

Dietary habits affecting reproductive functions in young women

Abstract

Dietary habit is one of important factors to determine their individual quality of life. During the last few decades, we proposed that skipping breakfast can affect ovarian function in young women and induce certain gynecological disorders that manifest as dysmenorrhea. We also demonstrated that the intensity of dysmenorrhea is high in those with a history of dieting in adolescence, emphasizing that dieting in adolescence has long-lasting adverse effects on the reproductive function in young women. These findings support the current notion that inadequate dietary habits influence women's quality of life not only in the present but also in the future, indicating the promoting need for adequate dietary habits among college students.

Keywords: daily habit, dysmenorrhea, irregular menses, post-adolescent women, reproductive dysfunction, skipping breakfast

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Introduction

Dietary habits in young women determine their individual quality of life (QOL) in not only the present life style but also subsequent middle or old age and should be evaluated from the perspective of total benefit throughout the entire life.^{1,2} One of the most common nutritional issues among young women is poor energy intake and/or inappropriate food selection due to dietary limitations for cosmetic purposes. In addition, it was also demonstrated that young females consuming fast and processed foods have a high incidence of dysmenorrhea along with poor general health.^{3,4} Accordingly, it is important to evaluate the present situation of eating habits in young women and estimate their influence on menstrual disorders. Irregular menstruation, dysmenorrheal and premenstrual syndrome are representative menstrual disorders.⁵ Although irregular menstruation is well known to be induced by inadequate food intake such as diet,⁶ the precise relationship between dietary habits and other menstrual disorders remain unclear. In adolescence, dysmenorrhea is frequently associated with immaturity of reproductive function,⁵ suggesting that dysmenorrhea is one of the symptoms for functional disorders. However, dysmenorrhea is also an important clinical sign suggesting organic reproductive diseases such as endometriosis and uterine myoma,⁷ which significantly influence QOL during the subsequent reproductive age. Consequently, information whether or not college students in the post-adolescent stage still have dysmenorrhea is very important.

Skipping Breakfast

To estimate the relation between breakfast habits and menstrual and intestinal disorders, we conducted a questionnaire survey of young women and analyzed their relationship. This study showed that young women who skip breakfast have a significantly higher degree of dysmenorrhea symptoms compared with that of those who eat breakfast.⁸ Based on clinical evidence that dysmenorrhea is an important initial symptom for organic gynecological diseases such as endometriosis, this study for the first time reported the possibility that skipping breakfast can induce certain gynecological disorders that manifest as dysmenorrhea.⁸

Considering that's kipping breakfast should be re-evaluated from the perspective of female reproductive function in young women, we continued a longitudinal investigation about the above issue by conducting a questionnaire. As a result, we obtained the same information, warning the harmful effects of skipping breakfast on reproductive function in female college students who are undergoing post-adolescent maturation processes.⁹

Later, the population that skips breakfast was shown to have a significantly higher incidence of other adverse dietary habits such as high intakes of fast foods and processed foods. We observed that the groups with high intakes of fast foods and processed foods had a significantly higher incidence of dysmenorrhea, suggesting that dietary habits can affect reproductive function.³ The subsequent study showed a significantly higher incidence of irregular menstruation in the group that skipped breakfast when the definition of regular menstrual cycle was strictly limited to a 26–32 day-cycle. These findings also suggested that skipping breakfast can affect ovarian function in young women.¹⁰

The group that skipped breakfast showed a tendency to have constipation, suggesting that skipping breakfast may generate some stress in young women.⁸ Notably, despite the absence of a significant difference in body mass index, there was a significantly higher population with a self-perception of poor general health among the group that skipped breakfast. In contrast, the groups with high intakes of fast foods and processed foods did not complain of self-perceived poor general health or increased episodes of irregular menstruation. Although the precise mechanisms are unclear, starvation during the initial steps of daily activity is an important factor that causes reproductive or non-reproductive disorders.⁹ From these findings, we presented the need for a long-term follow-up study of subjects who routinely skip breakfast focusing on the psychological, nutritional and medical impact of this life style.¹⁰

Past history of dieting

In recent years, adolescents in Japan have tended to try to lose body weight.^{11,12} In accordance with previous reports, this study showed that more than 60% of college students used diet control in

order to reduce weight and about 40% students had undergone dietary restriction in adolescence.¹³ This is partially caused by the discrepancy between body mass index and self-recognition of appropriate body weight in young women. The students undergoing a diet were shown to have a higher incidence of irregular menstruation, supporting that dietary limitation induces ovarian dysfunction. Among the majority of these students, their body mass index values were within or under the normal range.¹³

Notably, when we classified the population into students currently on a diet and those with a history of dieting in adolescence, students with a history of previous dieting showed a significant increase in dysmenorrhea despite the absence of a current increase in irregular menses or decrease in body mass index. Namely, the frequency of irregular menstruation is increased in young women who are currently on a diet, while the intensity of dysmenorrhea is high in those with a history of dieting in adolescence. This tendency was observed throughout the recent 6 years examined.¹³ These findings suggest that diet in adolescence has long-lasting adverse effects on reproductive function in young women, proposing a novel hypothesis that diet limitation in adolescence becomes a trigger for the subsequent development of organic gynecologic diseases.

Conclusion

Recently, diversified diet has been shown to influence various aspects of individual QOL.^{14,15} Our study showed that skipping breakfast can affect ovarian function and induce certain gynecological disorders that manifest as dysmenorrhea in young women. We also demonstrated that the intensity of dysmenorrhea is high in those with a history of dieting in adolescence, providing important cautionary evidence that dieting in adolescence has long-lasting adverse effects on the reproductive function in young women. Consequently, a follow-up survey of students currently having inadequate dietary habits or those with a history in adolescence should be performed to reevaluate the effects of dietary habits on reproductive function. We also proposed a novel hypothesis that diet limitation in adolescence becomes a trigger for the subsequent development of organic gynecologic diseases. This concept supports the current notion that inadequate dietary habits may influence women's QOL not only in the present but also in the future, indicating the promoting need for adequate dietary habits among college students.

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Conflict of interest

The author declares no conflict of interest.

References

1. Mitchison D, Hay P, Slewa-Younan S, et al. Time trends in population prevalence of eating disorder behaviors and their relationship to quality of life. *PLoS One*. 2012;7(11):e48450.
2. Poggiogalle E, Lubrano C, Gnessi L, et al. Reduced sleep duration affects body composition, dietary intake and quality of life in obese subjects. *Eat Weight Disord*. 2016;21(3):501–505.
3. Fujiwara T, Sato N, Awaji H, et al. Skipping breakfast adversely affects menstrual disorders in young college students. *Int J Food Sci Nutr*. 2009;60 Suppl 6:23–31.
4. Nazni P. Association of western diet & lifestyle with decreased fertility. *Indian Journal of Medical Research*. 2014;140 Suppl:S78–81.
5. Deligeoroglou E, Creatsas G. Menstrual disorders. *Endocr Dev*. 2012;22:160–170.
6. Carpenter SE. Psychosocial menstrual disorders: stress, exercise and diet's effect on the menstrual cycle. *Curr Opin Obstet Gynecol*. 1994;6(6):536–539.
7. Fauconnier A, Chapron C. Endometriosis and pelvic pain: epidemiological evidence of the relationship and implications. *Hum Reprod Update*. 2005;11(5):595–606.
8. Fujiwara T. Skipping breakfast is associated with dysmenorrhea in young women in Japan. *Int J Food Sci Nutr*. 2003;54(6):505–509.
9. Fujiwara T, Nakata R. Skipping breakfast is associated with reproductive dysfunction in post-adolescent female college students. *Appetite*. 2010;55(3):714–717.
10. T Zilberter, EY Zilberter. Breakfast: to skip or not to skip? *Front Public Health*. 2014;2:59.
11. Fujiwara T, Nakata R. Young Japanese college students with dysmenorrhea have high frequency of irregular menstruation and premenstrual symptoms. *Open Med Inform J*. 2007;1:8–11.
12. Fujiwara T, Nakata R. Current problems of food intake in young women in Japan: their influence on female reproductive function. *Reprod Med Biol*. 2004;3(3):107–114.
13. Fujiwara T. Diet during adolescence is a trigger for subsequent development of dysmenorrhea in young women. *Int J Food Sci Nutr*. 2007;58(6):437–444.
14. El Ansari W, Stock C, Mikolajczyk RT. Relationships between food consumption and living arrangements among university students in four European countries – a cross-sectional study. *Nutr J*. 2012;24: 11:28.
15. Fujiwara T, Nakata R. Smartphone usage during meals is a potential risk for weight gain in post-adolescent female students. *Integr Food Nutr Metab*. 2016;3(5):424–426.