.4 (30.7-48.8)	61.8 (52.5-70.3)	20.9 (14.3-29.4)
p-value	0.102	0.776	0.231	< 0.001	0.019
Place of residence					
Rural	28.5 (25.2-31.9)	15.4 (12.9-18.2)	34.6 (31.2-38.2)	45.0 (41.3-48.7)	12.3 (10.0-14.8)
Urban	30.0 (31.4-41.9)	13.0 (10.0-16.7)	33.7 (29.1-38.5)	47.7 (42.7-52.6)	16.1 (12.8-20.1)
p-value	0.594	0.291	0.757	0.404	0.074
Wealth quintile					
Lowest	32.6 (26.3-39.5)	21.6 (16.3-27.9)	41.1 (34.3-48.1)	53.2 (46.0-60.1)	15.3 (10.8-21.0)
Second	34.8 (28.9-41.2)	16.7 (12.4-22.1)	40.5 (34.3-47.0)	52.9 (46.3-59.2)	16.3 (12.0-21.6)
Middle	33.0 (27.1-39.5)	12.4 (8.6-17.4)	35.8 (29.7-42.3)	52.8 (46.1-59.2)	16.1 (11.7-21.5)
Fourth	27.2 (21.8-33.4)	12.4 (8.7-17.4)	31.7 (25.9-3.0)	42.2 (35.9-48.7)	14.2 (10.2-19.4)
Highest	18.1 (13.6-23.6)	10.6 (7.2-15.3)	23.5 (18.4-29.4)	30.1 (24.4-36.3)	6.6 (4.0-10.6)
p-value	0.001	0.012	< 0.001	< 0.001	0.015
Respondents' education					
No education	39.4 (32.2-47.0)	16.4 (11.5-22.7)	44.2 (36.8-51.8)	56.4 (48.3-63.7)	24.2 (18.3-31.3)
Primary	32.8 (28.0-37.8)	17.3 (13.7-21.6)	37.6 (32.7-42.8)	53.1 (47.9-58.2)	16.8 (13.2-21.0)
Secondary and higher	23.7 (20.4-27.4)	12.3 (9.8-15.2)	29.3 (25.7-33.2)	38.5 (34.5-42.5)	8.6 (6.5-11.2)
p-value	< 0.001	0.085	0.001	< 0.001	< 0.001
Currently working					
No	28.2 (25.2-31.4)	13.4 (11.2-15.9)	32.5 (29.3-35.7)	43.8 (40.8-47.2)	11.7 (9.7-14.1)
Yes	31.5 (26.2-37.4)	18.1 (13.8-23.2)	40.0 (34.2-46.0)	52.7 (46.6-58.6)	19.6 (15.2-24.8)
p-value	0.307	0.039	0.026	0.012	0.001
Ever use modern contraceptives					
No	20.7 (16.2-26.0)	12.9 (9.3-17.5)	25.8 (20.8-31.4)	31.6 (26.2-37.5)	11.7 (8.3-16.2)
Yes	31.6 (28.5-34.8)	15.1 (12.8-17.6)	36.9 (33.7-40.2)	50.4 (46.9-53.7)	14.2 (12.0-16.7)
p-value	0.001	0.389	0.001	< 0.001	0.308
Respondents' height (cm)					
< 145	35.6 (28.9-42.7)	22.8 (17.2-29.4)	43.3 (36.3-50.6)	52.2 (44.9-53.4)	18.9 (13.8-25.2)
≥ 145	27.7 (24.9-30.7)	12.9 (10.8-15.2)	32.5 (29.5-35.6)	44.7 (41.5-47.9)	12.6 (10.5-14.9)
p-value	0.035	0.001	0.005	0.064	0.024
Respondents' BMI					
Underweight	31.6 (27.0-36.6)	15.0 (11.6-19.0)	37.0 (32.1-42.1)	48.3 (43.1-53.5)	16.1 (12.6-20.3)
Normal	28.6 (25.3-32.1)	14.9 (12.4-17.8)	34.0 (30.5-37.7)	45.9 (42.1-49.7)	13.1 (10.7-15.8)
Overweight/Obese	19.4 (11.7-30.4)	9.0 (4.1-18.2)	22.4 (14.0-33.7)	34.3 (24.1-46.2)	6.0 (2.3-14.3)
p-value	0.009	0.407	0.028	0.048	0.039

95%CI: 95% confidence interval; BMI: body mass index.

Table 3

Adjusted odds ratios (OR) from multivariate logistic regression analyses examining the association between maternal body mass index (BMI) and maternal experience of intimate partner violence (IPV).

Characteristics	Physical IPV only	Sexual IPV only	Physical and/or sexual IPV	Minor physical IPV	Severe physical IPV
	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)
Respondents' BMI					
Normal	1.00	1.00	1.00	1.00	1.00
Underweight	1.39 * (1.09-2.71)	1.41 (0.58-3.43)	1.48 ** (1.12-2.75)	1.31 * (1.03-2.11)	2.11 * (1.40-6.19)
Overweight/Obese	1.45 ** (1.12-2.88)	1.29 * (1.02-3.24)	1.51 ** (1.09-2.88)	1.24 ** (1.01-2.26)	2.39 ** (1.35-7.19)
Age at marriage (years)					
< 18	1.00	1.00	1.00	1.00	1.00
≥ 18	0.59 * (0.37-0.91)	0.56 ** (0.41-0.92)	0.65 ** (0.42-0.89)	0.51 ** (0.34-0.74)	0.61 * (0.39-0.98)
Number of household members					
2-4	1.00	1.00	1.00	1.00	1.00
5-6	1.93 *** (1.33-2.78)	0.89 (0.57-1.39)	1.48 * (1.06-2.07)	1.92 *** (1.39-2.65)	2.46 ** (1.42-4.26)
≥ 7	1.19 (0.78-1.82)	0.92 (0.56-1.52)	1.01 (0.68-1.47)	1.27 (0.87-1.85)	1.36 (0.73-2.56)
Children ever born					
< 2	1.00	1.00	1.00	1.00	1.00
≥ 2	1.29 (0.81-2.03)	0.96 (0.53-1.73)	1.18 (0.75-1.84)	1.76 * (1.35-2.75)	1.62 (0.93-2.83)
Place of residence					
Rural	1.00	1.00	1.00	1.00	1.00
Urban	1.53 * (1.09-2.13)	0.98 (0.64-1.51)	1.38 * (1.08-1.98)	1.81 *** (1.31-2.50)	1.89 ** (1.24-2.88)
Wealth quintile					
Lowest	1.00	1.00	1.00	1.00	1.00
Second	1.08 (0.71-1.65)	0.77 (0.47-1.27)	1.10 (0.67-1.49)	0.94 (0.83-1.40)	1.09 (0.63-1.89)
Middle	1.04 (0.73-1.50)	0.62 (0.38-1.01)	0.86 (0.61-1.22)	1.09 (0.77-1.53)	1.15 (0.71-1.85)
Fourth	0.84 (0.58-1.22)	0.74 (0.45-1.20)	0.80 (0.56-1.14)	0.71 (0.50-1.01)	1.09 (0.67-1.77)
Highest	0.45 ** (0.29-0.71)	0.71 * (0.57-0.98)	0.53 ** (0.35-0.81)	0.37 *** (0.25-0.56)	0.42 ** (0.22-0.80)
Respondents' education					
No education	1.00	1.00	1.00	1.00	1.00
Primary	0.77 * (0.52-0.96)	1.12 (0.67-1.58)	0.79 * (0.54-0.92)	0.65 ** (0.42-0.87)	0.64 ** (0.40-0.96)
Secondary and higher	0.61 * (0.45-0.80)	0.70 * (0.54-0.93)	0.67 * (0.51-0.88)	0.53 *** (0.39-0.75)	0.53 ** (0.35-0.81)
Currently working					
No	1.00	1.00	1.00	1.00	1.00
Yes	0.97 (0.71-1.33)	1.35 (0.92-1.98)	1.21 (0.91-1.63)	1.16 (0.86-1.56)	1.52 * (1.03-2.25)
Respondents' height (cm)					
< 145	1.00	1.00	1.00	1.00	1.00
≥ 145	0.76 (0.53-1.08)	0.52 ** (0.35-0.79)	0.67 * (0.48-0.94)	0.81 (0.57-1.14)	0.73 (0.47-1.15)

95%CI: 95% confidence interval.

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$.

about food distribution in the household, could lead to food security issues and may contribute to their poor nutritional status. Moreover, women aged 15-24 years need adequate nutrients to support fast physical, mental and emotional growth. The unawareness of their own health and nutritional status could be another reason associated with their poor nutritional status. A study from South-Asia showed that the prevalence of overweight-obesity among women of reproductive age has risen between 1996 and 2006 and overweight-obesity was positively related to age²². This study also found that 29% and 14.5% of young

adult women experienced physical and sexual violence, respectively. These findings are similar to the earlier findings of experiencing IPV among women between 15-49 years in Bangladesh¹⁶, including young adults¹⁵. Comparing with the earlier study¹⁵, the likelihood of experiencing IPV decreases with age, which suggests that as women grow older, their roles as mothers become more prominent than their roles as wives, and they achieve a certain status at the household and community levels²³.

The results from nationally representative data set provide evidence for a relation between malnutrition and IPV experience among young adult Bangladeshi women. Underweight woman experienced more physical and physical and/or sexual IPV than a normal weight range woman. In this South-Asian region, the withholding of food is a documented form of abuse that is likely correlated with the perpetration of physical violence²⁴. This withholding of food through psychological or emotional abuse resulted in insufficient intake of diet among these populations and could mediate the relation between physical IPV and nutrient deficiencies that may cause undernutrition. Furthermore, IPV is strongly associated with a woman's inability to make decisions for herself and her family, including the choice of types and quantities of food that a woman prepares as she cares for herself and her children²⁵. This might also explain how IPV reflects the nutritional status among these women.

Another explanation underpinning the association between IPV and undernutrition is that the relation between IPV and nutritional deficiencies may also involve a mediating effect of psychological stress. A study in South-Asia documented that women who experience IPV tend to have higher levels of psychological stress²⁶, which could also be related to underweight status. Psychological stress increases oxidative stress⁸, a term used to describe a number of chemical reactions that produce free radicals and other organic molecules capable of damaging living tissue, risk factors for undernutrition. However, chronic stress also increases metabolic rate and energy expenditure^{9,27}, a process that could cause weight loss in a person with a fixed and limited caloric intake. That psychological stress may be associated with undernutrition in a low-income country is consistent with the result of a longitudinal study from the United Kingdom, which found that, under stressful conditions, lean subjects tend to lose weight²⁸.

Our findings also indicated that overweight/obese women experienced significantly more IPV (all the forms of IPV) than normal range women. Experience of sexual IPV is significantly associated with overweight/obese women, which corroborates the findings of the study of Egypt¹⁴. Thus, Bangladeshi young adult women who experience sexual IPV may experience adverse psychological after-effects, which leads to excess energy intake or a more sedentary lifestyle, and ultimately to a higher chance of being obese. Most research in food-rich environments in industrialized nations has documented a link between chronic stress and obesity mediated by metabolic changes²⁹ or behavioral adjustments³⁰ that promote abdominal adipose tissue deposition. Findings from a longitudinal study in the United Kingdom indicated that, under stressful conditions, overweight subjects tend to gain weight²⁸. Thus, young adult Bangladeshi women, who are on the verge of the normal nutritional range (BMI ≥ 23.0 and < 25.0), may gain weight due to stressful conditions in the family after experiencing sexual IPV and enter the overweight nutritional status.

Although our findings indicate important insights into the nutritional status and its association with IPV in Bangladesh, the results should be interpreted in the light of several limitations. First, the findings rely on self-reported data and retrospective accounts, which are vulnerable to recall bias and desirability bias. The second limitation is that a single item of sexual IPV precludes a more thorough documentation of marital sexual abuse; use of multiple behaviorally specific questions about the type or types of sexual abuse inflicted could have elicited a greater number of reports of sexual IPV³¹. Third, the BDHS is a cross-sectional observational survey, which prevents us from inferring that domestic violence causes malnutrition among these women. Indeed, the causal pathway may be reversed, with violence being a husband's reaction against his malnourished wife. Longitudinal designs that can address causality or cross-sectional path or mediational models using exposure to IPV and outcome variables will be more relevant than mere correlational designs. Fourth, as there is a strong psychological element used in this study, it will be more informative to shine some light on these women's feelings. However, BDHS survey did not evaluate the participating subjects for mood symptoms or negative moods, such as depression or stress. Finally, the sample of this study is limited to young adult Bangladeshi women and should not be generalized to women of other age groups and other countries, though the association found in this study is consistent with those of the few studies of this type.

Despite these potential limitations, our findings reveal a significant relationship between IPV and malnutrition among young adult Bangladeshi women. The findings strongly suggest that malnutrition in such settings may partly have its roots in the subordination of women. Future longitudinal studies are needed to investigate the influence of potential mechanisms mediating the relationship between IPV and undernutrition and overnutrition among these populations.

Contributors

J. Ferdos originated the study design, data analysis, and writing. Md. M. Rahman contributed to study design, statistical analysis, data interpretation, and provided critical revisions of the article.

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Resumo

O estudo explora as relações entre desnutrição e violência entre parceiros íntimos (VPI) em uma amostra de 1.086 mulheres adultas jovens (15-24 anos) de Bangladesh, usando dados transversais do Bangladesh Demographic Health Survey (BDHS) de 2007. Cerca de um terço (33,4%) dessas mulheres relataram terem sofrido VPI física e/ou sexual, 14,5% apenas VPI sexual e 29% apenas VPI física praticada pelo marido. Cerca de 32,6% das mulheres adultas jovens eram desnutridas ($IMC < 18,5$), enquanto 6,2% apresentavam sobrepeso ($IMC \geq 25$). As mulheres com baixo peso sofriram mais VPI física ($OR = 1,39$; $IC_{95\%}: 1,09-2,71$) e VPI física e/ou sexual ($OR = 1,48$; $IC_{95\%}: 1,12-2,75$) quando comparadas às mulheres eutróficas. Os resultados também indicam uma associação positiva entre sobrepeso/obesidade e todas as formas de VPI. Os achados indicam que a exposição à VPI tem um papel significativo na experiência das adultas jovens de baixo peso e com sobrepeso/obesidade e confirmam que são necessários programas e políticas nutricionais e de saúde para as mulheres jovens de Bangladesh.

Violência por Parceiro Íntimo; Desnutrição; Peso Corporal; Índice de Massa Corporal

Resumen

Este estudio explora la relación entre la malnutrición y violencia doméstica (IPV por sus siglas en inglés) entre 1.086 mujeres adultas jóvenes bangladesíes, con una edad entre 15-24 años, usando datos de un estudio transversal, procedentes del 2007 Bangladesh Demographic Health Survey (BDHS). Cerca de un tercio (33,4%) de las mujeres adultas jóvenes sufrieron violencia física y/o sexual IPV, 14,5% sufrieron sólo sexual IPV, y un 29% sufrieron sólo física IPV por parte de sus maridos. Cerca de un 32,6% de las mujeres adultas jóvenes se encontraban por debajo del peso ideal ($IMC < 18,5$) y un 6,2% tenían sobrepeso ($BMI \geq 25$). Las mujeres con el peso por debajo del apropiado sufrían más violencia física IPV ($OR = 1,39$; $IC_{95\%}: 1,09-2,71$) y física y/o sexual IPV ($OR = 1,48$; $IC_{95\%}: 1,12-2,75$), en comparación con el rango normal de mujeres. Los resultados también indican una asociación positiva entre sufrir sobrepeso/obesidad y todas las formas de IPV. Los hallazgos del estudio indican que sufrir IPV tiene un papel significativo en el peso por debajo del peso ideal y con sobrepeso/obesidad de las mujeres adultas jóvenes y el apoyo a salud de estas mujeres más jóvenes, que necesitan tanto programas de nutrición, como políticas especialmente dirigidas a mujeres que sufren violencia doméstica.

Violencia de Pareja; Desnutrición; Peso Corporal; Índice de Masa Corporal

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