

ORIGINAL ARTICLE

Medicine Science 2020;9(4):963-6

**Evaluation of gastroesophageal reflux disease and related factors
in seasonal agricultural workers****¹Yasemin Saglan¹, ²Ugur Bilge², ³Dilek Oztas³, ⁴Ramazan Saglan²,
⁵Yunus Emre Sari⁴, ⁵Huseyin Balcioğlu⁵, ⁵Ilhami Unluoglu⁵**¹*Alpu State Hospital, Eskisehir, Turkey*²*Provincial Directorate Health of Eskisehir, Turkey*³*Yildirim Beyazıt University, Faculty of Medicine, Department of Public Health, Ankara, Turkey*⁴*Çal State Hospital, Denizli, Turkey*⁵*Osmangazi University, Faculty of Medicine, Department of Family Medicine, Eskisehir, Turkey*

Received 05 July 2020; Accepted 17 August 2020

Available online 22.10.2020 with doi: 10.5455/medscience.2020.06.119

Abstract

As gastroesophageal reflux disease affects various aspects of health and consumes considerable resources, it is important to know its prevalence in seasonal agricultural workers. This study was conducted to evaluate the frequency of gastroesophageal reflux disease and related factors in seasonal agricultural workers. The study is a cross-sectional study conducted on seasonal agricultural workers working in rural Eskişehir. 536 of seasonal agricultural workers were formed the working group. The prevalence of gastroesophageal reflux disease was evaluated with the National Institutes of Health Patient-Reported Outcomes Measurement Information System Gastroesophageal Reflux Disease Scale. Multivariate logistic regression analysis was used in multivariate analysis. Of the study group, 62.5% were female and the age of the study group ranged from 18 to 92 years. The prevalence of gastroesophageal reflux disease among seasonal agricultural workers were detected as 82.8%. Gender, age, monthly average income, and body mass index were all found as important risk factors for gastroesophageal reflux disease in our study. Also, it was detected a considerable amount of gastroesophageal reflux disease in seasonal agricultural workers. Family income status has to be improved and struggle against overweight to decrease the prevalence of gastroesophageal reflux disease in seasonal agricultural workers.

Keywords: Gastroesophageal reflux disease, seasonal agricultural workers, epidemiology**Introduction**

Gastroesophageal Reflux Disease (GERD) is defined as the escape of stomach contents to the esophagus, causing symptoms and/or complications that disturb the person. Important risk factors for GERD include lifestyle factors such as smoking, chocolate, consumption of spicy foods, consumption of cigarettes and alcohol, obesity, and the use of drugs such as aspirin and nonsteroidal anti-inflammatory drugs. GERD is a persistent gastrointestinal disease that decimated standard of life and causes an important complication like esophageal stricture, gastrointestinal bleeding, or Barrett's esophagus [1].

GERD is common in agricultural workers [2]. It is well known that working conditions, fees, and nutrition are highly deficient in seasonal agricultural workers, influencing health negatively [3].

Physical activity, weightlifting, carrying heavy loads, frequent or long slopes are contributing to the development of GERD and severe course [2]. Many of gastroesophageal reflux disease patients never seek medical attention and therefore go undiagnosed. As the disease affects various aspects of health and consumes considerable resources, it is important to know its frequency in the community [4], but the frequency of GERD in seasonal agricultural workers is more important than the community. Because, seasonal agricultural workers undergo many social, economic, and health-related problems that differ from those in the general population [5]. This study was conducted to evaluate the frequency of gastroesophageal reflux disease and related factors in seasonal agricultural workers.

Material and Methods

The study is a cross-sectional study conducted on seasonal agricultural workers working in rural Eskişehir in 2017.

The prevalence of gastroesophageal reflux disease was estimated to be 50%, the error margin was 5%, the confidence interval was 95%, the minimum number of people to be reached was calculated

***Corresponding Author:** Ramazan Saglan, Provincial Directorate Health of Eskisehir, Turkey, E-mail: dr.ramazansaglan@gmail.com

as 384 so that the reliability of the results could be accepted. 536 of seasonal agricultural workers were formed the working group.

In the study, among the inclusion criteria are volunteering to participate, 18 years of age and over, having cognitive competence to answer the questions, not having any health problems preventing the interview, understanding, and communicating in Turkish.

Refusal to participate in the study, under the age of 18, pregnancy, the patient's perception disorder, and psychiatric disorder to preventing communication, failure to answer 90% of the questions in the questionnaire are among the exclusion criteria from the study.

The questionnaire includes socio-demographic features of the person, factors that are thought to be related to GERD, and questions about the NIH PROMIS GERD Scale. The questionnaires were filled by the authors using face-to-face method interviews. This method took approximately 30 minutes.

NIH Promis GERD Scale

Individuals with burning symptoms in the retrosternal region for at least 1 day in the last week were considered as retrosternal burning positive and patients with regurgitation of foods and drinks without vomiting were accepted as regurgitation positive. Individuals with symptoms of retrosternal burning and regurgitation at least 1 week in the study were identified as GERD. Prevalence of gastroesophageal reflux disease was evaluated with the National Institutes of Health (NIH) Patient-Reported Outcomes Measurement Information System (PROMIS) Gastroesophageal Reflux Disease (GERD) Scale. This scale was developed by the

National Institutes of Health (NIH) in 2014 [6, 7], and the validity and reliability study in Turkey was conducted by Özşeker et al. The scale includes 13 questions with 5 Likert types. The scores from each question range from 0-4. Scores to be taken from this scale ranged from 0 to 52. According to the scoring system, 16 and over points were the most symptomatic, 8-15 points were moderate symptomatic, 4-7 points were mild symptomatic, 1-3 points were the least symptomatic, and 0 points were accepted as asymptomatic [8].

Data analysis

Statistical Package for Social Sciences (SPSS 15.0) was used to assess the obtained data. Chi-square test was used for univariate analysis and multivariate logistic regression analysis was used in multivariate analysis. $p < 0.05$ was taken as a significance for all variables.

Results

Of the study group, 62.5% were female and the age of the study group ranged from 18 to 92 years and the mean (SD) was 39.05 (13.59) years. The prevalence of GERD among seasonal agricultural workers were detected as 82.8%. The sociodemographic attributes of the study group are given in Table 1.

In our study, male gender (OR: 2.072; $p = 0.007$), age (> 30) (OR: 1.891; $p = 0.014$), family income status (< 500 €) (OR: 5.200; $p = 0.001$) and overweight (OR: 1.962; $p = 0.009$) were detected as significant risk factors for gastroesophageal reflux disease. Multivariate logistic regression analysis outcomes are given in Table 2.

Table 1. The sociodemographic attributes of the study group

Sociodemographic characteristics	Number (n)	Percentage (%)
Gender		
Female	335	62.50
Male	201	37.50
Age group		
≤ 30	172	32.10
> 30	364	67.90
Monthly average income		
≥ 500 €	21	3.90
< 500 €	515	96.10
Education status		
Illiterate	348	64.90
Primary school graduate	163	30.40
High school and above	25	4.70
Chronic Disease		
No	292	54.50
Yes	244	45.50
BMI (kg/m^2)		
< 25	157	29.30
≥ 25	379	70.70
Total	536	100.0

Table 2. Multivariate logistic regression analysis outcomes

Variables		GERD(%)	OR (95% CI)	p
Gender	Female	79.40	1	0.007
	Male	88.60	2.072 (1.219-3.522)	
Age group	≤30	73.30	1	0.014
	>30	87.40	1.891 (1.139-3.141)	
Monthly average income	≥500€	52.40	1	0.001
	<500€	84.10	5.200 (2.028-13.333)	
Chronic Disease	No	78.80	1	0.093
	Yes	87.70	1.540 (0.931-2.547)	
BMI (kg/m²)	<25	73.90	1	0.009
	≥25	86.50	1.962 (1.182-3.256)	

OR: Odd's ratio, CI: Confidence interval

Discussion

GERD is a common disease of the gastrointestinal tract that affects the quality of life of people with various symptoms and complications [9]. The prevalence of GERD in seasonal agricultural workers were detected as 82.8%. GERD is widespread in agricultural workers [2]. It is well known that working conditions, fees, and nutrition are highly deficient in seasonal agricultural workers, influencing health adversely [3]. It has been reported in some studies among adults in various countries that the frequency of GERD varies between 6.2-31.3% (12-14)[10-12]. The lack of standardization of the methods used to diagnose GERD may be among the reasons for the different reported results.

In the study, the frequency of GERD in males was 2.072 times higher than that of females ($p=0.007$). Similarly, researches have reported the frequency of GERD is higher in men, regardless of homeland, ethnicity, and decade [13]. Whereas Shaha et al. reported that the frequency of GERD in females was higher than in men [14] and on the other hand in Locke et al.'s study in Minnesota, there was no variation in the frequency of GERD between men and women [15]. In research handled by Sağlan and colleagues, it was reported that there was no variation in the frequency of GERD between men and women in Type 2 Diabetes Mellitus patients [9].

In our study, the age group was determined as an independent risk factor for GERD. Pourshams et al.'s study, it was reported there was also a trend toward the increasing frequency of GERD with increasing age [4]. Similar results have been reported in a community-based population study conducted by Wang et al. in southern India [16].

In our study, the GERD frequency was higher in families who have a monthly average income of <500€. In the literature, it was reported that there was a relationship between the frequency of GERD and low income [17]. In research, it was reported that GERD frequency was higher in families with moderate income when compared with families that had a good income [1]. In another study conducted in the literature, it was reported that seasonal agricultural workers reported insufficient income (90.7%)

[3], and on the other hand, In research committed in the literature, it was reported that there was no relationship between monthly average income and GERD [18].

In our study, there was no relationship between chronic disease and GERD ($p>0.05$). In research committed by Sağlan et al., it was reported that Diabetes Mellitus over a decade was found to be a significant risk factor for gastroesophageal reflux disease and GERD was found to be a common complication in diabetic patients [9]. In research committed, it was reported that GERD frequency was higher in chronic cough, asthma, diabetes mellitus, hypertension, and COPD patients [18]. In research committed in the literature, it was reported that GERD frequency was higher in those who were at high Obstructive Sleep Apnea Syndrome risk status [1].

In the literature, it was reported that obesity is a significant risk factor for GERD [1]. In our study, overweight was detected as an independent risk factor for GERD ($p=0.009$). Similar results have been reported in a study conducted by El-serag and his colleagues [19]. In researches committed in the literature, it was determined that GERD frequency was too much in obese persons [16, 20]. An increase in intragastric pressure with increasing central obesity was contributed to GERD [19].

This study has several limitations. Among the limitations of the study are that it is a cross-sectional study, that it was conducted only in a provincial and semi-rural area, and that no endoscopy, pH meter, etc. tests were performed for diagnosis.

Conclusion

In the study, it was detected a considerable amount of gastroesophageal reflux disease in seasonal agricultural workers. In our study, male gender, age group (>30 years), monthly average income (<500€), and body mass index (≥ 25 kg/m²) were all found as important risk factors for GERD. Family income status must be improved and struggle against overweight to decrease the prevalence of gastroesophageal reflux disease in seasonal agricultural workers.

The abstract of this article was presented as an oral presentation in the 8th International Conference on Epidemiology & Public Health, September 17-19, 2018, Rome, Italy. (Yasemin Saglan et al., Epidemiology (Sunnyvale) 2018, Volume 8 conferenceseries. com DOI: 10.4172/2161-1165-C1-020).

Conflict of interests

The authors declare that they have no competing interest

Financial Disclosure

All authors declare no financial support.

Ethical approval

The ethical permission was received from the Social and Human Sciences Ethics Committee of Ankara Yıldırım Beyazıt University.

References

1. Soysal A, Sağlan R, Zencirci SA, et al. Evaluation of gastroesophageal reflux disease and variables related with its severity in adults. *Progres Nutr.* 2019;21:366-74.
2. Komleva NE, Spirin VF, Trubetskoy AD, et al. The prevalence of gastroesophageal reflux disease in agricultural workers. *Med Tr Prom Ekol.* 2012;5:9-12.
3. Göçer Ş, Mazıcıoğlu MM, Ulutabanca RÖ, et al. Assessment of healthy lifestyle behaviors in traveling seasonal agricultural workers. *Public Health.* 2020;180:149-53.
4. Pourshams A, Rahmani AR, Hatami K. Gastroesophageal reflux disease in Iran. *Govareh.* 2005;10:48-53.
5. Koyuncu T, Metintaş S, Ayhan E et al. Evaluation of reproductive health criteria in seasonal agricultural workers: a sample from Eskisehir, Turkey. *RRH.* 2016;16:12-20.
6. Cohen E, Bolus R, Khanna D, et al. GERD Symptoms in the general population: prevalence and severity versus care-seeking patients. *Dig Dis Sci.* 2014;59:2488-96.
7. Spiegel BM., Hays RD, Bolus R, et al. Development of the NIH patient-reported outcomes measurement information system (PROMIS) gastrointestinal symptom scales. *Am J Gastroenterol.* 2014;109:1804-14.
8. Özseker B, Yasar NF, Bilgin M, et al. Turkish validation of National Institutes of Health (NIH) patient-reported outcomes measurement information system (PROMIS®) Gastroesophageal Reflux Disease (GERD) scale. *Biomed Res.* 2016;27:577-81.
9. Saglan Y, Bilge U, Unluoglu I. Frequency of gastroesophageal reflux disease in patients with type 2 diabetes mellitus. *Biomed Res.* 2017;Special Issue:507-12.
10. Wang R, Yan X, Ma XQ, et al. Burden of gastroesophageal reflux disease in Shanghai, China. *Dig Liver Dis.* 2009;41:110-5.
11. Bor SE, Lazebnik LB, Kitapcioglu G, et al. Prevalence of gastroesophageal reflux disease in Moscow. *Dis Esophagus.* 2016;29:159-65.
12. Bretagne JF, Richard-Molard B, Honnorat C, et al. Gastroesophageal reflux in the French general population: national survey of 8000 adults. *Presse Med.* 2006;35:23-31.
13. Asanuma K, Iijima K, Shimosegawa T. Gender difference in gastroesophageal reflux diseases. *World J Gastroenterol.* 2016;22:1800-10.
14. Shaha M, Perveen I, Alamgir MJ, et al. Prevalence and risk factors for gastroesophageal reflux disease in the North-Eastern Part of Bangladesh. *Bangladesh Med Res Counc Bull.* 2012;38:108-13.
15. Locke III GR, Talley NJ, Fett SL, et al. Risk factors associated with symptoms of gastroesophageal reflux. *Am J Med.* 1999;106:642-49.
16. Wang HY, Leena KB, Plymoth A, et al. Prevalence of gastroesophageal reflux disease and its risk factors in a community-based population in Southern India. *BMC Gastroenterol.* 2016;16:1-6.
17. Moshkowitz M, Horowitz N, Halpern Z, et al. Gastroesophageal Reflux Disease Symptoms: Prevalence, Sociodemographics and Treatment Patterns in the Adult Israeli Population. *World J Gastroenterol.* 2011;17:1332-5.
18. Yönm Ö, Sivri BÜ, Özdemir LE, et al. Gastroesophageal reflux disease prevalence in the City of Sivas. *Turk J Gastroenterol.* 2013;24:303-10.
19. El-Serag HB, Graham DY, Satia JA, et al. Obesity is an independent risk factor for GERD symptoms and erosive esophagitis. *Am J Gastroenterol.* 2005;100:1243-50.
20. Fisichella PM, Schlottmann F, Patti MG. Evaluation of gastroesophageal reflux disease. *Updates Surg.* 2018;70:309-13..