A Comparative Study of Breakfast Consumption among Inner Mongolia Medical Students in 2011 and 2013

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Abstract. The study aim was to explore changes in breakfast consumption between 2011 and 2013 at the Inner Mongolia Medical University, China. We conducted a census of the students who resided on campus at the Inner Mongolia Medical University in 2013. Current study was based on our previous study in 2011. We compare the breakfast prevalence among all students resided on campus in 2011 and 2013. The students who participated in both the 2011 and 2013 censuses were involved in self-matching and we researched the changes in the students' breakfast status in those 2 years. Overall breakfast consumption was at 70.4\% in 2013, which is slightly lower than it was in 2011. The self-matching students had a decreased prevalence in 2013 compared to 2011. Considering the lower breakfast prevalence in the 2013, targeted policies and interventions should be developed for the student population in the Inner Mongolia area of China.

Introduction

Breakfast consumption is important for maintaining adequate nutrient intake and health [1-3]. Breakfast eaters have a higher frequency of health promoting behaviors, such as feeling more energetic, increased stress management skills, less likely to eat unhealthy midmorning snacks, and have fewer health problems [4]. In Delhi, India, a dose–response relationship was observed, such that the overall prevalence of overweight and obesity among urban school-aged adolescents who consumed breakfast daily (14.6\%) was significantly lower than those who only sometimes (15.2\%) or never (22.9\%) consumed breakfast [5]. Among adults, skipping breakfast is associated with a lower quality diet and health-compromising behaviors such as smoking, infrequent exercise, low education level, and higher BMI [6].

Although it is generally agreed that breakfast is the most important meal of the day [7], there has been a gradual increase in the proportion of children and adolescents who report that they regularly skip breakfast [8]. A decline in regular breakfast consumption by children has also been reported in Asia [9-10]. For instance, approximately 10\% of school-aged children and adolescents in Hong Kong were reported to skip breakfast at least 4 times a week [9]. Furthermore, in Malaysia, it has been found that breakfast is the most frequently missed meal [10].

The health and well-being of university students is important, not only because of their potential societal influence, but also because many lifestyle-related attitudes and habits are formed at this stage and persist across the lifespan [11-14]. This is especially the case with students attending medical universities. Over the past few years, a great deal of research has been done on the relationship between doctors’ and medical students’ health and how this affects their patients’ health care. It has become clear that healthy physicians set a strong example for their patients and have an improved ability to motivate their patients to change unhealthy behaviors [15-18].

Many studies have examined the association between breakfast consumption and nutritional adequacy, body weight, and academic performance among children and adolescents [8]. A recent research of breakfast consumption among students indicate that the association between consumption, socio-demographic factors, and lifestyle behaviors [19]. This study examined the socio-demographic factors lifestyle behaviors associated with breakfast consumption among Inner Mongolia University medical students in 2013 in comparison with 2011.
Methods and Measures

Study Design

The initial planning of this study was based on our previous study at the Inner Mongolia Medical University in 2011 [20]. Specifically, we conducted a census at the Inner Mongolia Medical University, recruiting students who resided on campus at the time of the survey in 2013. In the current study, we also followed up with the students who participated in the 2011 survey. The survey was a self-administered questionnaire.

Setting and Participants

This study was conducted on students attending five faculties of the Inner Mongolia Medical University including: Clinical Medical, Public Health Administration, Medicine Information Management (PHAMIM), Medicine, Traditional Chinese Medicine, Mongolian Medicine, and others. It should be noted that the length of undergraduate education for PHAMIM and Medicine is 4 years, while the length of undergraduate education for other faculties is 5 years. Students in the Faculty of Clinical Medicine (accounting for almost half of all students in the first 3 years of the study) undertake primarily theoretical education in their first 3 years and internships in hospitals in the last 2 years, whereas students belonging to other faculties continue to study in the college for their last 2 years [21]. After arrangement with the co-coordinator, students from each faculty were approached in the classroom. A member of our study group orally explained the benefits of the study to participants. Students were also assured that information obtained would be confidential and their participation would not affect their course progress.

Measures

The demographic factors assessed included gender, school grades, monthly expenses, residence, and faculty. In addition, participants’ breakfast consumption habits were studied as behavioral factors.

Consistent with our previous study, breakfast was defined as including all foods eaten from the time a student got up in the morning until 45 minutes after the start of school [22]. Participants were divided into two breakfast consumption categories: those who reported not eating breakfast on either day eating breakfast on one of two days (breakfast skippers), or those who ate breakfast on both days (breakfast eaters) [23].

Self-perception of breakfast consumption habits were based on the following question: “How do you evaluate your physical condition, relationships, appetite, sleeping, learning, and getting along with classmates?” A two-point scale including (1) good and (2) poor was used to evaluate self-perceived breakfast consumption habits.

Statistical Analysis

Frequencies for all variables related to breakfast consumption were counted and cross-tabulated using percentages. Univariate and multivariate logistic regression models were used to assess the factors associated with breakfast eating. In the binary logistic regression models, eating breakfast was introduced as the dependent variable and all other study factors were included as independent variables. The results are presented as crude odds ratios (COR), 95% confidence intervals (95% CI), and adjusted odds ratios (AOR). The difference in breakfast consumption prevalence between 2011 and 2013 was tested using Pearson’s chi-square test. Differences in students’ characteristics who participated in both 2011 and 2013 were assessed using the chi-square test. Data were recorded using EpiData (Epi-Data Association, Denmark; v3.1). Statistical analysis was carried out using the Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA, v13.0).

The level of significance was set at 0.05.

Ethical Approval

Ethical approval for the study was obtained from the ethics committee of Inner Mongolia.
Results

Demographic Characteristics

Of the 6109 participants, 6093 students responded to the question about eating breakfast (response rate = 99.7%). There were a total of 1662 male (27.3%) and 4431 female (72.7%) respondents.

Prevalence of Breakfast Consumption

The overall prevalence of breakfast consumption was 70.4%. Prevalence of breakfast consumption was almost 1.5 times higher among females than males. Additionally, the prevalence of breakfast consumption among students with monthly expenses of >1000 (CNY) was almost 60%. Furthermore, the prevalence of breakfast consumption was lowest among students in the PHAMIM faculty.

Factors Associated with Breakfast Consumption

Based on analyses, monthly expenses were negatively associated with students’ breakfast consumption. Lower grade, poor sleeping and learning were risk factors for decreased breakfast consumption. In addition, PHAMIM students had a nearly 3 times higher risk of skipping breakfast compared to those in the faculty of clinical medicine. Univariate and multivariate analyses both revealed no association between breakfast consumption and residence.

Differences in Breakfast Consumption between 2011 and 2013

Male students’ breakfast consumption was found to differ between the two years. Specifically, compared to 2011 male students, 2013 male students reported they were more likely to skip breakfast (2011, 58.3%; 2013, 53.2%). In addition, the prevalence of eating breakfast was reduced from 65% to 51.8% among students in the PHAMIM faculty.

Differences in Breakfast Consumption of Follow-up Students between 2011 and 2013

The prevalence of breakfast consumption among follow-up students decreased from 77.2% to 72.4% between 2011 and 2013. Students with monthly expenses of >1000 (CNY) were higher in 2013 than in 2011. The proportion of students with poor sleeping increased from 5.5% in 2011 to 12.1% in 2013, while an increase from 3.8% to 12.1% occurred among students with poor learning.

Discussion

In the current study, we found that the overall 2013 prevalence of breakfast consumption is 70.4% at Inner Mongolia Medical University. This is slightly lower than in 2011 [20]. The prevalence of breakfast consumption in the United States and Europe is between 70% and 90% [24]. Thus, our results are similar to the lowest range of results in Western countries.

Our study found that male students are unlikely to eat breakfast. Specifically, the prevalence of breakfast consumption among males was significantly lower than females. However, there is some opposing research within the field [25-26]. In particular, it was reported that females were more likely to skip breakfast than males because of concerns about gaining weight [25]. Although it reduced daily energy intake, they believed that skipping breakfast was an effective method of dieting [26]. However, in our survey, we found that breakfast consumption was not associated with being overweight among female Inner Mongolia Medical University students [27]. Thus, our current research does not conflict with these results. Several studies have found that the habitual skipping of breakfast was associated with poor food choices and unfavorable nutrient intake [28-29]. The reason why male students do not like to eat breakfast may indicate that male students had a more negative perception of dietary balance and healthy diet [30]. Likewise, males are less likely than females to report healthier food choices [31]. Additionally, our study shows that the prevalence of breakfast consumption among male students was lower in 2011 than 2013. Our study also revealed that more male students had lower grades and higher monthly expenses in 2013 compared to 2011.
Lower grades were found to be a risk factor, and monthly expenses were negatively associated with students’ breakfast consumption. Students with lower grades were also from the youngest age group at the university. Congruently, some studies reported that younger age groups have weaker health perceptions than more mature students [30, 32]. In addition, we speculate that students with higher monthly expenses are unwilling to eat breakfast so that they have additional money to eat more snacks than those whose lower monthly expenses [20]. Evidence has reported that snackers are unwilling to eat breakfast because they do not feel hungry in the morning [33]. When the follow-up students that ate breakfast in 2011 and skipped breakfast in 2013 were analyzed, we observed that students with higher monthly expenses also increased. Thus, the proportion of students with higher monthly expenses increased between 2011 and 2013, which led to the lower 2013 prevalence.

In both our current and previous study, we also confirmed that poor sleeping and learning were risk factors for decreased breakfast consumption [20]. In other words, students with poor sleeping and learning do not tend to eat breakfast. When we analyzed students who ate breakfast in 2011 and skipped it in 2013, we observed that the proportion of students with poor sleeping and learning increased. Consequently, this is a reason for the lower prevalence of breakfast consumption in 2013. It is also noteworthy that the prevalence of breakfast consumption is lowest among PHAMIM students than those in other faculties, and that breakfast consumption was lower among this group in 2013 than 2011. Since these students are future public health managers and should set a strong example for others, this situation should be addressed [21].

As a whole, our study results indicated that the prevalence of medical students’ breakfast consumption decreased. As a result, more effort should be made to encourage healthy daily breakfast consumption [25]. One approach could be to create healthy breakfast intervention programs for male students and those with lower grades. Public health managers should also pay increased attention to students with poor sleeping and learning. Overall, it is important to improve students’ awareness of the importance of breakfast consumption.

Conclusions

In general, the present study shows that the prevalence of breakfast consumption was lower in 2013 than 2011. Thus, breakfast consumption should be encouraged, especially in groups who are more likely to skip breakfast: males, those with lower grades and higher monthly expenses, and PHAMIM students. Our study findings could help health care professionals develop targeted policies and programs for students in the Inner Mongolia area of China.

Human rights

Informed consent was obtained for experimentation with human subjects. The privacy rights of human subjects must always be observed.

Authorship

YW, AB and Y-D designed the study and wrote the first draft of the manuscript and conducted the statistical analysis. YF-J and BZ performed the data collection and took part in statistical analysis. CS-L and YL-W provided critical input into the data analysis and interpretation of the results. JS participated in conception, designed of the study and revised it critically for important intellectual content. All authors have read the draft critically to make contributions and also approved the final manuscript.

References


