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Original Research Article

Breakfast Skipping and Health Status among University Professionals in Bangladesh

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ABSTRACT

Objective: Regularly skipping breakfast put people at high risk of a number of conditions – such as high blood pressure, diabetes, obesity and high cholesterol. The objective of this study was to evaluate the prevalence of breakfast skipping and associated health risk among university professionals in Bangladesh.

Study design: A cross-sectional descriptive study design was performed on a total of 120 university professionals, who were randomly selected in two distinct universities in Dhaka city, Bangladesh. Factors associated with breakfast skipping were identified using multivariate regression models.

Result: Results indicated that approximately 35.8% of the sample skipped breakfast. Gender was the only statistically significant sociodemographic variable, with females skipping at over two times the rate of males (OR 95% CI: 1.9; 0.90-4.13). The reasons given for skipping breakfast were almost exclusively habit (39.5%), work pressure (23.2%) and lack of time (16.2%). Skippers were significantly more likely to be obese (OR 2.4; 95% CI 1.02- 5.7), less energetic (OR 3.5; 95% CI 1.5-8.6), associated with health problems (OR 4.3; 95% CI 1.8- 10.17) and eating tendency of fast food (OR 2.5; 95% CI 1.13 - 5.5). Gastric and heart burn (X^2=4.19, p<0.05) and high blood pressure (X^2=5.027, p<0.05) were detected among 34.9% and 27.9 % of those employees respectively identified as breakfast skippers and they showed significantly high prevalence.

Conclusion: Breakfast skipping is highly prevalent among university professionals with significant association of different health problems in Bangladesh. Health promotion strategies should be used to encourage all adults to eat breakfast regularly.

Key words: Breakfast; Healthy lifestyle; Breakfast skipping; Health status; University professionals.

INTRODUCTION

Breakfast consumption has been identified as an important factor in the nutritional well-being of adults.[1,2,3] Breakfast provides a significant proportion of total nutrient intake of the day with lower intakes of fat and higher intakes of carbohydrate, dietary fibre and certain micronutrients. [4-8] Breakfast skipping is associated with a lower diet quality and concentrated energy intakes [9] meeting two thirds of the Recommended Dietary Allowance for vitamins and minerals [10] and health-compromising behaviors in adults such as smoking, infrequent exercise, low education level, higher BMI. [11] In other words, the breakfast eaters had a higher frequency of health promoting behaviors, such as feeling of energetic in their work, having more stress management skills, less

tendency to eat unhealthy snacks in midmorning and possessing of less health problems. Regular consumption of a breakfast meal may reduce the risk of obesity and other chronic diseases. [12-14] Positive association between skipping breakfast and overweight and obesity is globally observed regardless of cultural diversity among countries. [15,16] Many studies have reported that ready-to-eat breakfast cereal [17] and other fiber-rich foods [18-21] are associated with lower risk of obesity. [22-24] Most cross-sectional studies that have examined the association between breakfast habits and measures of obesity in adults report an inverse association, even with adjustment for potential confounding factors. [25-28] Prospective studies also examined the associations between breakfast habits and body weight. [29-33] Breakfast consumption is related to satiety and reduced risk of type 2 diabetes [34,35] and possibly of cardiovascular disease [36,37] and cancer. Preliminary breakfast feeding studies suggest that eating, rather than skipping, breakfast may reduce fasting total and LDL cholesterol, [38] oxidized LDL, and serum triglycerides. Men who skipped breakfast had a 27% higher risk of coronary heart disease compared with men who did not. [39]

Breakfast is considered as the most important meal of the day for various reasons, but most of the adult used to skip their breakfast possessing detrimental health sequel. This is first documented study in Bangladesh to determine the prevalence of breakfast skipping by adults working in university. The main objective of this study was to evaluate the eating pattern of breakfast among employees working in two distinct universities of Bangladesh.

MATERIALS AND METHODS

A cross-sectional descriptive study design was carried out from April to May, 2013 among university employees attending in two established universities of Bangladesh located at Dhaka, Bangladesh: Daffodil International University and Jahangirnagar University. A total number of 120 university employees were randomly selected from two universities involving 60 from each. Employees involved in academic work schedule were included in this study and those who were in administration were excluded from the study. Equal number of male and female participants was selected for the interview. All of the selected participants were made well informed of the study aims and informed written consent was obtained from the subjects. Interviews were conducted in the faculty room. A semi-structured questionnaire was used to collect data regarding their age, sex, weight, height, BMI level, meal pattern, eating pattern of breakfast, skipping of breakfast, reason behind skipping, energy level in working hour, eating pattern of fast food in midmorning, presence of health problems etc. Employees completed the questionnaire anonymously and used about 30 minutes to complete the scale. They could decline to participate in the project at any time while completing the questionnaire.

Measures: Data were collected by a self-administered questionnaire. The questionnaire was composed as follows:

Demographic characteristics were age and sex.

Weight status was determined by Body Mass Index (BMI). The height and weight were measured by self-report and the BMI was calculated by the standard formula: weight (kg) divided by height (m^2). BMI was plotted on the age and sex-specific cutoff points to define the different body sizes of respondents according to nationally accepted guidelines. A BMI greater than or equal to 25 is overweight and a BMI greater than or equal to 30 is obesity. Ranges from 18.5 to 24.9 of BMI ensure the normal level.

Statistical analysis

SPSS 15.0 version was used for statistical analyzes. The risk (odds ratio and chi square) of health status and associated 95 percent confidence intervals was estimated using simple logistic regression analysis. Multivariable logistic regression modeling was used to control all risk estimates for covariates. Possible covariates, participants' health-promoting behaviors and demographic characteristics, were evaluated as potential confounders of the relationship between eating patterns and overweight status.

RESULT

Table 1: Characteristics and eating pattern of breakfast among respondents

Age	Respondents (%)
<20	0
21-25	4(3.3%)
26-30	75(62.5%)
>30	41(34.2%)
Sex	Respondents (%)
Male	60(50%)
Female	60(50%)
Weight status(BMI Level)	Respondents (%)
Underweight	2(1.7%)
Normal weight	54(45%)
Overweight	35(29.2%)
Obesity	29(24.1%)
Meal pattern	Respondents (%)
1 meal/day	34(28.3%)
2 meal/day	45(37.5%)
3 meal/day	36(30%)
More than 3 meal	5(4.2%)
Breakfast skipping	Respondents (%)
Yes	43(35.8%)
No	77(64.2%)
Breakfast skipping by sex	Respondents (%)
Male	17(39.5%)
Female	26(60.5%)
Reason of skipping	Respondents (%)
Work pressure	10(23.2%)
Habit	17(39.5%)
Unable to prepare	3(7.7%)
Away from family	6(14%)
Lack of time	7(16.2%)
Energetic up to lunch time	Respondents (%)
Yes	93(77.5%)
No	27(22.5%)
Eating habits of fast food	Respondents (%)
Yes	67(55.8%)
No	53(44.2%)
Presence of Health problems	Respondents (%)
Yes	70(58.3%)
No	50(41.7%)
Category of health problems	Respondents (%)
Gastric and heart burn	29(41.4%)
High blood pressure	21(30%)
Fatigue	20(28.6%)

A total number of 43(35.8%) respondents reported to skip their breakfast at regular basis. Female respondents (60.5%) skipped breakfast more compared to their male respondents (39.5%). Most of the respondents (37.5%) reported to have two major meals per day where 28.3% and 30% reported to have one and three major meals per day respectively. University employees skipped their breakfast having different reasons. The main reasons for breakfast skipping were: habit (39.5%), work pressure (23.2%), lack of time(16.2%),away from family(14%), unable to prepare(7.7%). 77.5% respondents reported to feel energetic up to lunch time where 22.5% reported to fell less energetic in their work time. Most of the employees (55.8%) reported to have different types of fast food items timed between breakfast and lunch. Around 58% reported to have different levels of health problems. Most common health problems reported by university employees were: Gastric and heart burn (41.4%), high blood pressure (30%), fatigue (28.6%). Table 1 shows the characteristics and eating pattern of breakfast among respondents.

Unadjusted odd ratio for breakfast skipper by having less energy level, health problems, eating habits of fast food and obesity risk was established in this study. Feeling of less energetic in work level up to lunch time was significantly associated with breakfast skipping (OR 3.5; 95% CI 1.5-8.6). Occurrence of different health problems (OR 4.3; 95% CI 1.8- 10.17), eating tendency of fast food between breakfast and lunch time (OR 2.5; 95% CI 1.13 - 5.5) and obesity risk (OR 2.4; 95% CI 1.02- 5.7) were also significantly associated with breakfast skipping. Table 2 shows unadjusted ORs for breakfast skipper by having less energy level, health problems, eating habits of fast food and obesity risk.

Table 2: Unadjusted ORs for breakfast skipper by having less energy level, health problems, eating habits of fast food and obesity risk.

	Having less energy level in work		Occurrence of health problems		Eating habits of fast food		Risk of obesity	
Breakfast skipper	n	OR(95% CI)	n	OR(95% CI)	n	OR(95% CI)	n	OR(95% CI)
	27	3.5; 1.5-8.6	70	4.3; 1.8-10.17	67	2.5;1.13 - 5.5	29	2.4, 1.02- 5.7

Gastric and heart burn was detected among 34.9% of those employees identified as breakfast skippers and they showed significantly high prevalence (X^2=4.19, p<0.05). High blood pressure was also detected among 27.9% of those employees identified as breakfast skippers and they showed significantly high prevalence (X^2=5.027, p<0.05). Fatigue was also detected among and 16.3% of those employees identified as breakfast skippers and they did not show significantly high prevalence. Table 3 shows distribution of breakfast skippers according to the presence or absence of specific health problems.

Table 3: Distribution of breakfast skippers according to the presence or absence of specific health problems.

Character	Present/absent	Breakfast skipper	Statistical values	ORs (95% CI)
Gastric and heart burn	Present	15(34.9%)	X^2=4.19,p<0.05	2.4; 1.02-5.66
	Absent	28(65.1%)		
High blood pressure	Present	12(27.9%)	X^2=5.027,p<0.05	2.9;1.1 -7.67
	Absent	31(72.2%)		
Fatigue	Present	7 (16.3%)	Not significant at p<0.05	0.9; 0.35-2.61
	Absent	36(83.7%)		

Gastric and heart burn was two times more prevalent in breakfast skippers compared to breakfast eaters (OR 95% CI: 2.4; 1.02-5.66). High blood pressure was also two times more prevalent in breakfast skippers (OR 95% CI: 2.9; 1.1 -7.67).

DISCUSSION

Breakfast contributes to the quality and quantity of a person's daily dietary intake and breakfast skipping has been linked to inadequate dietary nutrition with several health problems. The results of the current study support the hypothesis that breakfast skipping is more prevalent among adult professionals in Bangladesh with significant association of specific health problems. The prevalence of breakfast skipping was estimated as 35.8% by university professionals in Bangladesh. A Cross-sectional survey (Nicklas TA,et al. 1998) of young adults in Bogalusa, La showed the prevalence of breakfast skipping with 37% [40] where in this present study, the prevalence of breakfast skipping among adult population of Bangladesh is also in high with 35.8% which was close to the result of the study on France adults. Another study showed the prevalence of breakfast skipping with 22% [27] where a high prevalence was also observed in this study.

The sociodemographic characteristics of breakfast skippers have also been investigated. Female respondents (60.5%) skipped breakfast more(OR 95% CI: 1.9; 0.90-4.13) compared to their male respondents (39.5%) in this study. Similarly, another study (Shaw, Mary E. 1998) [41] showed that female respondents skipped breakfast more compared to their male respondents.

In this study it was reported by skippers that the main reasons for skipping were: habit (39.5%), work pressure (23.2%), lack of time (16.2%), away from family (14%), unable to prepare (7.7%). Similarly, Singleton and Rhoads (1982) [42] found that the most common reasons given for skipping

were no time (43%) and not being hungry or habit of skipping (42%); less common reasons included being on a diet to lose weight, not feeling good, no one to prepare food, not liking the food served, and food not being available. Lack of time and habit privilege the reason behind breakfast skipping most often.

In this study obesity risk (OR 2.4; 95% CI 1.02- 5.7) was significantly associated with breakfast skipping. Several other studies including Stockman et al [43] and Berkey et al [44] have yielded similar results, showing that inconsistent or irregular breakfast eating was significantly associated with being overweight. In one study, increased meal frequency (meals per week) was associated with a 45% reduced risk for obesity [odds ratio = 0.55 (95% CI = 0.33, 0.91)] in adults, [29] whereas skipping breakfast appeared to be associated with a significant increase in risk of developing obesity (Cho S,et al 2003). [17] In a study [45] (Huang CJ,et al 2010), the unadjusted odds ratio of obesity in breakfast skippers was 1.23 (95% CI: 1.06, 1.43) where in this study the unadjusted odds ratio of obesity in breakfast skippers was 2.4 (95% CI :1.02,5.7) which was twice in the sense. Another study (Ma Y, et al 2003) [29] showed that skipping breakfast was associated with increased prevalence of obesity (odds ratio = 4.5, 95% confidence interval: 1.57, 12.90), where this study also showed a high prevalence (OR 2.4; 95% CI 1.02- 5.7).

Our study revealed that health-promoting behaviors differ between the regular breakfast eater and breakfast skipper groups. In this study, it was evaluated that breakfast skippers feel three times less energetic (OR 3.5; 95% CI 1.5-8.6) in working period compared to those who never skip their breakfast. Skipping breakfast also triggers bad eating habits during the day, as cravings ensue and quick-fix fast foods are often eaten. Occurrence of different health problems (OR 4.3; 95% CI 1.8- 10.17), eating tendency of fast food between breakfast and lunch time (OR 2.5; 95% CI 1.13 - 5.5) were also significantly associated with breakfast skipping. Niemeier HM, et al[46] showed that fast food consumption and breakfast skipping increased parallel in recent years where this study also suggests that fast food consumption was two times(OR 2.5; 95% CI 1.13 - 5.5) higher in breakfast skippers compared to non-skippers.

Occurrence of different health problems was four times more (OR 4.3; 95% CI 1.8- 10.17) prevalent in breakfast skippers compared to breakfast eaters. Most common health problems reported by university employees were: Gastric and heart burn (41.4%), high blood pressure (30%) and fatigue (28.6%). Gastric and heart burn was detected among 34.9% of those employees identified as breakfast skippers and they showed significantly high prevalence (X^2=4.19, p<0.05). A cross sectional study [47] (Verdalet-Olmedo M,et_al 2012) showed that omission of breakfast is significantly associated with gastric cancer. In this study it was also evaluated that gastric or different types of digestive tract disorder was common among participants. High blood pressure was also detected among 27.9% of those employees identified as breakfast skippers and they showed significantly high prevalence (X^2=5.027, p<0.05). Sakata K, et al showed that breakfast skippers tended to have higher blood pressure and a higher serum total cholesterol level than non-skippers.[48] This study also suggests that high blood pressure was common among breakfast skippers with relatively high prevalence (X^2=5.027, p<0.05). In this study, it was found that high blood pressure was two times more prevalent in breakfast skippers (OR 95% CI: 2.9; 1.1 -7.67) compared with breakfast eaters.

The results of this study may be an indication that the high prevalence of breakfast skipping among university professionals in Bangladesh can be threatening considering its detrimental health effects. Several studies showed that skipping breakfast may put people on the fast track to weight gain, heart disease, osteoporosis, irritability or mood swings, menstrual irregularity, low energy levels, low memory and hormonal stress. This study also reports that breakfast skipping is in high among adult professionals in Bangladesh and skippers were found to be associated with obesity, high blood pressure, stress, low energy level and poor eating habits.

This study only evaluated the prevalence of breakfast skipping and some of its associated health effects in Bangladeshi adults. Unless evaluating the all possible effect of breakfast skipping in both the short and long term health of adult professionals, it will not be able to determine the overall risk associated with breakfast skipping. Considering this issue, the next step of this study will be to follow up respondents for a period of time to evaluate the adverse health outcome associated with breakfast skipping.

The study has several limitations and this influence the generalizability of the findings. First, since the data were collected through a self-reporting measure, it is possible that the findings were affected by a social desirability response set and the study is cross-sectional which does not infer causal relationships Second, breakfast eating was only counted from Monday to Friday; seven-day measurements or in-depth interviews might increase the reliability and validity of our understanding of this phenomenon. Third, we did not explore the content or quality of breakfast. Furthermore, we examined only two universities located in Dhaka, Bangladesh, caution should be taken to generalize the data for other university outside Dhaka city.

CONCLUSION

Regular breakfast intake is strongly associated with reduced risk of a spectrum of metabolic conditions such as diabetes, cardiovascular disease, obesity etc. This study provides evidence of increasing trend of breakfast skipping in adults of Bangladesh where skipping correlates with being associated to different health problems, obesity, low energy level and with less health-promoting behavior. Considering such a high prevalence of breakfast skipping with associated adverse health outcome in university professionals of Bangladesh, these findings can provide baseline data for taking the initiative to monitor and make people aware regarding the importance of breakfast eating.

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