NUTRITIONAL STATUS, HYPERTENSION, PROTEINURIA AND GLYCOSURIA AMONGST THE WOMEN OF RURAL BANGLADESH

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Abstract

Methods and materials – A rural community was purposively selected in Sreepur thana of which four villages were selected randomly. The total population of all age groups was 14,165 and the eligible reproductive aged females were 3,820 based on age between 15 and 45 years. Sample size was estimated at 573 (15%) of the eligible participants depending on the availability of time and logistic support. The study design was to use a questionnaire related to age, education, family income, housing and sanitation. Height (ht), weight (wt) and blood pressure (BP) were measured. Urine protein was estimated. Clinical examinations noted the presence of anemia, jaundice, edema, ring-worm, scabies, goiter, xerophthalmia and gum bleeding. Body mass index (BMI) was calculated to determine their obesity or wasting.

Results – Overall, 501 volunteered and the response rate was 87.4%. Of these participants, 30.3% were illiterate. Almost all of them had supply of tube-well water and 68% had sanitary latrines. Their mean (±SD) age was 30.2 (±2.9)y, wt was 46 (±8.5)kg, ht was 149 (±5)cm and BMI was 20.5 (±3.5). The poor women had significantly lower BMI than the rich [20.0 (2.93) vs. 21.2 (4.1), ($p < 0.05$)]. Their mean (±SD) systolic and diastolic blood pressure were 116 (±17) and 73 (±12) mmHg, respectively. The prevalence of hypertension, proteinuria and glycosuria were 16.6, 10.4 and 2.6%, respectively. The frequencies of proteinuria and ring-worm were significantly higher among the poor than among the rich social class (both cases $p < 0.05$). Regarding nutritional deficiency, about half of the rural women (52%) had some form of signs relating to Vit-A deficiency and 65% had signs of Vit-B complex deficiency either in the form of glossitis or of angular stomatitis or both.

Conclusions – Despite time and logistic constraint, the study revealed that most of the rural women had a poor nutritional status (80% had BMI < 23.0). The prevalence of hypertension and glycosuria were also not negligible. Vitamin deficiency disorders (xerophthalmia), gum-bleeding, angular stomatitis were also very high among them. The study also revealed that the poor social class had a significantly lower BMI, higher proteinuria and higher skin problems than their rich counterparts.

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Indexing Words: Rural women, nutritional status, health problems, developing countries, RFST

Introduction

The rural people not only have less access to health care facilities but also lack awareness regarding personal and family hygiene. In addition the rural females are subject to gender discrimination and neglect starting from birth to their motherhood. This study addressed to explore the nutritional status of rural women of reproductive age along with other ailments like hypertension, proteinuria and glycosuria. There are several published reports on the prevalence of hypertension and diabetes mellitus in the adult (≥20y) population of India and Bangladesh[1-3]. It was also reported that there has been an increasing trend of these non-communicable diseases in the developing countries[4]. Additionally, some investigators opined that the more disadvantaged section of the population were more prone to develop hypertension and diabetes. It is

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also known that the rural women of Bangladesh are the disadvantaged class with regard to their social position, employment, wage, nutrition and health care[5]. Usually the rural women are not aware about hypertension, diabetes and kidney diseases. In this study a few specific health problems were selected like hypertension, proteinuria, glycosuria and nutritional status that may affect not only women as mothers but also their fetuses and lactating infants. Thus, the study was undertaken to assess the nutritional status and to determine the prevalence of hypertension, proteinuria and glycosuria among the women of reproductive age in the rural community.

Materials and Methods

Four villages in Sreepur union of Gazipur district was purposively selected as a part of the residential field site training (RFST) programme for the IM-3 students in the month of April 2007. For this cross sectional study, a questionnaire was made that included age, sex, education, occupation, income and family history of non-communicable diseases. The total population of all age groups in these 4 villages was 14,165 and the eligible reproductive aged females were 3,820. All women of age 15 to 49 years were considered eligible. Sample size was estimated at 573 (15%) of the eligible participants depending on the availability of time and logistic support. After taking verbal consent, each eligible participant was interviewed. Then, weight and height was measured for estimating body mass index (BMI = wt in kg /ht in mt sq.). Systolic and diastolic blood pressure was measured using a mercury manometer after 10 minutes rest. Each participant was clinically examined for the signs of Vitamins and nutrient deficiency. Glucostrip was used for estimating Glycosuria and salicylic sulphonic acid for detecting proteinuria.

Statistical analysis – The prevalence rates are given in percentages. The quantitative variables (age, weight, height, calculated BMI, blood pressure were presented as means ± SD. Student's t test was used for quantitative data to determine differences between poor and rich social classes and Chi Sq was used for qualitative data to estimate association between variables. The level of significance was accepted at <0.05. SPSS version 11.5 was used for analysis of data.

Table-1: *Total population and the participants in the randomly selected 4 villages (n = 501)*

Name of villages	Total population	Reproductive age group	Participants
Shatalia	2755	711	60
Tepir Bari	4537	1137	103
Bakar Shahar	1349	495	122
Tangra	5524	1477	216
Total	**14165**	**3820**	**501**

Results

From a total of 3,820 eligible participants 501 took part in the investigation in four randomly selected villages [table 1]. The response rate was 87.4%.

Of the participating women, regarding education, only 1% women had graduation, 60% could somehow read and write and 30% were illiterate [table 2]. The provision of safe drinking water was available for 99% and 67.9% of the families had sanitary latrines. The mean ± SD monthly expenditure of the participants was BDT 5,207 ± 3,440 and family size ranged from 2-13.

Their mean age was 30.2 ± 2.9y, wt was 46 ± 8.5kg, ht was 149 ± 5cm and BMI was 20.5 ± 3.5 [table 3]. The poorer women had a significantly lower BMI than the rich women [20.0 ± 2.9 vs. 21.2 ± 4.1, ($p<0.05$)]. Their mean systolic and diastolic blood pressure were 116 ± 17 and 73 ± 12 mmHg, respectively. There was no significant difference of both systolic and diastolic blood pressure between the poor and the rich social class. The prevalence of hypertension, proteinuria and glycosuria were 16.6, 10.4 and 2.6%, respectively [table 4]. The frequencies of proteinuria

Table-2: *Characteristics of the participants in the study area*

Characteristics	Mean ± SD	Range
Age (y)	30.2 ± 9.2	15 - 49
Family expenditure per month (taka)	5207 ± 3440	700 - 25000
Family size	4.69 ± 1.68	2 - 13
Body weight (kg)	46 ± 8.5	29 - 81
Height (m)	1.49 ± .05	1.31 - 1.65
BMI	20.5 ± 3.5	13.9 – 34.7
Systolic BP (mmHg)	116 ± 17	85 – 210
Diastolic BP (mmHg)	73 ± 12	35 – 125

SD – standard deviation; BMI – body mass index (wt in kg / ht in mt sq), BP – blood pressure.

Table-3: *Socio-demographic status of the study population*

Variables	Status	Frequency	%
Marital Status	Married	459	91.6
	Unmarried	42	8.4
Menstrual History	Regular	368	73.5
	Irregular	133	26.5
Housing	Thatch	70	14.0
	Tin	428	85.4
	Concrete	3	0.6
Sanitary Latrine uses	Yes	340	67.9
	No	161	32.1
Occupation	House Wife	411	82.0
	Industrial worker	18	3.6
	School Worker	3	0.6
	Others	69	13.8
Drinking Water	Safe	499	99.6
	Not safe	2	0.4
Education	Can't read or write	152	30.3
	Can read and write	302	60.3
	Passed SSC	34	6.8
	Passed HSC	8	1.6
	Graduate	5	1.0

Table-4: *Prevalence of diseases/disorders due to deficiency*

Findings related to Non Communicable Disease	**Frequency**	**Percentage**
Proteinuria	52	10.4
Glycosuria	13	2.6
Hypertension	83	16.6
Nutritional deficiency		
Vitamin A deficiency	64	12.8
Vitamin B deficiency	62	12.4
Vitamin C deficiency (Gum bleeding)	115	23.0
Iodine deficiency	53	10.6
Symptoms related to underlying disease		
Anemia	108	21.6
Jaundice	1	0.2
Edema	54	10.8
Communicable Disease		
Ring worm	41	8.2
Scabies	34	6.8

and ring-worm were significantly higher among the poor than among the rich social class (both cases $p<0.05$).

Regarding nutritional deficiency, about half of the rural women (52%) had some form of signs related to Vit-A deficiency and 65% had signs of Vit-B complex deficiency either in the form of glossitis or of angular stomatitis or both. Of those with Vit-A deficiency, 52% complained of night blindness, 37% had Bitot's spot plus night blindness, 3% had toad skin, 2% had Bitot's spot and corneal / conjunctival xerosis. Of the vitamin B deficiency disorders, 65% presented with glossitis, 19% with angular stomatitis and 16% with both angular stomatitis and glossitis.

Discussion

The response rate (87%) was quite satisfactory. In five days, 501 subjects volunteered. It indicates that the rural women were cooperative. The study had limitations with regard to time and money allocated for the study. The cause or causal associations of proteinuria (diabetic nephropathy or nephritis, or urinary tract infection) could not be identified. Likewise, the cause (diabetes), or types of glycosuria (renal or alimentary) could not be detected.

This study attempted to explore the general health status of rural women who are almost always neglected from their early childhood. This is possibly the first study in a RFST programme that addressed the nutritional status of rural women of reproductive age and an attempt was made to determine the prevalence of hypertension, proteinuria and glycosuria among them. About one-third of these women were found to be illiterate, which is consistent to the national report[5]. Regarding nutritional status the BMI observed in this study does not differ from the previous reports[1,6]. Similarly, the prevalence of hypertension is almost comparable to other reported studies[1,3,6]. The prevalence of proteinuria could not be compared because of non-availability of data in this regard. It is also true, as mentioned that the cause(s) of proteinuria could not be detected. Same is the case with glycosuria prevalence – the cause and type of glycosuria remained undetected.

As regards the social class comparison, it is interesting to note that the prevalence of proteinuria was significantly higher among the poor women than their richer counterparts ($p<0.01$). The prevalence of dermatomycosis (ringworm) was also significantly higher among the poor class. Both these findings suggest that the poor social class is more likely to get urinary tract infection and proteinuria and dermal lesions like ringworm possibly, due to less concern or less support

of personal or family hygiene or to poorer nutrition and resistance to infection. Interestingly, the prevalence of anemia, bleeding gum, goiter, scabies and jaundice showed no difference between the poor and rich class. It is difficult to explain why there was no such difference. Possibly, a larger sample is needed to explain whether there is a true difference or, if so, why that difference is there.

Conclusion

The study revealed that most of the rural women had a poor nutritional status (80% had BMI < 23.0). Hypertension and glycosuria were frequently found but it goes undetected. Vitamin deficiency disorders (xerophthalmia, gum-bleeding, angular stomatitis) were also very high among them. It was also observed that the poor social class had a significantly lower BMI, higher proteinuria and higher skin lesions than their richer counterparts. Further study with a larger sample using adequate diagnostic tools may be undertaken to confirm these exploratory findings.

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The following students of IM-3A were involved in the study:

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Editor's Note: Residential Field Site Training (RFST) is an academic and university requirement for the 4th year MBBS students. Students' exposure to the rural community under this programme can be utilized in an effective and proper teaching environment. This paper shows that proper utilization of the allotted time can yield the desired goals. It is a culmination of the integration of teaching and practical application of research methods, community health problems, report writings, presentations, and group efforts. One such report was published in the last issue and we will publish further articles on RFST programs.