Original article:

Prevalence, Risk Factors and Treatment Modalities of Peptic Ulcer Among Basic Medical Undergraduate Students in Delta State University, Abraka, Nigeria.

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Abstract

Objective*:* Smoking, alcohol consumption, coffee intake, non-steroidal anti-inflammatory drugs (NSAIDs) use and stress, which are risk factors of peptic ulcer disease (PUD), are usually associated with university students and could influence the prevalence of PUD. Hence, the current study is to identify the prevalence, risk factors and treatment options of PUD among basic medical undergraduate students of Delta State University, Abraka, as it will provide valuable epidemiological information. ***Materials and Methods:*** A descriptive cross-sectional survey on the prevalence and treatment modalities of peptic ulcer was conducted among 150 basic medical undergraduate students in Delta State University, Abraka, with the use of well-structured questionnaires. Statistical Package for Social Sciences (SPSS) version 21.0 software was used for data entry and analysis. ***Results and Discussion:*** Majority of the respondents were between the ages of 20-24 years, with a mean age of 22.3±3.17 years. Fifty-one of the 150 respondents reported to have ulcer (34%), mainly duodenal ulcer (62.7%). Majority of respondents reported the use of antacids (98%), proton pump inhibitors (PPI) (74.5%), and antibiotics (60.8%) in the management of peptic ulcer, however, combination drug therapy comprising antacids, PPI, and antibiotics was the mostly used (32; 62.7%). ***Conclusion***: This study showed that the prevalence of peptic ulcer was 34%, with a gastric to duodenal ulcer ratio of 1:1.68, with intake of NSAIDs and alcohol consumption identified as the most associated risk factors amongst this students' population. Effective treatment was achieved with appropriate combination therapies and patient compliance.

Keywords: Peptic ulcer disease, antacids, alcohol, *Helicobacter pylori*

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Introduction

Peptic ulcer disease (PUD) is a disease of the gastrointestinal tract which is characterized by mucosal damage secondary to pepsin and gastric acid secretion.[1] An ulcer is principally an inflamed break in the skin or the mucus membrane lining the alimentary tract.[2] Peptic ulcer disease embraces both gastric and duodenal ulcers, with a high morbidity and substantial mortality reported over the past two centuries, hence, seen as a major threat to the world's population, including the student population.[3,4]

The prevalence of gastric ulcer is 2.4% in the Western population.[5] Epidemiological data for this disease and its complications have shown alarming geographical variations in incidence and prevalence. Development of ulcer disease and death from it has been associated with the birth

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of urbanization and was interpreted as a birth-cohort event with the peak of disease in those born during the late 19th century.[6] Common symptoms of a duodenal ulcer include upper abdominal pain, belching, vomiting, weight loss, or poor appetite. Complications may include bleeding, perforation and blockage of the stomach.[7]

Common causes include the bacteria *Helicobacter pylori* and NSAIDs i.e., non-steroidal anti-inflammatory drug.[8-10] Other common causes include tobacco smoking, stress due to serious illness, Behcet disease, Zollinger-Ellison syndrome, Crohn disease and liver cirrhosis, among others.[11-13] Stoppage of smoking habits, NSAIDs and alcohol consumption are possible management options. Medications such as proton pump inhibitors (PPIs) or H_2 receptor blocker can be used to decrease gastric acid.[12] Ulcers caused by *H. pylori* are treated with a combination of medications such as amoxicillin, clarithromycin and a PPI. Likewise, medicinal plants including *Azadirachta indica, Carica papaya, Musa paradisca, Musa sapientum, Phyllanthus emblica*, *Moringa oleifera, Garcinia cambogia,* amongst others, are been shown to be effective in the treatment of peptic ulcer. [2, 5, 14-16]

With early detections of the occurrence of ulcer and subsequent medical therapy, complications associated with peptic ulcer disease can be largely controlled in patients. Thus, this research is carried out to identify the prevalence of ulcer among basic medical undergraduate students of Delta State University, Abraka so as to provide valuable epidemiological information concerning its prevalence among students' population, as well as the various treatment strategies.

Materials and Methods

Study design and population

Delta State University, Abraka (DELSU, Abraka) is a state-owned university in Nigeria with the main campus located at Abraka, Delta State, with two other campuses at Oleh and Asaba. The main campus at Abraka has six Faculties, of which the undergraduate students of the Faculty of Basic Medical Sciences constituted the study population from which data was obtained.

This is a descriptive cross-sectional survey on the prevalence and treatment modalities of peptic ulcer among basic medical undergraduate students in Delta State University, Abraka in May 2019 from an estimated population size of 2,000. A total of one hundred and fifty (150) questionnaires were given to responsive undergraduate students who answered and returned after filling. Explanations were made on questions pertaining to the questionnaires and honest answers were encouraged.

An oral informed consent was obtained from each student who participated in the study. One limitation of this study is possible response bias and reluctance on the part of some respondents as a result of some cultural beliefs and personal reasons about revealing some sensitive information. This was appropriately handled by persuasive encouragement that the information provided was anonymous.

Data analysis

Statistical Package for Social Sciences (SPSS) version 21.0 software was used for data entry and analysis. Validity of data collected was ensured by double entry and random checks for errors. Frequency distributions and summary measures were done and percentages were used to represent the results gotten from the data.

Results

Table 1 above shows the demographic distribution of the respondents. Majority of the respondents were between the ages of 20-24 years, with a mean age of 22.3±3.17 years. Forty-four percent (44%) were males and 56% females. Most of the respondents were of Urhobo ethnicity (36.7%), while majority were Christians (98%); a larger proportion of the respondents (43.3%) were 400 level students.

Fifty-one of the 150 respondents reported to have ulcer (34%), mainly duodenal ulcer (62.7%). Most reported to have taken aspirin medication (74.7%) and alcohol (67.3%), while only 23.3 of the respondents revealed to have had a family history of ulcer. Abdominal pains (44%), heartburn (27.3%), weight loss (23.3%), and loss of appetite (22%) were among the reported symptoms experienced. (Table 2).

Majority of respondents reported the use of antacids

(98%), proton pump inhibitors (PPI) (74.5%), and antibiotics (60.8%) in the management of peptic ulcer, however, combination drug therapy comprising antacids, PPI, and antibiotics was the mostly used (32; 62.7%) (Table 3). Very few respondents (9.8%) reported therapy with herbal medication. Effectiveness of therapy was reported as 62.7%. Pharmacy shops (56.9%) was a major source of procurement of drugs. Furthermore, 64.7% reported to completely comply to drug therapy.

Table 1: Socio-demographic data (n=150)

Parameters	Category	Frequency (%)
Age (years) *	15-19	26 (17.3)
	20-24	89 (59.3)
	25-29	35 (23.3)
	≥ 30	0 (0)
Gender	Male	66 (44)
	Female	84 (56)
Ethnic Group	Urhobo	55 (36.7)
	Isoko	36 (24)
	Delta Ibo	21 (14)
	Ijaw	7 (4.7)
	Itsekiri	6 (4)
	Others[#]	25 (16.7)
Religion	Christian	147 (98)
	Islam	3 (2)
Level of Study	100	24 (16)
	200	31 (20.7)
	300	30 (20)
	400	65 (43.3)

**Mean age (±SD) = 22.3 ± 3.17;*

[#]Others comprises Yoruba, Igbo, Hausa, etc.

Table 2: Ulcer occurrence and risk factors.

Statement	Category	Frequency (%)
Do you have ulcer	Yes	51 (34)
	No	99 (66)
Type of ulcer (n=51)	Duodenal ulcer	32 (62.7)
	Gastric ulcer	19 (37.3)
Which do you take*	Alcohol	101 (67.3)
	Tobacco	25 (16.7)
	Milk drinks	75 (50)
	Aspirin	112 (74.7)
	Spicy food	65 (43.3)
	Coffee	44 (29.3)
	Herbal medicine	19 (12.7)
	Energy drinks	66 (44)
Family history of ulcer	Yes	35 (23.3)
	No	115 (76.7)
Which symptom(s) do you experience?*	Abdominal pains	66 (44)
	Heart burn	41 (27.3)
	Weight loss	35 (23.3)
	Loss of appetite	33 (22)
	Vomiting	21 (14)
	Fatty food intolerance	11 (7.3)
	Vomiting of blood	0 (0)

**multiple response*

Table 3: Drug therapy and source of procurement (n=51)

Item Question	Category	Frequency (%)
Which drug do you take?	Antacids (Ant)	50 (98.0)
	Proton pump inhibitors (PPI)	38 (74.5)
	Antibiotics (Ab)	31 (60.8)
	Histamine-2 receptor antagonist (H_2RA)	10 (19.6)
	Ant + PPI + Ab	32 (62.7)
	Ant + H_2RA	8 (15.7)
	Herbal medication	5 (9.8)
Effectiveness of therapy	High	32 (62.7)
	Moderate	16 (31.4)
	Low	3 (5.9)

Item Question	Category	Frequency (%)
Where do you get your drugs from	Pharmacy shop	29 (56.9)
	Patent medicine stores	11 (21.6)
	Hospital	10 (19.6)
	Open market	1 (2.0)
Do you take your drugs as recommended?	Always	33 (64.7)
	Sometimes	17 (33.3)
	Never	1 (2.0)

Discussion and Conclusion

The present study was carried out to assess the prevalence and treatment modalities of peptic ulcer among undergraduate students of the Faculty of Basic Medical Sciences of Delta State University, Abraka, Nigeria. The mean age of the respondents was 22.3 ± 3.17 years, majority of them being of Urhobo ethnicity which is to be expected in this part of Delta state. Females made up the highest percentage while Christianity was the main religion recorded as it is prevalent in the Southern part of the country.

The prevalence of peptic ulcer was 34%, with duodenal ulcer more predominant (62.7%) than gastric ulcer (37.2%), giving a gastric to duodenal ulcer ratio of 1:1.68. This is similar to other studies that reported ratios of 1:1.55[17] and 1:1.5[18], however, another study revealed a ratio of 1.88:1 with dominance in gastric ulcer.[19] Giving the age range (15-29 years) of this study, duodenal ulcer was prevalent than gastric ulcer; study has shown that duodenal ulcer was more common in the young than gastric ulcer.[20] Although, a 15-year period study carried out in Nigeria indicated a decline in the prevalence of duodenal ulcer with an increase in gastric ulcer.[21] A 2018 review revealed a 34% peptic ulcer prevalence in Iran,[22] similar to the findings of the present study. However, in contrast, lower PUD prevalence among healthcare workers were reported as 10.28%, 9.53%, and 9.05% in physicians, nurses, and pharmacists respectively in Taiwan. [23]

The most risk factors identified in this study were intake of aspirin and alcohol. This may be as a result of high prevalence of NSAIDs use and increased consumption of alcohol amongst students' Population.[24-27] Others reported risk factors include tobacco, family history, spicy food and milky food (diet). High incidence of peptic ulcer has been shown to occur in people who smoke (tobacco intake), use NSAIDs (nonsteroidal anti-inflammatory drug; e.g., aspirin), and consume alcohol.[5, 9-11,13,28] Reported symptoms of abdominal pain, vomiting, weight loss, heartburn, and anorexia, are common with peptic ulcer disease.

Effective management of peptic ulcer disease is targeted at neutralization and/or inhibition of gastric acid secretion, and the eradication of *Helicobacter pylori* (*H. pylori*). Hence, countering aggressive factors and improving the mucosal defenses will subsequently relive pain, heal ulcer and prevent ulcer recurrence. This involves the use of antacids (e.g., magnesium hydroxide, aluminum hydroxide), proton pumps inhibitors (PPIs) (e.g., omeprazole, lansoprazole), histamine-2 receptor antagonists (H_2RA) (e.g., cimetidine, ranitidine), and antibiotics (e.g., amoxicillin, tetracycline).[29-32] This study revealed antacids as the widely used medication (98%) in the treatment of ulcer, followed by the PPIs (74.5%), and antibiotics (60.8%). Histamine-2 receptor antagonists (H_2RA) were the least used agent (9.8%). The combination drug therapy mostly utilized was antacids + PPI + Antibiotics (62.7%), which is in line with the aim of ulcer management. Utilization of herbal medicine in disease therapy is a growing aspect in the world of medicine especially in developing countries. [33-35] About 9.8% of the respondents in this study utilized herbal medications as medicinal plants have been demonstrated to be effective in the treatment of ailments including ulcer. [2, 5, 16]

The high extent of effectiveness reported in this study is in line with the increased use of drug combination therapy in their peptic ulcer management and their compliance to drug therapy.

Based on sources of drug procurement for the treatment of ulcer, a great majority of the respondents purchased their drugs for Pharmacy shops and hospitals, only few (2%) patronized open markets or hawkers. This practice is highly commendable and encouraged.

In conclusion, this study showed that the prevalence of peptic ulcer was 34%, with a gastric to duodenal ulcer ratio of 1:1.68, with intake of NSAIDs and alcohol consumption identified as the most associated risk factors amongst this

students' population. Effective treatment was achieved with appropriate combination therapies and patient compliance. Public health education targeted at reducing risk factors associated with PUD may be beneficial in reducing the prevalence PUD in the future.

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Conflict of interest

The authors declare no conflict of interest exist.

Ethical clearance

Ethical approval was obtained from the 'Ethical Committee' of the Faculty of Basic Medical Sciences, Delta State University, Abraka, Nigeria.

Authors' contribution

Edje KE and Moke EG conceptualized and designed the study, and wrote the initial draft of the manuscript. Eduviere AT, Umukoro EK, and Edje BO were involved in data gathering and analysis. All authors read the final draft of the manuscript.

References

1. Ramakrishnan K and Salinas RC. Peptic ulcer disease. Am Fam Physician 2007; 76(7):1005-1012.
2. Gadekar R, Singour PK, Chaurasiya PK, Pawar RS and Patil UK. A potential of some medicinal plants as an antiulcer agent. Pharmacogn Rev 2010; 4(8):136-46.
3. Malfertheiner P, Chan FK and McColl KE. Peptic ulcer disease. Lancet 2009; 374(9699):1449-61.
4. El Mouzan MI and Abdullah AM. Peptic ulcer disease in children and adolescents. J Trop Pediatr 2004; 50(6):328-30.
5. Bi WP, Man HB and Man MQ. Efficacy and safety of herbal medicines in treating gastric ulcer: a review. World J Gastroenterol 2014; 20(45):17020-8.
6. Sonnenberg A. Causes underlying the birth-cohort phenomenon of peptic ulcer: analysis of mortality data 1911–2000, England and Wales. Int J Epidemiol 2006; 35(4):1090–1097.
7. Milosavljevic T, Kostić-Milosavljević M, Jovanović I and Krstić M. Complications of peptic ulcer disease. Dig Dis 2011; 29(5):491-3.
8. Salih BA, Abasiyanik MF, Bayyurt N and Sander E. *H. pylori* infection and other risk factors associated with peptic ulcers in Turkish patients: a retrospective study. World J Gastroenterol 2007; 13(23):3245-8.
9. García Rodríguez LA and Hernández-Díaz S. Risk of uncomplicated peptic ulcer among users of aspirin and nonaspirin nonsteroidal antiinflammatory drugs. Am J Epidemiol 2004; 159:23-31.
10. Fashner J and Gitu AC. Diagnosis and Treatment of Peptic Ulcer Disease and H. pylori Infection. Am Fam Physician 2015; 91(4):236-242.
11. Ko JK and Cho CH. Alcohol drinking and cigarette smoking: a "partner" for gastric ulceration. Zhonghua Yi Xue Za Zhi (Taipei) 2000; 63:845-854.
12. Najm WI. Peptic ulcer disease. Prim Care 2011; 38(3):383-94.

13. Ojieh AE, Adegor EC, Wilson JI, Agbonifo-Chijiokwu E and Moke EG. Evaluating Effect of Prolonged Alcohol Consumption on Serum Gastrin and Secretin and Histo-archiecture of the Stomach and Duodenum in Rats. Trop J Health Sci 2020; 27(3):31-35.
14. Pakrashi A, Pandit S, Bandyopadhyay SK and Pakrashi SC. Antioxidant effect of Phyllanthus emblica fruits on healing of indomethacin induced gastric ulcer in rats. Indian J Clin Biochem 2003; 18:15-21.
15. Roy SD, Chakraborty J, Shil D, Das S and Begum N. Herbs Used in Peptic Ulcer: A Review. Int J Pharm Res All Sci 2013; 2(2):9-23.
16. Moke EG, Omorodion LI, Akpoguma HA, Imere P and Ahante E. Anti-ulcerogenic Activity of Aqueous Extract of Unripe Fruit of *Musa sapientum* Linn in Combination with Vitamin C on Ulcer Induced Models in Experimental Rats. Eur J Med Plants 2017; 19(2):1-6.
17. Tijjani B and Umar A. Peptic ulcer disease and helicobacter pylori infection at Kano, Nigeria. Internet J Gastroenterol 2008; 8(1):1-4.
18. Eniojukan JF, Okonkwo OC and Adje UD. Risk Factors, Management and Other Correlates of Peptic Ulcer Disease in a University Community in South-South Nigeria. UK J Pharm Biosci 2017; 5(6):7-15.
19. Dongo AE, Uhunmwagho O, Kesieme EB, Eluehike SU and Alufohai EF. A Five-Year Review of Perforated Peptic Ulcer Disease in Irrua, Nigeria. Int Sch Res Notices 2017; 2017(8375398):1-6.
20. Doherty GM and Way LW. Current Surgical diagnosis and treatment. 12th ed. New York, McGraw-Hill Companies, 2006:513-515.
21. Nwokediuko SC, Ijoma U, Obienu O and Picardo N. Time trends of upper gastrointestinal diseases in Nigeria. Ann Gastroenterol 2012; 25(1):52-56.
22. Sayehmiri K, Abangah G, Kalvandi G, Tavan H and Aazami S. Prevalence of peptic ulcer in Iran: Systematic review and meta-analysis methods. J Res Med Sci 2018; 23:8.
23. Lin HY, Weng SF, Lin HJ, Hsu CC, Wang JJ, Su SB, Guo HR, Huang CC. Peptic Ulcer Disease in Healthcare Workers: A Nationwide Population-Based Cohort Study. PLoS One 2015;10(8):e0135456.
24. Wawryk-Gawda E, Chylinska-Wrzos P, Lis-Sochocka M and Jodlowska-Jedrych B. Consumption and awareness of students about nonsteroidal anti-inflammatory drugs. 2014; Curr Issues Pharm Med Sci 2014; 27(3):175-178.
25. O'Connor S, McCaffrey N, Whyte E, Moran K and Lacey P. Nonsteroidal anti-inflammatory drug use, knowledge, and behaviors around their use and misuse in Irish collegiate student-athletes. Phys Sportsmed 2019; 47(3):318-322.
26. Ajayi AI, Owolabi EO and Olajire OO. Alcohol use among Nigerian university students: prevalence, correlates and frequency of use. BMC Public Health 2019; 19:752.
27. Umukoro EK, Eduviere AT, Ahama EE, Moke EG, Edje KE, Omorodion LI and Ovigue C. Substance Abuse: Awareness and Attitude among Secondary School Students in Sapele, Nigeria. J Appl Sci Environ Manage 2021; 25(3): 347-351.
28. Maity P, Biswas K, Roy S, Banerjee RK and Bandyopadhyay U. Smoking and the pathogenesis of gastroduodenal ulcer – recent mechanistic update. Mol Cell Biochem 2003; 253:329-338.
29. Ford AC, Delaney BC, Forman D and Moayyedi P. Eradication therapy in Helicobacter pylori positive peptic ulcer disease: systematic review and economic analysis. Am J Gastroenterol 2004; 99:1833-1855.
30. Aydemir S, Boyacioglu S, Gur G, Demirbilek M, Can FK, Korkmaz M, et al. Helicobacter pylori infection in hemodialysis patients: Susceptibility to amoxicillin and clarithromycin. World J Gastroenterol 2005; 11(6):842-845.
31. Bytzer P, Dahlerup JF, Eriksen JR, Jarbøl DE, Rosenstock S and Wildt S. Diagnosis and treatment of Helicobacter pylori infection. Dan Med Bull 2011; 58(4):C4271.
32. Ergül B, Koçak E, Taş A, Filik L and Köklü S. Bismuth, moxifloxacin, tetracycline, lansoprazole quadruple first line therapy for eradication of H. pylori: A prospective study. Clin Res Hepatol Gastroenterol 2013; 37:527-529.
33. Kuna L, Jakab J, Smolic R, Raguz-Lucic N, Vcev A and Smolic M. Peptic Ulcer Disease: A Brief Review of Conventional Therapy and Herbal Treatment Options. J Clin Med 2019; 8(2):179.
34. Moke EG, Umukoro EK, Asiwe JN, Omogbiya AI, Erhirhie EO, Ben-Azu B and Anieh FU. Herbal Medicine: Education and Occupation Influences Its Practice among Residents of Port Harcourt, South-South Nigeria. Int J Pharm Phytopharm Res 2021; 11(2):38-44.
35. Sofowora A, Ogunbodede E and Onayade A. The role and place of medicinal plants in the strategies for disease prevention. Afr J Tradit Complement Altern Med 2013; 10(5):210-229.