

# Prevalence and risk factors of gastroesophageal reflux disease among female Medical students at Taif University, Saudi Arabia

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Received: October 2020; Accepted ovember 2020; Published: December 1, 2020.

Citation: Sameer A. Al-Towairqi et al. Prevalence and risk factors of gastroesophageal reflux disease among female Medical students at Taif University, Saudi Arabia. World Family Medicine. 2020; 18(12): 77-81 DOI: 10.5742/MEWFM.2020.93912

## Abstract

**Background:** Gastroesophageal Reflux Disease (GERD) is one of the most common chronic gastrointestinal disorder in adults.

**Objectives:** to determine the prevalence of GERD and its risk factors among females at Medical college of Taif university, Saudi Arabia.

**Methods:** A cross sectional study was conducted at Taif university and data was collected by a structured questionnaire. The sample was 240 female medical students who had GERD. Data about age, burning sensation pain in stomach, nausea, trouble sleeping, medication taken, having non-vegetarian diet, snacks, skipping breakfast, drinking tea, sleeping hours, smoking, and exercises were collected.

**Results:** Out of the studied students, 29.3% had symptomatic GERD. Only frequent consumption of tea or coffee had a statistically significant association with symptomatic GERD.

**Conclusion:** This study demonstrated a high GERD prevalence among studied students. There is a need to increase awareness of university students about modifiable risk factors of GERD.

**Key words:** Prevalence, risk, gastroesophageal, reflux, students, Taif

## Introduction

Gastroesophageal reflux disease (GERD) is one of the most common chronic gastrointestinal disorder in adults (1). It develops as a result of lower esophageal sphincter dysfunction and/or large hiatal hernia when the stomach contents reflux and rise up into the esophagus (2). The symptoms and complications of GERD are a result of stomach acid that touches the lining of the esophagus (2).

The standard symptoms of GERD include heartburn, regurgitation, rarely sore throat and cough, and mucosal damage (3). There are more serious complications from permanent acid reflux, for example esophagitis, esophageal strictures, and Barrett's esophagus (4,5). Several risk factors have been associated with GERD, such as analgesics intake (e.g., nonsteroidal anti-inflammatory drugs (NSAIDs), types of food, types of drinks, smoking, family history, high body mass index (BMI), physical activities, salt, or pickles consumption with meals and fast food. Accordingly, the life style of patient is the main cause of GERD (6,7).

A survey of nocturnal reflux in patients with gastroesophageal reflux disease was done in China. In this survey, outpatients with nGER were selected and relevant data were collected by using a questionnaire. The symptoms of heartburn and regurgitation were more severe during nighttime than daytime (8). In China, a study included 4,978 individuals where symptoms of heartburn and regurgitation were more severe during nighttime than daytime; age and body mass index were positively correlated with reflux severity in daytime and nighttime. This study found that a positive correlation was found between GERD severity and lifestyle factors such as smoking, high-fat diet, carbonated beverages, late supper (later than 9 pm), and snoring during sleeping, nighttime heartburn and regurgitation were positively correlated with sleep disorder (9).

In the Kingdom of Saudi Arabia (KSA), a cross-sectional study was designed to assess GERD's risk factors among the community of Saudi Arabia. In this study, the characteristics and behaviors of participants statistically significant with GERD were positive family history (39.3%), obese (body mass index > 30 kg/m<sup>2</sup>), not performing weekly regular physical activities ≥ 30 min and smoking. GERD was commonly noticed in participants on analgesics, not taking fiber, drinking tea, eating greasy and fast food (10).

Another study was done the same year to assess gastroesophageal reflux disease prevalence among school teachers of Saudi Arabia and its impact on their daily life activities. In this study, 55% of the participants reported to have GERD, 3% of them had blood group O +ve and 7.8% reported symptoms which affected their daily life activity (11). A study done in 2018 found no association between GERD's prevalence and gender, age, residence status, education level, occupation, and blood group (12).

Studies about GERD prevalence and their risk factors among female medical students in KSA are limited. This study aimed to determine the prevalence of GERD and its risk factors among females at medical college of Taif university, Saudi Arabia.

## Methodology

**Study design, setting and time frame:** A cross sectional study was conducted at Taif university from 1/ 1/2019 April to 30/ 4/2020 in Taif city, KSA.

**Sample:** Sample was 256 female medical students in all years. The inclusion criteria were all female students at the medical college of Taif university, and the exclusion criteria were all students outside the medical college university and male medical students and those who had no history of GERD.

**Data collection:** The data were collected by using structured questionnaires. The following data were obtained from each student: age in years and the Gastroesophageal reflux disease questionnaire (GERDQ). The GERDQ, enquired about burning sensation, pain in stomach, nauseated, trouble sleeping, taking medication, non-vegetarian diet, snacks, skipping breakfast, drinking tea, sleeping hours, smoking and exercise.

The third part included the Gastroesophageal reflux disease questionnaire (GERDQ). The questionnaire included 6 Questions about: (1) burning sensation behind the breast bone (heartburn), (2) stomach material going up to the throat or mouth (regurgitation), (3) pain in the middle of the upper stomach region, (4) nausea, (5) trouble getting a good night's sleep due to heartburn or regurgitation, (6) and previous need for over-the-counter medication for heartburn or regurgitation (6,7). Each of the six items questioned about their weekly frequency and each item had four options with the following score:

Score 0: Occurs on 0 days, score 1: Occurs on 1 day, score 2: Occurs on 2-3 days, and score 3: Occurs on 4-7 days. After each item score for each participant was summated, a participant with a score of 8 was considered to have GERD. In other trials, this score cutoff value was used and had strong sensitivity and precision when detecting esophagitis and excluding functional heartburn (13,14,15).

**Data analysis:** Data entry was performed by using Microsoft Excel. Data were statistically analyzed by Statistical Package for Social Sciences (SPSS) program version 25. Qualitative data were presented by frequency and percentage, while quantitative data were presented by median and standard deviation. Chi-square test was used to assess the association variables. A p-value less than 0.05 was considered as statistically significant.

**Ethical considerations:** The study was approved by the research Ethical Committee of Taif University, KSA. An electronically signed consent was obtained from every student before participating in the study.

## Result

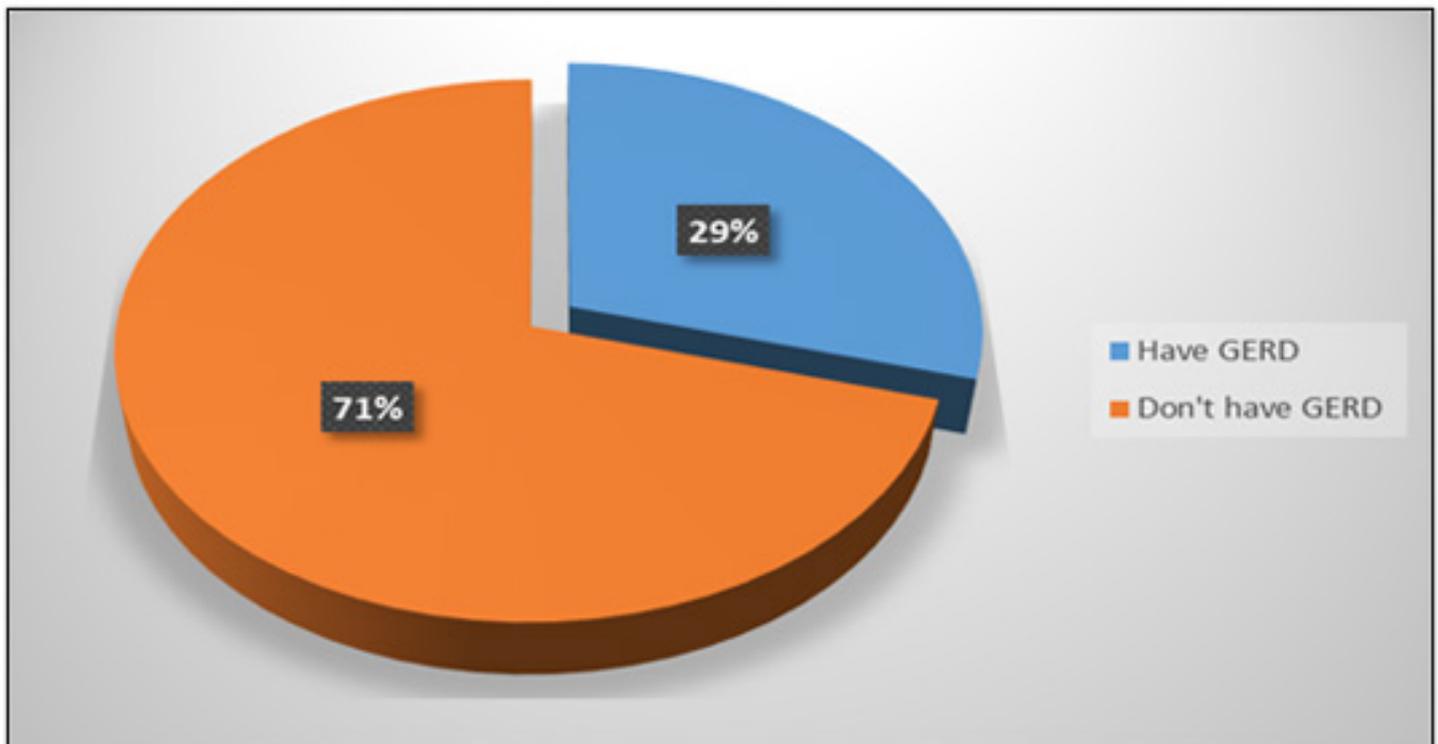
Out of 256 online questionnaires distributed, 256 were fully completed leading to a 100% response rate. The risk factors for these participants are presented in Table 1. Smokers were 14 (5.5%) while 242 (80.5%) were nonsmokers, 170 (66.7%) of them had Non-vegetarian diet, and 206 (80.5%) exercise less than 5 times per week. Of them, 180 (60.3%) sleep less than 6 hours at night

Half of the participants, 130 (50.8%) frequently skip breakfast, 140 (55.3%) eat snacks at night, and 103 (40.6%) drink tea or coffee regularly. As for medication, 67 (26.3%) had frequent use of analgesics, and antacid users were 56 (22.0%) (Table 1). Out of the 256 students, 75 (29.3%) had symptomatic GERD (Figure 1). (Table 2) shows that only frequent consumption of tea or coffee had statistical significance and association ( $P < 0.05$ ) with symptomatic GERD. However, all other risk factors did not show a statistical significance in relation to GERD ( $P > 0.05$ ).

**Table 1: Risk factor of 256 students**

Parameters	N (%)
Smoking	14 (5.5%)
No smoking	242 (80.5%)
Non-vegetarian diet	170 (66.7%)
Frequent night snacks	140 (55.3%)
Frequently skips breakfast	130 (50.8%)
Inadequate sleep	180 (60.3%)
Frequent use of analgesics	67 (26.3%)
Frequent consumption of tea or coffee	103 (40.6%)
Physical activity (per week)	
>5 times	50 (19.5%)
<5 times	206 (80.5%)
GERD symptoms	75 (29.3%)

**Figure 1: Percentage distribution of GERD prevalence among the participants**



**Table 2. Variables associated with GERD**

Risk factor	GERD (n=75)	No GERD (n=181)	P
Smoking	5 (35.71%)	9 (64.29%)	0.398
Non-vegetarian diet	57 (21.76%)	113 (78.24%)	0.128
Frequent night snacks	45 (32.14%)	95 (67.86%)	0.647
Frequently skips breakfast	46 (35.38%)	84 (64.62%)	0.125
Inadequate sleep	60 (33.33%)	120 (66.67%)	0.105
Frequent use of analgesics	24 (35.82%)	43 (64.18%)	0.178
Frequent consumption of tea or coffee	39 (37.86%)	64 (62.14%)	0.025*
Physical activity (per week) <5 times	12 (4.0%)	38 (96.0%)	0.715

\* Statistically significant

## Discussion

Gastroesophageal reflux disease (GERD) is one of the major gastrointestinal disorders affecting adults worldwide. Our study results revealed that GERD is a common problem in Taif University students with a prevalence of (29.3%).

In our study we found that consumption of tea and coffee are significantly associated with GERD symptoms 103(40.6%), however a study in Shaqra university (16) conducted on 435 participants reported 203(50%) were associated with frequent consumption of coffee (16). Another study among students of Jouf (17) university in Saudi Arabia included 500 participants and found coffee consumption was 205 (41%) in their students.

Our results show that GERD is a prevalent problem among female medical college students at Taif university as it affects about one third (29.3%) of the students. This figure is lower than the prevalence of (33.2%) reported among college students in southwestern Saudi Arabia (18), but higher than the prevalence reported in Shaqra university (23.8%), Saudi Arabia (16).

In our study, there was an association between GERD symptoms and Frequent consumption of tea or coffee ( $p < 0.025$ ), However one study done among medical students in Jeddah (4) has shown tea and coffee were not associated with symptoms of GERD.

Our results were lower than those reported in a study conducted among University students in the western region of Saudi Arabia (19), who reported a higher prevalence rate of GERD among smokers (68.3%) which was significantly higher ( $p < 0.001$ ) than that among nonsmokers (47.6%), while our study showed that smoking is an insignificant risk factor of GERD, ( $p$  value 0.398), and the prevalence of GERD in smokers was (35.71%).

In the present study, 12.6% of the college students, however, who had inadequate sleep, was not related to GERD in this study and according to a Shaqra University study[5] in 2019, inadequate sleep did not show statistical significance in relation with GERD ( $P > 0.05$ ).

The relationship between physical activity and GERD was found not significant in the current study ( $p > 0.05$ ). However, another study revealed that regular physical exercise is an associated risk factor for acid reflux. The same result was revealed from another study (20).

## Limitations

A limitation of the present study is using a self-reported questionnaire that could have a recall bias.

## Conclusion

The findings of the present study demonstrated a high GERD prevalence among studied female medical students. There is a need to increase awareness of university students about modifiable risk factors of GERD through conducting awareness campaigns.

**Acknowledgments:** the authors gratefully acknowledge the cooperation of all participants.

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