Journal of Umm Al-Qura University for Medical Sciences

Journal homepage: https://uqu.edu.sa/en/mj

Research Article

Profile of Peptic Ulcer Disease and its Risk Factors amongst Health Science Students at Umm Al-Qura University

Muath Alzahrani[1], Abdulrahman Alharthi[1*], Nasser Al Shanbari[1], Salah Bakry[1],Gufran Kambiji[1], Khalid Nahar[1], Alaa Alqurashi[1], Fahad Alharthi[1], Mohamed Elhefny[2]

[1]College of Medicine, Umm Al-Qura University, Makkah, Saudi Arabia

[2]Assistant professor of Medical Genetics, Medical Genetics department, Faculty of Medicine, Umm Al-Qura University, Al-Qunfudah, Saudi Arabia

ARTICLE INFO

Received: 24/12/2022
Revised: 06/02/2023
Accepted: 11/02/2023

Keywords:
Abdominal pain,
Gastrointestinal bleeding,
Helicobacter pylori,
Health science students,
Peptic ulcer.

***Corresponding author:**
Abdulrahman Alharthi
Abdulrahmanma-suod@gmail.com

ABSTRACT

Background: Peptic ulcer is a common disease that can lead to several complications, such as bleeding and perforation. Identifying the prevalence and risk factors will help in prevention and early treatment to avoid further issues. Consequently, in this study, we aim to estimate peptic ulcer prevalence and risk factors among health science students at Umm Al-Qura University (UQU).

Methods: A cross-sectional study was administered by an online questionnaire in June 2022. The survey was distributed to all health science students who study at Umm Al-Qura University during the 2021-2022 academic year.

Results: A total of 342 participants were included in the study. The majority were males, accounting for 72.2%. Our study showed that only 4.4% of respondents had a positive history of peptic ulcer disease. We found that spicy food and Helicobacter pylori were the main risk factors for peptic ulcer disease among participants with 46.7% and 26.7% respectively.

Conclusion: Peptic ulcer disease is a worldwide health dilemma. Our study found that 4.4% of the participants have a positive history of peptic ulcers. The main risk factors reported among respondents were spicy food and Helicobacter infection with 46.7% and 26.7% respectively. Educational health efforts are recommended.

1. INTRODUCTION

Peptic ulcers are divided into gastric and duodenal ulcers. Ulcers can result when the lining of the lower part of the oesophagus, stomach, and upper part of the small intestine breaks (Najm 2011, Albaqawi, El-Fetoh et al. 2017). Approximately 4.1% of the general population have ulcers (2% peptic and 2.1% duodenal) (Najm, 2011). Abdominal pain that is relieved with eating is a characteristic of duodenal ulcers. By contrast, gastric ulcer pain worsens with eating. However, they share similar symptoms such as heartburn, poor appetite, nausea and vomiting (Aro, Storskrubb et al. 2006).

A study conducted in Saudi Arabia of adolescents and children showed that the most common symptom was chronic abdominal pain (63% of the participants), followed by vomiting in association with abdominal pain (17%) (El Mouzan & Abdullah 2004). Regarding risk factors, several studies have demonstrated that Helicobacter pylori and non-steroidal anti-inflammatory drugs are the major causes (Steinberg 2002, Karima, Bukhari et al. 2006; Najm 2011). Followed by other causes such as stress, cigarettes, alcohol and caffeine (Karima, Bukhari et al. 2006; Najm, 2011).
Additionally, peptic ulcers have serious complications, including perforation, bleeding and obstruction, which are common in older people (Milosavljevic, Kostić-Milosavljević et al. 2011). Drugs such as proton pump inhibitor prostaglandin analogues and histamine-2 receptor antagonists are protective and therapeutic, leading to the healing of mucosal damage and settling gastrointestinal bleeding (Scally, Emberson et al. 2018).
Health science students face a huge of physiological stress during their journey at university due to the academic requirements such as a large amount of content to learn, tests, homework and heavy workload; additionally, they share multiple risk factors for peptic ulcer such as caffeine consumption and smoking (Othman, 2013).

Doi: https://doi.org/10.54940/ms74558041

Therefore, the main goal of this study is to investigate the risk factors of peptic ulcers and estimate their prevalence among health science students.

2. MATERIALS AND METHODS

This is a descriptive cross-sectional study based on an electronic survey built in Google Forms, conducted at Umm Al-Qura University, Makkah, in June 2022. We included in our study both male and females' students of health sciences at Umm Al-Qura University. We excluded students in their preparatory years and those who refused to participate. The survey was distributed among students in a non-random snowball sampling fashion. The sample size was calculated by Epi Info software v. 2.1 (Sullivan, Dean et al. 2009). Based on a 95% confidence interval, our sample size was 342 students.

We delivered the questionnaire used in this study to the target population after ethical approval was obtained from the biomedical ethics committee of the College of Medicine at Umm Al-Qura University, Makkah (Approval No. HAPO-02-K-012-2022- 06-1125).

The questionnaire was validated and adapted from a published study (Albaqawi, El-Fetoh et al. 2017). Also, a pretest was done by distributing the survey to 20 participants of our population; then the survey was distributed to students via social media platforms (WhatsApp and Telegram). The first author's email was included with the message to answer any questions or solve any issues, and informed consent was acquired from all students.

The questionnaire included two sections. The first section assessed participants' demographic informations such as age, gender, college, academic year, presence of chronic diseases and history of peptic ulcers. The second part evaluated the characteristics of peptic ulcers (e.g., pain nature, signs and symptoms, and treatment) and their risk factors through six multiple choice questions.

The obtained data were added to a Microsoft Excel spreadsheet to check for typographical errors, and then included in Statistical Package for Social Sciences software v. 23 (SPSS Inc., Chicago, Illinois, USA). The categorical variables were expressed as percentages in the descriptive analysis, while mean and standard deviations were used for the continuous variables. The categorical variables were computed using the independent Chi-square test. A p-value of 0.05 was considered statistically significant.

3. RESULTS

The respondents were 342 students of health science colleges at Umm Al-Qura University. The participants' demographic profiles are given in Table 1. The students' mean age was 21.77 years (SD=1.75). Most participants ranged from 21–24 years (n=242, 70.8%), while male participants were predominant (n=247, 72.2%). Furthermore, most respondents were single (n=335, 98%). (Table 1)

Table 1 : Participants' social-démographique profiles

Category		Frequency	Percentage
Age groups	12-20	87	25.4%
	21-24	242	70.8%
	25-32	13	3.8%
Gender	Male	247	72.2%
	Female	95	27.8%
Social status	Single	335	98.0%
	Married	6	1.8%
	Widow	1	0.3%
Academic Years	2^{nd} year	40	11.7%
	3^{rd} year	74	21.6%
	4^{th} year	73	21.3%
	5^{th} year	76	22.2%
	6^{th} year	79	23.1%
Colleges	Medicine	277	81.0%
	Dentistry	2	0.6%
	Pharmacy	33	9.6%
	Nursing	14	4.1%
	Applied medical sciences	16	4.7%
Smoking status	Yes	50	14.6%
	No	292	85.4%
Chronic diseases among participants	Diabetes mellitus	2	0.6%
	Hypertension	2	0.6%
	Asthma	15	4.4%
	No chronic diseases	323	94.4%
Previous history of peptic ulcer disease (PUD)	Yes	15	4.4%
	No	327	95.6%
Age (Mean) (Standard deviation)	(Mean=21.77) (SD=1.75)		

The students' academic years were broadly represented in the sample, with a predominance of sixth-year medical students (n=79, 23.1%). The College of Medicine had the most responses (n=277, 81%). (Table 1)

The data revealed that only 14.6% (n=50) of the students smoked. Further, most of the students did not have a history of chronic disease.

However, 4.4% (n=15) had a positive history of asthma, most of them had no history of peptic ulcers, only 4.4% (n=15) had a positive history. (Table 1)

The characteristics of the individuals with a positive history of peptic ulcers are described in Table 2. Regarding pain intensity, one-fifth of the participants rated it as severe pain, while nausea and vomiting were the most common symptoms recorded among the students (53.3%). Our study found that spicy foods and Helicobacter pylori infection were the main risk factors reported among the participants (46.7% and 26.7%, respectively). Interestingly, most participants reported no complications (66.7%). Additionally, most responded to antibiotics (80%) and just under half needed gastroscopy as an investigation method (46.7%). (Table 2)

Table 2: Participants' characteristics of peptic ulcer Profiles

Category	Answers	Frequency	Percentage
Pain intensity	Mild	3	20.0%
	Moderate	1	6.7%
	Severity	1	6.7%
	Precipitated by certain food	3	20.0%
	Severe	7	46.7%
Symptoms	Chest pain	1	6.7%
	Indigestion	1	6.7%
	Loss of appetite	1	6.7%
	Nausea and vomiting	8	53.3%
	Regurgitation	2	13.3%
	Associated with sense of gastric erosion	2	13.3%
Risk factors	Coffee intake	1	6.7%
	Helicobacter pylori infection	4	26.7%
	Prolonged use of non-steroidal anti-inflammatory drugs (NSAIDs)	1	6.7%
	Psychic stress	1	6.7%
	Smoking	1	6.7%
	Spicy food.	7	46.7%
Complications	Presence of hematemesis	1	6.7%
	Presence of melena	4	26.7%
	No complication	10	66.7%
Treatments	Need hospital admission	3	20.0%
	Responds to antibiotics	12	80.0%
Investigation	Urea breath test	3	20.0%
	Ultrasound	2	13.3%
	Barium meal	3	20.0%
	Gastroscopy	7	46.7%

The association between the students' previous history of peptic ulcers and their demographic profiles is shown in Table 3. A significant correlation was found between social status, mainly being single, and both a positive (n=13) and a negative (n=322) history of peptic ulcers (P-value, 0.002). Furthermore, the students at the College of Medicine corresponded significantly to both a positive (n=9) and a negative (n=268) history of peptic ulcers (P-value, <0.001). Moreover, the participants' smoking history and previous chronic diseases also corresponded significantly to a previous history of peptic ulcers (P-values, 0.004 and 0.013, respectively). (Table 3)

Table 3: The association between students' previous history of peptic ulcer disease and their demographical profiles

Category		History of peptic ulcer disease		P-value
		Yes (N.)	No (N.)	
Age groups	12-20	5	82	0.613
	21-24	9	233	
	25-32	1	12	
Gender	Male	8	239	0.095
	Female	7	88	
Social status	Single	13	322	0.002*
	Married	2	4	
	Widow	0	1	
Academic years	2nd year	3	37	0.447
	3rd year	1	73	
	4th year	5	68	
	5th year	3	73	
	6th year	3	76	
Colleges	Medicine	9	268	<0.001*
	Dentistry	0	2	
	Pharmacy	1	32	
	Nursing	5	9	
	Applied Medical sciences			
Smoking status	Yes	6	44	0.004*

	No	9	283	
Chronic diseases among participants	Diabetes mellitus	1	1	0.013*
	Hypertension	0	2	
	Asthma	0	15	
	No chronic diseases	14	309	

The findings revealed significant differences between reporting nausea and vomiting as symptoms and the participants at the College of Medicine (n=7) (P-value, 0.019). Another significant association was revealed between those students with no complications (n=4) and those in their fourth academic year, while only two students with the presence of melena as a complication corresponded significantly with the second academic year (P-value, 0.016). (Table 4(a,b,c) and 5(a,b,c))

Table 4: The association between individuals with peptic ulcer disease and their colleges

Table 4(a) : The association between individuals with peptic ulcer disease and their collages

Category	**Answers**	**Colleges**					**P-value**
		Medicine(N.)	Dentistry (N.)	Pharmacy (N.)	Nursing (N.)	Applied medical sciences (N.)	
Pain Intensity	**Mild**	1	0	0	2	0	0.651
	Moderate	0	0	0	1	0	
	d	1	0	0	0	0	
	Precipitated by certain food	2	0	0	1	0	
	Severe	5	0	1	1	0	

Table 4(b) The association between individuals with peptic ulcer disease and their collages

Symptoms	Chest pain	0	0	1	0	0	0.019*
	Indigestion	0	0	0	1	0	
	Loss of appetite	0	0	0	1	0	
	Nausea and vomiting	7	0	0	1	0	
	Regurgitation	1	0	0	1	0	
	Associated with sense of gastric erosion	1	0	0	1	0	
	Responds to s	7	0	1	4	0	
Risk factors	Coffee intake	1	0	0	0	0	0.805
	Helicobacter pylori infection	3	0	0	1	0	
	Prolonged use of non-steroidal anti-inflammatory drugs (NSAIDS)	1	0	0	0	0	
	Psychic stress	1	0	0	0	0	
	Smoking	1	0	0	0	0	
	Spicy food.	2	0	1	4	0	

Table 4(c) The association between individuals with peptic ulcer disease and their collages

Complications	Presence of hematemesis	1	0	0	0	0	0.821
	Presence of melena	2	0	0	2	0	
	No complication	6	0	1	3	0	
Treatments	Need hospital admission	2	0	0	1	0	0.870
	Responds to antibiotics	7	0	1	4	0	
Investigation	Urea breath test	3	0	0	0	0	0.420
	Ultrasound	2	0	0	0	0	
	Barium meal	1	0	0	2	0	
	Gastroscopy	3	0	1	3	0	

Table 5(a) : The association between individuals with peptic ulcer disease and their academic years

Category	Answers	Academic years					P-value
		2nd year (N.)	3rd year (N.)	4th year (N.)	5th year (N.)	6th year (N.)	
Pain intensity	Mild	1	0	1	1	0	0.318
	Moderate	1	0	0	0	0	
	d	0	0	0	1	0	

	Precipitated by certain food	0	0	0	1	2	
	Severe	1	1	4	0	1	

Table 5(b) The association between individuals with peptic ulcer disease and their academic years

Symptoms	Chest pain	0	0	0	0	1	0.458
	Indigestion	1	0	0	0	0	
	Loss of appetite	0	0	0	1	0	
	Nausea and vomiting	1	1	4	0	2	
	Regurgitation	1	0	0	1	0	
	Associated with sense of gastric erosion	0	0	1	1	0	
Risk factors	Coffee intake	0	0	1	0	0	0.625
	Helicobacter pylori infection	0	1	0	2	1	
	Prolonged use of non-steroidal anti-inflammatory drugs (NSAIDS)	0	0	1	0	0	
	Psychic stress	0	0	1	0	0	
	Smoking	0	0	1	0	0	
	Spicy food.	3	0	1	1	2	

Table 5(c) The association between individuals with peptic ulcer disease and their academic years

Complications	Presence of hematemesis	0	1	0	0	0	0.016*
	Presence of melena	2	0	1	1	0	
	No complication	1	0	4	2	3	
Treatments	Need hospital admission	1	0	2	0	0	0.504
	Responds to antibiotics	2	1	3	3	3	
Investigation	Urea breath test	0	0	1	1	1	0.292
	Ultrasound	0	1	1	0	0	
	Barium meal	2	0	1	0	0	
	Gastroscopy	1	0	2	2	2	

4. DISCUSSION

This cross-sectional study conducted on 342 students at health science colleges aimed to estimate the prevalence of peptic ulcers among these students and recognize the risk factors associated with the disease. Our findings show that the prevalence of peptic ulcers is 4.4% of the study population, most whom between 21 and 24 years. The prevalence in our study is far lower than that of a study in Arar, which reported a prevalence of 21.9% among individuals aged 18 to 75 years (Albaqawi, El-Fetoh et al. 2017). Another study showed a prevalence of peptic ulcers of 4% in a randomly selected population of adults aged 20 years and older (Aro, Storskrubb et al. 2006).

Regarding the risk factors associated with a diagnosis of peptic ulcers, 46.7% of our study participants identified spicy food, while Helicobacter pylori infection was confirmed by 26.7% of the respondents. By contrast, based on the findings of another study, coffee drinking (81.8%) and physical stress (77.3%) were the most common risk factors of the disease (Albaqawi, El-Fetoh et al. 2017). In addition, a study conducted in Zambia reported that 57% of the participants were alcohol drinkers, and 40% regularly used Non-steroidal anti-inflammatory drugs (Sondashi KJ 2011). According to our findings, the most prevalent symptom is nausea and vomiting, which is present in 53.3% of the participants. By contrast, a corresponding study showed that 78.8% suffered a loss of appetite and 71.2% complained of indigestion (Albaqawi, El-Fetoh et al. 2017). Another study in the Kingdom of Saudi Arabia reported that 63% of the respondents presented with abdominal pain, whereas 17% of the participants suffering from abdominal pain associated with vomiting (El Mouzan and Abdullah 2004).

The diagnosis of peptic ulcers can be achieved using upper endoscopy, especially for those with dyspepsia and concurrent alarm symptoms (Talley, Vakil et al. 2005, Barazandeh, Yazdanbod et al. 2012, Allen, Katzka et al. 2015). Accordingly, our results indicate that 46.7% of the participants had previously undergone gastroscopy for the diagnosis of peptic ulcers. Further, they show that 80% responded to antibiotics with no need for hospital admission. However, 26.7% of the diagnosed respondents confirmed the presence of melena as a complication of peptic ulcers.

This is in line with , the results of Albaqawi et al. work, showed that 22.7% experienced melena as a complication of the disease, followed by hematemesis in 10.6% (Albaqawi, El-Fetoh et al. 2017).

Our findings show, 14.6% of our participants were smokers and support previous study founding, that smoking is the third most common risk factor along with prolonged use of NSAIDs and physical stress (Albaqawi, El-Fetoh et al. 2017). Hence, we recommend further studies to determine the knowledge and awareness of the non-cancerous hazards of smoking.

Additionally, the awareness of the effect of spicy food on increasing the risk of peptic ulcers should be raised since our study shows that it is the most

common risk factor among the study population.

5. CONCLUSION AND RECOMMENDATION

Our study showed a 4.4% prevalence of peptic ulcers among health science students at Umm Al-Qura University. Moreover, spicy food consumption was the most reported risk factor. We recommend providing substantial health education campaigns for health science students at Umm Al-Qura to raise their awareness of the effect of spicy food in increasing the risk of Helicobacter pylori.

AUTHOR CONTRIBUTION

The authors participated equally in each step of the re- search process.

SOURCE OF FUNDING

This study has not received any external funding.

CONFLICT OF INTEREST

The authors declare no conflicts of interests.

ACKNOWLEDGEMENTS

We would like to thank the participants who all contributed samples to this study.

REFERENCES

Allen, J. I., Katzka, D., Robert, M., & Leontiadis, G. I. (2015). American Gastroenterological Association Institute Technical Review on the Role of Upper Gastrointestinal Biopsy to Evaluate Dyspepsia in the Adult Patient in the Absence of Visible Mucosal Lesions. *Gastroenterology*, *149*(4), 1088–1118. https://doi.org/10.1053/j.gastro.2015.07.040

Aro, P., Storskrubb, T., Ronkainen, J., Bolling-Sternevald, E., Engstrand, L., Vieth, M., Stolte, M., Talley, N. J., & Agréus, L. (2006). Peptic Ulcer Disease in a General Adult Population. *American Journal of Epidemiology*, *163*(11), 1025–1034. https://doi.org/10.1093/aje/kwj129

Badi Albaqawi, A. S., Abo el-Fetoh, N. M., Abdullah Alanazi, R. F., Farhan Alanazi, N. S., Emad Alrayya, S., Nughaymish Mulfi Alanazi, A., Trad Alenezi, S. Z., Alrkowi Alanazi, R. A., Muaddi Alshalan, A., Tabaan Alenezi, O., & Bakr Ali, W. M. (2017). Profile of peptic ulcer disease and its risk factors in Arar, Northern Saudi Arabia. *Electronic Physician*, *9*(11), 5740–5745. https://doi.org/10.19082/5740

Barazandeh, F., Yazdanbod, A., Pourfarzi, F., Sepanlou, S. G., Derakhshan, M. H., & Malekzadeh, R. (2012). Epidemiology of Peptic Ulcer Disease: Endoscopic Results of a Systematic Investigation in Iran. *Middle East Journal of Digestive Diseases*, *4*(2), 90–96. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4017685/

El Mouzan, M. I., & Abdullah, A. M. (2004). Peptic ulcer disease in children and adolescents. *Journal of Tropical Pediatrics*, *50*(6), 328–330. https://doi.org/10.1093/tropej/50.6.328

Karima, T. M., Bukhari, S. Z., Ghais, M. A., Fatani, M. I., & Hussain, W. M. (2006). Prevalence of Helicobacter pylori infection in patients with peptic ulcer diseases. *Saudi Medical Journal*, *27*(5), 621–626. https://pubmed.ncbi.nlm.nih.gov/16680249/

Milosavljevic, T., Kostić-Milosavljević, M., Jovanović, I., & Krstić, M. (2011). Complications of Peptic Ulcer Disease. *Digestive Diseases*, *29*(5), 491–493. https://doi.org/10.1159/000331517

Najm, W. I. (2011). Peptic ulcer disease. *Primary Care*, *38*(3), 383–394, vii. https://doi.org/10.1016/j.pop.2011.05.001

Othman, C. N., Farooqui, M., Yusoff, M. S. B., & Adawiyah, R. (2013). Nature of Stress among Health Science Students in a Malaysian University. *Procedia - Social and Behavioral Sciences*, *105*. https://cyberleninka.org/article/n/149412

Scally, B., Emberson, J. R., Spata, E., Reith, C., Davies, K., Halls, H., Holland, L., Wilson, K., Bhala, N., Hawkey, C., Hochberg, M., Hunt, R., Laine, L., Lanas, A., Patrono, C., & Baigent, C. (2018). Effects of gastroprotectant drugs for the prevention and treatment of peptic ulcer disease and its complications: a meta-analysis of randomised trials. *The Lancet Gastroenterology & Hepatology*, *3*(4), 231–241. https://doi.org/10.1016/S2468-1253(18)30037-2

Sondashi, K. J., Odimba, B., & Kelly, P. (2011). A Cross-sectional Study on Factors Associated With Perforated Peptic Ulcer Disease in Adults Presenting to UTH, Lusaka. *Medical Journal of Zambia*. https://www.semanticscholar.org/paper/A-Cross-sectional-Study-on-Factors-Associated-With-Sondashi-Odimba/defe0885043400926a871c4e26b08b7759b2608a?utm_source=direct_link

Steinberg, K. P. (2002). Stress-related mucosal disease in the critically ill patient: Risk factors and strategies to prevent stress-related bleeding in the intensive care unit. *Critical Care Medicine*, *30*(Supplement), S362–S364. https://doi.org/10.1097/00003246-200206001-00005

Sullivan, K. M., Dean, A., & Soe, M. M. (2009). OpenEpi: A Web-based Epidemiologic and Statistical Calculator for Public Health. *Public Health Reports*, *124*(3), 471–474. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2663701/

Talley, N. J., Vakil, N. B., & Moayyedi, P. (2005). American Gastroenterological Association Technical Review on the Evaluation of Dyspepsia. *Gastroenterology*, *129*(5), 1756–1780. https://doi.org/10.1053/j.gastro.2005.09.020