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Research Article

Associations between the symptoms of gastroesophageal reflux disease and dietary and lifestyle behavior among young Korean adults: a preliminary cross-sectional study

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Objectives: Gastroesophageal reflux disease (GERD) is a clinical condition caused by esophageal tissue damage resulting from the reflux of stomach or duodenal contents. An increasing number of GERD cases have been reported recently; however, research on this population, especially young adults, is lacking. This study aimed to investigate the dietary and lifestyle factors associated with GERD symptoms in young Korean adults.
Methods: A total of 202 individuals (19–34 years old) living in Gwangju were surveyed using a questionnaire to examine their general characteristics, lifestyle, and dietary behaviors. GERD symptoms were investigated using the gastroesophageal reflux disease questionnaire (GerdQ). The participants were grouped into normal (GerdQ score ≤ 4) and caution (GerdQ score ≥ 5), and their characteristics were analyzed according to the group.
Results: The findings suggested 15 participants (7.4%) belonged to the GERD caution group. More non-office workers were in the caution group than in the normal group ($P < 0.05$). The participants' smoking, physical activity, sleep duration, and pillow height were not significantly different between the GERD phenotypes; however, the caution group consumed alcohol more frequently than the normal group ($P < 0.001$). The analyses of the participants' eating behaviors revealed that the frequency of overeating, late-night snacking and chocolate consumption was significantly higher in the caution group ($P < 0.001$).
Conclusion: Lifestyle and dietary behaviors were associated with GERD symptoms in young Korean adults. Further studies with larger cohorts are required to confirm these findings.

Keywords: eating; food intake; gastroesophageal reflux; Korean

INTRODUCTION

Gastroesophageal reflux disease (GERD) is defined as a set of symptoms associated with tissue damages in the esophagus caused by the reflux of the stomach or duodenal contents [1]. According to big data analyses of the Health Insurance Review and Assessment Service [2], the total number of cases of GERD (code: K21) increased by approximately 6.1% from 4.58 million in 2019 to 4.86 million

in 2021. Additionally, the number of patients in their 20s increased from 389,162 to 467,973, and those in their 30s rose from 532,964 to 574,936 during the same period, resulting in annual prevalence increase of approximately 20.3% and 7.8%, respectively from 2019 to 2021. The prevalence rates among individuals in their 40s–50s and those aged 60 and older were consistently higher, around 11% and 14%, respectively, compared to the 20s–30s group. While these higher rates remained stable, the prevalence in the younger group, in their 20s–30s, has shown a gradual upward trend [2]. Therefore, further studies on the strategies for GERD care and prevention in this young population are required.

GERD is mainly caused by abnormalities in the sphincter that tightens the stomach and esophagus to prevent the reflux of stomach contents into the esophagus; a decrease in pressure, an increase in stomach contents, and an increase in pressure inside the stomach and abdominal pressure are also known to be associated with the disease. Heartburn and acid reflux are typical symptoms of GERD, and some patients experience atypical abdominal pain, indigestion, nausea, bloating, and belching [3]. Treatment of GERD aims to relieve pain, reduce acid reflux, heal wounds, and prevent complications and recurrence. Therapeutic approaches were performed in two steps, lifestyle modification and medication, considering the patient's medical history and severity [4]. Proton pump inhibitors are the primary medication for GERD; however, some patients do not respond to treatment, and multiple therapeutic trials have been conducted. GERD easily recurs but can progress to ulcers, Barrett's esophagus, and further malignancy. Therefore, changes in lifestyle, dietary behavior, and medications are essential for the treatment and prevention of GERD [5].

Earlier studies suggested that several lifestyle habits, including cigarette smoking and alcohol consumption, lower the pressure on the esophageal sphincter. Alcohol consumption is associated with increased reflux symptoms and esophageal exposure to gastric acid [6]. The symptoms of GERD are also associated with tobacco use [7, 8]. Dietary behavior is significantly associated with GERD, including consumption of caffeinated drinks, carbonated soda, fat-rich foods, chocolate, and sour and savory foods [9]. Additionally, eating fast and overeating can lead to excessive secretion of stomach acid, which damages the esophageal mucosa, leading to GERD [10].

Unhealthy lifestyles and dietary habits related to GERD are evident in younger population. According to 2021 the National Health and Nutrition Examination Survey reports, approximately 64% of people in their 20s–30s had alcohol at least once a month, which was the highest in the entire age group [11]. Additionally, 20% of those young adults are currently smoking tobacco (including those who smoked five or more packs of cigarettes in their lifetime) and this ratio was the highest among the entire population [11]. The young population also had more fatty foods (e.g. ramen, fried chicken/strips), sweets, carbonated drinks, and coffee, which lower the pressure on the lower esophageal sphincter (LES), and further their dietary quality index scored lowest in the population [11, 12]. This dietary behavior could be one of the risk factors of GERD, yet majority of studies performed in the hospital based with a case-control study design [7, 13, 14]. Research regarding such young adults in their 20-30s and general population is limited.

Therefore, this study aimed to examine the association between GERD symptoms, lifestyle, and dietary behaviors in young Korean adults. This study analyzed young Koreans living in Gwangju Metropolitan City to ascertain 1) the prevalence of GERD cases using a questionnaire and 2) the differences in lifestyle, dietary behavior, and intake between GERD phenotypes. This study provides preliminary evidence for understanding lifestyle and dietary behaviors for the prevention and management of GERD in young Korean adults.

METHODS

Ethics statement

All participants were volunteered and were free to stop the study anytime. Informed consent was obtained from individual. This study was approved by the Institutional Review Board of Chonnan National University (IRB No: 1040198-221018-HR-124-02).

1. Study design

This study was designed as a preliminary cross-sectional study. The details of study was described according to

STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) statement, available at https://www.strobe-statement.org/.

2. Participants

The study included young adults aged 19–34 years living in Gwangju Metropolitan City, Korea. Overall, 250 individuals were recruited for the study. Among them, 202 who completed the questionnaire were included in the analysis. Due to the potential alteration in lifestyle and dietary behavior post-diagnosis, cases defined by medical doctors were excluded from the study. Due to a purpose of the study, a preliminary trial, this study was performed with a limited number of individuals.

3. Data collection of participants' general and lifestyle characteristics

Study participants' sex, age, marital status, living type, monthly income, occupation, and medical history of GERD were surveyed. Their height and weight were also investigated by self-report and used as body mass index (BMI; kg/m^2). Obesity class was defined using BMI, following the rules of the Korean Society of Obesity Study: Underweight (< 18.5 kg/m^2), Normal (18.5–22.9 kg/m^2), Overweight (23–24.9 kg/m^2), Obesity (≥ 25 kg/m^2) [15]. Other lifestyle factors including the use and quantity of tobacco and alcohol, sleep duration, and pillow height were also recorded. Physical activity was also investigated using the International Physical Activity Questionnaire and was presented as the metabolic equivalent of task (MET-h/week) [16, 17].

4. Data collection of dietary behavior and intake

A literature review did not reveal any existing survey specifically addressing eating behaviors related to GERD in the general Korean population. Therefore, dietary habits and intake information were collected using a modified version of a questionnaire from a previous Korean study [18]. The questionnaire was designed to examine the weekly frequency of the following types of foods: five food groups commonly consumed by Koreans and three unhealthy food groups: fatty foods, instant foods, and fast foods. Additionally, based on a literature review [6, 19], the consumption frequency of five additional types of foods known to worsen GERD was also investigated: chocolate, carbonated drinks, coffee, tea, and fruit juice. Lastly, dietary habits such as meal regularity, meal duration, meal frequency, overeating, eating out, snacking, and late-night meals were assessed. Participants selected from the following options: Meal regularity (per week: very irregular [≤ 1 day], irregular [2–3 days], regular [4–5 days], very regular [6–7 days]); meal duration (minutes: < 10, 10–20, 20–30, ≥ 30); meal frequency (per day: 1, 2, ≥ 3); overeating (per week: none, 1–2, 3–4, ≥ 5); eating out (excluding work meals, including delivered food: none, 1–3/month, 1–2/week, 3–4/week, 5–6/week, daily); snacking (between-meal snacks, per week: none, 1–2, 3–4, 5–6, daily); late-night meals (after-dinner snacks: none, 1–3/month, 1–2/week, > 3/week).

5. Data collection of GERD symptoms

To investigate the GERD symptoms, the Korean version of the gastroesophageal reflux disease questionnaire (GerdQ) was applied [20, 21]. GerdQ is the initial tool used to determine the severity of GERD symptoms in patients who have not previously been treated for upper gastrointestinal symptoms when they first visit a primary healthcare provider to guide diagnosis and treatment.

The GerdQ consists of four potential symptoms of GERD (heartburn, acid reflux, sleep disturbance, and additional medications without a doctor's prescription) and two additional symptoms (upper abdominal pain and nausea) associated with diseases other than GERD. If the participants had one or more of the following symptoms, they scored one for each (heartburn, acid reflux, sleep disturbance, or medications). However, as described above, upper abdominal pain and nausea could indicate issues other than GERD and were not considered. GerdQ scores ranged from 0 to 12, with higher scores indicating the severity of GERD. Participants were divided into two groups based on their scores. If the subject's GerdQ is ≤ 4, then belongs to the normal, otherwise caution group.

6. Statistical analyses

All statistical analyses were performed using IBM SPSS Statistics 25.0 (IBM Co.). The reliability of the questionnaire was tested using the Cronbach's alpha. The coefficient for lifestyle items was 0.95, that for the dietary

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behavior was 0.669, and for GERD symptoms was 0.801, which was all appropriate (α > 0.6). The general characteristics, lifestyle, and dietary habits of the participants were presented as frequencies and percentages. The Fisher's exact test was used to examine the differences in general characteristics according to the GerdQ score, and the Mann-Whitney *U*-test was used to analyze the differences in lifestyle, dietary habits, and food group intake. Statistical significance was set at $P < 0.05$.

RESULTS

1. GerdQ score and the general characteristics of the study participants

The GerdQ scores of all participants are presented in Table 1. The GerdQ scores of the study group ranged from 0 to 7. Among the study participants, 187 (92.6%) were in the normal group (GerdQ ≤ 4) and 15 (7.4%) were in the caution group (GerdQ ≥ 5). The prevalence of GERD in this study was comparable to that observed among Koreans in the same age group (20–30 years) [2]. No participants had a GerdQ of more than 8.

Table 2 presents the general characteristics of study

Table 1. Distribution of study participants according to GerdQ score

Classification	GerdQ score (median [interquartile range])	Min	Max	n (%)
Total	0 [0–2]	0	7	202 (100)
Normal	0 [0–3]	0	4	187 (92.6)
	0			105 (52.0)
	1			39 (19.2)
	2			25 (12.4)
	3			10 (5.0)
	4			8 (4.0)
Caution	6 [5–6]	5	7	15 (7.4)
	5			7 (3.4)
	6			5 (2.5)
	7			3 (1.5)

GerdQ, gastroesophageal reflux disease questionnaire. Min, minimum; Max, maximum.

Table 2. General characteristics of the study participants according to GerdQ score

Characteristic	Category	Total	GerdQ score group		x^2
			Normal (n = 187)	Caution (n = 15)	
Sex	Male	68 (33.7)	63 (33.7)	5 (33.3)	–0.028
	Female	134 (66.3)	124 (66.3)	10 (66.7)	
Age (year)	20–24	96 (47.5)	92 (49.2)	4 (26.7)	–1.317
	25–29	64 (31.7)	58 (31.0)	6 (40.0)	
	30–35	42 (20.8)	37 (19.8)	5 (33.3)	
Marital status	Married	24 (11.9)	20 (10.7)	4 (26.7)	–1.835
	Single	178 (88.1)	167 (89.3)	11 (73.3)	
Type of residence	Living with family	127 (62.9)	116 (62.0)	11 (73.3)	–0.869
	Living alone	75 (37.1)	71 (38.0)	4 (26.7)	
Monthly income (10,000 Korean won)	< 100	126 (62.4)	119 (63.6)	7 (46.7)	–1.251
	100–199	16 (7.9)	13 (7.0)	3 (20.0)	
	200–299	43 (21.3)	41 (21.9)	2 (13.3)	
	≥ 300	17 (8.4)	14 (7.5)	3 (20.0)	
Occupation	Office worker	146 (72.3)	139 (74.3)	7 (46.7)	–2.297*
	Non-office worker	56 (27.7)	48 (25.7)	8 (53.3)	
BMI	Underweight	24 (11.9)	22 (11.8)	2 (13.3)	–0.417
	Normal	113 (55.9)	106 (56.7)	7 (46.7)	
	Overweight	30 (14.9)	27 (14.4)	3 (20.0)	
	Obesity	35 (17.3)	32 (17.1)	3 (20.0)	

n (%).
Comparisons between normal and caution groups were made Fisher's exact tests.
BMI, body mass index; GerdQ, gastroesophageal reflux disease questionnaire.
*$P < 0.05$.

participants according to their GERD scores. The GERD phenotype was associated with the subject's type of occupation. The proportion of participants with non-office jobs was higher in the caution group (53.3%) than in the normal group (25.7%, $P < 0.05$). However, other background information, including sex, age, marital status, type of residence, household income, and obesity, were independent of the GERD phenotype.

2. Lifestyle factors related to GERD taking account of GerdQ score

The differences in lifestyle behaviors related to GERD are presented in Table 3, considering the GerdQ score group. A total of five investigated items, the frequency of alcohol drinking per week differed between two GerdQ groups. Individuals in the GerdQ caution group were more likely to drink alcohol weekly than those in the control group ($P < 0.05$). However, other lifestyle characteristics, such as the amount of alcohol and cigarettes consumed, physical activity, sleep duration, and pillow height, were not associated with the GerdQ score in this young Korean adult group.

3. Dietary behavior and consumption taking account of GerdQ score

Table 4 shows the dietary behaviors of the study participants according to GerdQ group. Seven dietary habits were investigated; among them, the frequency of overeating and late-night meals was significantly associated with the GerdQ group ($P < 0.001$). Individuals with higher GerdQ scores in the caution group reported overeating and late-night snacks more frequently than those with lower GerdQ scores in the normal group. However, there were no significant differences in the regularity of meals, frequency of meals, eating out, snacks, or mealtimes between the GerdQ groups.

Table 3. Lifestyle factors related to gastroesophageal reflux disease according to GerdQ score

Characteristic	Total (n = 202)	GerdQ score group		*U*
		Normal (n = 187)	Caution (n = 15)	
Frequency of drinking (per week)	1.5 [0–1.5]	1.5 [0–1.5]	1.5 [0–3.5]	–1.628***
Amount of alcohol (glass/day)	1.5 [0–5.5]	1.5 [0–5.5]	1.5 [0–3.5]	–0.036
Amount of smoking (cigarettes/day)	0 [0–0]	0.0 [0–0]	0.0 [0–0]	–1.290
Physical activity (MET-h/week)	9.6 [4.9–16.9]	9.6 [4.9–16.9]	10.3 [6.3–16.9]	–0.260
Sleep duration (h/day)	6.5 [6.0–7.5]	6.5 [6.0–7.5]	6.5 [6.0–6.5]	–1.481
Pillow height (cm)	7.0 [2.5–7.0]	7.0 [2.5–7.0]	7.0 [2.0–7.0]	–0.263

Median [interquartile range].
Comparisons between normal and caution groups were from Mann-Whitney *U*-tests.
GerdQ, gastroesophageal reflux disease questionnaire; MET, metabolic equivalent of task.
***$P < 0.001$.

Table 4. Dietary habits according to the GerdQ score group

Characteristic	Total (n = 202)	GerdQ score group		*U*
		Normal (n = 187)	Caution (n = 15)	
Frequency of meal (per day)	2.0 [2.0–3.0]	2.0 [2.0–3.0]	2.0 [2.0–3.0]	–0.941
Meal regularity (per week)	4.5 [2.5–4.5]	4.5 [2.5–4.5]	4.5 [2.5–4.5]	–0.770
Mealtimes (min)	15.0 [15.0–25.0]	15.0 [15.0–25.0]	15.0 [15.0–25.0]	–0.336
Frequency of overeating (per week)	1.5 [1.5–3.5]	1.5 [1.5–3.5]	3.5 [1.5–5.5]	–2.672***
Frequency of eating out (per week)	1.5 [0.5–3.5]	1.5 [0.5–3.5]	3.5 [1.5–3.5]	–1.277
Frequency of snack (per week)	7.0 [3.5–7.0]	7.0 [3.5–7.0]	7 [3.5–7.0]	–0.758
Frequency of late-night meals (per week)	0.5 [0.5–0.5]	0.5 [0.5–1.5]	5 [1.5–5.0]	–3.551***

Median [interquartile range].
Comparisons between normal and caution groups were from Mann-Whitney *U*-tests.
GerdQ, gastroesophageal reflux disease questionnaire; MET, metabolic equivalent of task.
***$P < 0.001$.

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The frequencies of weekly food group consumption are presented in Table 5. Thirteen types of foods were investigated. Among them, the frequency of chocolate and fast food intake differed between the GERD caution and normal groups; the caution group had chocolate and fast food every week more often (for both, $P < 0.001$). However, the frequency of consumption of the rest of the investigated food groups (grain, protein, fruits, vegetables, dairy foods, coffee, tea, fruit juice, carbonated drinks, fatty foods, and instant foods) did not differ between the GERD phenotypes.

DISCUSSION

Growing prevalence of GERD resulting from a Westernized diet and stress has been markedly evident in Koreans, especially in young adults in 20s–30s. This young population may be at a higher potential risk of GERD because it commonly consumes more fatty foods, snacks, soda, and caffeinated drinks, which lowers the pressure on the LES. In this study, a group of young Korean adults aged 19–34 living in Gwangju Metropolitan City were analyzed. Using the Korean version of the GerdQ, the risk groups for GERD were identified, and their lifestyle, dietary behavior, and intake were also examined. The findings suggest that the GerdQ caution group showed differences in job, alcohol consumption, dietary habits, and intake compared with the normal group.

Fifteen individuals were identified in the GerdQ caution group (7.4%) among the 202 participants, a prevalence similar to that of GERD in Koreans within the same age group [2]. Among the general characteristics of study participants, occupation type was associated with the GerdQ group. Those with severe GERD symptoms in the caution group had a higher proportion of non-office workers. In a study from UK, the risk of GERD was increased with manual work, compared to sedentary jobs [22]. In this study, jobs involved in physical labor were included in the job type of non-office work. In line with this, the current findings–higher GerdQ scores in individuals with non-office workers–are also similar to earlier findings from the UK. Furthermore, in the current study, non-office workers had a higher proportion of smokers, compared to office workers (12.5% vs. 8.9%). Although the current study did not confirm the association between the smoking and the risk of GERD, the habitual use of cigarette is a lifestyle risk factor that affect GERD symptoms [23]. Additionally, sex differences in the prevalence and risk of GERD are also well

Table 5. Frequency of intake of foods per week according to the GerdQ score group

Characteristic	Total	GerdQ score group		*U*
		Normal (n = 187)	Caution (n = 15)	
Grain	7.0 [7.0–7.0]	7.0 [7.0–7.0]	7.0 [7.0–7.0]	–1.112
Protein	7.0 [3.5–7.0]	7.0 [3.5–7.0]	7.0 [1.5–7.0]	–0.826
Fruits	3.5 [1.5–7.0]	3.5 [1.5–7.0]	3.5 [1.5–7.0]	–1.365
Vegetables	7.0 [3.5–7.0]	7.0 [3.5–7.0]	7.0 [1.5–7.0]	–0.444
Dairy foods	3.5 [1.5–7.0]	3.5 [1.5–7.0]	3.5 [3.5–7.0]	–1.128
Chocolate	1.5 [0–3.5]	1.5 [0–3.5]	3.5 [1.5–3.5]	–2.266***
Coffee	4.5 [1.5–7.0]	3.5 [1.5–7.0]	7.0 [3.5–7.0]	–1.765
Tea	1.5 [0–3.5]	1.5 [0–3.5]	1.5 [0–3.5]	–0.487
Fruit juice	0 [0–1.5]	0 [0–1.5]	0 [0–1.5]	–0.312
Carbonated drinks	1.5 [0–3.5]	1.5 [0–3.5]	1.5 [0–3.5]	–0.808
Fatty foods	1.5 [1.5–3.5]	1.5 [1.5–3.5]	3.5 [1.5–5.5]	–1.735
Instant foods	1.5 [1.5–3.5]	1.5 [1.5–3.5]	3.5 [1.5–5.5]	–1.442
Fast foods	1.5 [1.5–3.5]	1.5 [1.5–3.5]	3.5 [1.5–3.5]	–2.265***

Median [interquartile range].
Comparisons between normal and caution groups were from Mann-Whitney *U*-tests.
GerdQ, gastroesophageal reflux disease questionnaire; MET, metabolic equivalent of task.
***$P < 0.001$.

documented. Females, particularly those over 50, have a higher risk of GERD compared to males, likely due to hormonal changes [24]. In this study of young Korean adults, although more females were surveyed, no significant sex differences in GERD symptoms were observed. This may be related to the age of the study population, as the participants were primarily in their 20s and 30s. Lastly, studies have reported that psychological factors, including job satisfaction and stress, are also associated with GERD symptoms [25, 26]. Further studies considering these psychological characteristics are required to confirm the current findings.

Among the participants' general characteristics, their sex, age, marital status, residence type, household income, and degree of obesity were not associated with the GerdQ score. Inconclusive findings were evident regarding the role of these factors in the etiology of GERD; however, earlier studies have observed that obesity is associated with the risk of GERD. Excessive fat and body weight increase abdominal pressure, which may lead to GERD [27-29]. A large cohort study also suggested that the risk of GERD increases with a BMI of 3.5 kg/m^2 [30]. However, in the young Korean adult group, there was no clear association between BMI and GERD symptoms. Anthropometric measurements were not performed for this project, and information was only collected from self-reporting. This may lead to an unclear association between BMI and GerdQ score.

The frequency of alcohol consumption was associated with GerdQ score, along with other lifestyle factors, including the amount of alcohol and tobacco consumed, frequency of smoking, physical activity, sleep duration, and pillow height. Multiple studies have suggested that alcohol consumption is a risk factor for GERD as it weakens esophageal movement and pressure of LES [31]. A meta-analysis revealed that alcohol consumption is associated with GERD, and that the amount and frequency of alcohol consumption are decisive risk factors for GERD [32]. However, there are still discrepancies between these studies: Alcohol does not affect the occurrence of GERD [33], and, although the current study confirmed that frequency of alcohol consumption was associated with higher GerdQ scores, other alcohol-related behaviors did not differ between the two GerdQ score groups. Tobacco smoking is also associated with GERD. Smoking is speculated to prolong acid clearance time due to decreased salivary secretion and bicarbonate concentration, decreased pressure on the LES, and reflux symptoms due to the rapid increase in intra-abdominal pressure caused by coughing [34-37]. Several epidemiological studies have supported the risk effect of tobacco smoking on GERD pathogenesis [7, 8, 38, 39]. Furthermore, to reduce nocturnal acid reflux, maintaining the upper body position [40], and sleeping on the left side of the body [41, 42]. However, in this study, lifestyle behaviors, except for alcohol consumption, were independent of GERD. This may be due to the limited size and age of the study population (mostly in their 20s) and the relatively short exposure to such substances. Further studies with larger sample sizes and more in-depth analyses are required.

The frequencies of overeating and late-night eating were associated with the GerdQ score. Having a meal leads to stomach distension and triggers transient LES relaxation (TLESR) to emit air during the meal. A large meal can cause more stomach distension, resulting in more frequent TLESR and acid reflux [43, 44]. Most cases of GERD occurs within three hours of eating due to stomach distension [45], and a group of people who overeat experience more frequent acid reflux and esophageal exposure than those who have regular meals [46]. Although studies have reported inconclusive findings [47], it is well known that overeating, eating fast, irregular meal times, and late-night snacking are all negatively associated with the risk of GERD. Possible mechanisms of action for these eating behaviors in GERD have also been suggested. Overeating and eating quickly can damage the esophageal mucosa and delay gastric emptying, which can increase the risk of GERD and worsen its condition [48, 49]. Other studies have also reported that eating within three hours of going to bed is associated with an increased risk of GERD [50]. The current findings provide supportive evidence that overeating and late-night eating are associated with GERD severity. However, overeating and late-night eating were defined by each participant; further studies are needed to investigate this dietary behavior using a more accurate definition.

This study analyzed the dietary consumption of selected food groups known to be associated with GERD

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symptoms. The findings suggest that individuals in the GerdQ caution group consumed more chocolate and fast foods than those in the normal group. Fast foods contain a large amount of fat, which causes and worsens GERD by weakening the LES. Chocolate is also associated with weakening of the LES, leading to acid reflux [9]. This study confirmed the known dietary therapy that a reduction in the consumption of fast food and cholate could relieve GERD symptoms, and findings should be considered in the treatment practice.

Limitations

This study applied a comprehensive approach to understanding various lifestyle and dietary factors, especially in young Korean adults. The findings showed that lifestyle, dietary habits, and food intake were associated with GERD in young Koreans and could be considered disease interventions. However, the following issues may have been present in this study: First, this study employed a quantitative design using the questionnaire. This self-report document cannot provide detailed information to explain the underlying mechanisms and associated risk factors. Second, the study was performed on a group of young people living in a limited area of a large city. These study participants did not fully represent all young Korean adults. Further studies with larger cohorts from various regions and better-descriptive questionnaires are warranted.

Conclusion

This study investigated the lifestyle and dietary factors that influence GERD symptoms in young Koreans. The results showed that those at risk of GerdQ scores were more likely to have non-office occupations, frequent alcohol consumption, heavy and late-night eating, and frequent consumption of chocolate and fast food. These findings could be referred to in the understanding of GERD and the development of guidelines to prevent and improve GERD symptoms in young Korean adults.

CONFLICT OF INTEREST

There are no financial or other issues that might lead to conflict of interest.

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None.

DATA AVAILABILITY

Research data is available upon a reasonable request to the corresponding author.

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