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*Research Article*

# **Prevalence, Symptoms and Lifestyle Aspect of Peptic Ulcer Disease among Undergraduate Students of a Nigerian University**

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## **ABSTRACT**

Peptic ulcer disease (PUD) may result to frequent illness, absenteeism in classes and consequent poor academic performance but its distribution and management among university students has been poorly studied. This study assessed the prevalence and symptoms of PUD as well as lifestyle and nutritional status of students with PUD. A total of 297 students (48% females and 52% males) were selected using multistage random sampling method. Information on knowledge, lifestyle and dietary habit was obtained via structured questionnaire. The study revealed 7.9% confirmed PUD cases. Students complained of symptoms suggestive of PUD such as bloating (23.7%), nausea (33.8%), burping (32.4%), bloody stool (15.8%) and heart burn (46.4%). About 68.2% of students with PUD had good knowledge of PUD while 44.1% practice healthy lifestyle. About 36.4%, 59.1% and 4.5% of the confirmed cases were underweight, normal and overweight, respectively. There was no significant relationship between knowledge of healthy lifestyle in PUD and nutritional status. Factors that affected the use of good practice in PUD included early morning lectures (81.8%), food vendors opening late (54.5%) and poor meal variety (50%). In conclusion, low prevalence rate of PUD but high occurrence of symptoms related to PUD was found among the students. An appreciable number of students with PUD were underweight and knowledge of healthy lifestyle did not influence nutritional status. Early morning lectures was the greatest challenge faced by undergraduate students living with PUD. Measures should be taken to detect students with PUD and tackle nutritional challenges faced by these students.

**Keywords:** *Peptic ulcer, lifestyle, diet, students.*

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## **INTRODUCTION**

Peptic ulcer disease is a condition characterized by erosion of the Gastro Intestinal (GI) mucosa resulting from the digestive action of hydrochloric acid and pepsin (Dunlap and Patterson, 2019). Gastro-duodenal disease is common in Sub-Saharan Africa (Archampong *et al.*, 2016). Globally, peptic ulcers are estimated to involve 5-10% of the population (Lanas and Chan, 2017). Peptic ulcer disease (PUD) develops when the protective mechanisms of the gastrointestinal mucosa, such as mucus and bicarbonate secretion, are overpowered by the damaging effects of gastric acid and pepsin (Debruyne *et al.*, 2016; Shah *et al.*, 2019). Other factors implicated include the bacterium named *Helicobacter pylori* (*H. pylori*), aspirin and non-steroidal anti-inflammatory drugs (NSAIDs) (Kainat *et al.*, 2020) and blood group O (Ray-Offor and Opusunju, 2020), alcohol and smoking (Eniojukan *et al.*, 2017), physical or emotional stress and starvation (Zibima *et al.*, 2020). A study found out that people who had irregular meal timing

particularly deviating more than two hours had higher risk of developing gastritis and *H. pylori* infection by thirteen-fold compared to those who ate regularly (Lim *et al.*, 2013). Cigarette smoking was a common factor among those diagnosed with ulcer. Researches on coffee as one of the risk factors of peptic ulcer disease is inconsistent (Zaman *et al.*, 2019). When a person is affected by stress he may also smoke more, sleep less and take more non-steroidal anti-inflammatory drugs thereby increasing their susceptibility to ulcer by mechanisms that are related to acidity.

Many people with ulcers experience minimal indigestion, abdominal discomfort that occurs after meals, or no discomfort at all. Some complain of upper abdominal burning or hunger pain one to three hours after meals or in the middle of the night (Debruyne *et al.*, 2016; Nix, 2017). These symptoms often are promptly relieved by food or antacids that neutralize stomach acid. Peptic ulcer disease may lead to complications such as gastro-duodenal haemorrhage, perforation and death (Lau *et al.*, 2008). It may also result to

frequent illness and absenteeism in classes and consequent poor performance and achievement (Brook *et al.*, 2010). Maintaining optimal health may be challenging for undergraduate students with PUD who reside within the school and environs and do not have control over diet.

Extensive work has been done on the nutritional status and other areas of life among students but there is paucity of information on the prevalence and challenges of PUD disease among undergraduate students. PUD negatively affects quality of life and achievements. Most times, it is either undiagnosed or poorly managed in diagnosed persons leading to serious complications. Proliferation of *Helicobacter pylori*, the major culprit in PUD is linked to poor sanitary and overcrowded living conditions including unsafe water (Hussen *et al.*, 2013). There is need to investigate the pattern of this disease among students and devise measures that would ensure good health status and improved academic performance.

Therefore, this study aimed to determine the prevalence of peptic ulcer disease among the university students as well as assess the practice of healthy lifestyle and nutritional status of the students living with PUD.

## MATERIALS AND METHODS

**Study setting/design:** The study was carried out in Bells University of technology, Ota (Bells) located in Ogun state, South Western Nigeria. The study is a descriptive cross-sectional survey using quantitative research method. The study population comprised of male and female undergraduate students of Bells University of Technology.

**Sampling method:** A multistage sampling method was used to select 297 participants from the hostels. A random sampling method was employed to select the participants from the hostels in the university. The University has a total of two female hostels and five male hostels. A random sampling was done to pick two male hostels. Rooms were selected systematically (k=2). A total of 297 students were randomly chosen from the selected rooms.

**Data collection:** Questionnaires were distributed to the respondents in two phases. In the first phase, data on the variables such as socio-demographic characteristics and presence of symptoms of PUD was collected. Then in the second phase, the respondents who were confirmed cases of PUD were further examined using part B of the questionnaire with sections on knowledge of PUD, lifestyle practices including dietary habit, factors affecting practice and nutritional status assessment. A 24 hour dietary recall was used to obtain information on food intake and estimate daily energy and nutrient intakes.

**Anthropometry:** Height and weight measurements were undertaken as outlined in a previous work (Arisa *et al.*, 2020). The height of each respondent was measured in meters using a heightometer. Each respondent was made to stand erect, barefooted, feet together and face straight. They were measured to the nearest 0.1cm. Weight measurements were taken in the mornings before breakfast with participants

minimally dressed and standing barefooted on the center of a digital scale. Weight was measured to the nearest 100g. Body Mass Index (BMI) in Kg/m<sup>2</sup> was obtained using weight and height of the students with PUD. Anthropometric status was determined using WHO BMI classification criteria: underweight (BMI  $\leq 18.5$ ), normal (BMI 18.5-24.99), overweight (BMI 25- 29.99) and obesity (BMI  $\geq 30$ ) (World Health Organisation, 2000).

**Data analysis:** Frequency and percentage distributions, mean and standard deviations were used to present data. Chi-square was used to test for significant differences and associations using SPSS package

## RESULTS

**Socio-demographic characteristics of the students:** The percentage distribution of age of respondents shows that majority of the respondents (37.8%) were in the age range of 19-21 years while 22.3% of the students were between 15 and 18 years old. Most of the students' parents are gainfully employed. On the basis of weekly allowance, it was observed that majority of the respondents receive 5000-10000 as weekly allowances.

**Prevalence of peptic ulcer disease among students:** The prevalence of both confirmed and unconfirmed cases of peptic ulcer disease was 43.2% (Table 1), while prevalence of medically diagnosed cases was 7.9%.

**Table 1.**  
Prevalence of Peptic Ulcer Disease among the students

Peptic ulcer	Frequency	Percent
Yes (Confirmed cases)	120 (22)	43.2 (7.9)
No	158	56.8
Total	278	100.0

**Table 2.**  
Proportion of students with symptoms suggestive of PUD

	Symptoms	Frequency	%
Nausea & vomiting	Yes	94	33.8
	No	184	66.2
Burn in the heart	Yes	129	46.4
	No	149	53.6
Bloating	Yes	66	23.7
	No	212	66.3
Loss of appetite	Yes	122	43.9
	No	156	56.1
Discomfort with meals	Beans and products	74	26.6
	Milk and products	115	41.4
	Citrus fruits	27	9.7
	No discomfort	8	2.9
Experience burping	Occasionally	90	32.4
	Often	123	44.2
	Never	65	23.4
	Total	278	100

**Proportion of students with some symptoms suggestive of PUD (Table 2)**

More than 40% of the students had symptoms suggestive of PUD. These symptoms include bloating (23.7%), nausea (33.8%), burping (32.4%), bloody stool (15.8%) and heart burn (46.4%) among others. About 33.8% of the total students said they usually have the sign of nausea or vomiting. Consumption of milk and legume-based products caused discomfort in about 41% and 33.8% of the students, respectively..

**Level of Knowledge among the students living with Peptic Ulcer Disease:** The knowledge of students with peptic ulcer disease about the disease is displayed in Table 3. It reveals that all the respondents living with PUD do not know that bacteria, aspirin, stress, caffeine, smoking or radiation may cause or worsen ulcer. It was also observed that many of them (90%) do not know that frequent milk intake is not encouraged in persons diagnosed with peptic ulcer. In addition, the fact that coffee or caffeinated drink may aggravate symptoms is well recognised (77.3%). About 64% of the students had good knowledge of healthy lifestyle in PUD.

**Table 3.**  
Level of Knowledge among the students living with Peptic Ulcer Disease

Questions	Number (Good)	Percentage (%)
What do you think causes peptic ulcer disease?	0	0
Persons with peptic ulcer should eat?	13	59.1
Frequent milk should be encouraged?	2	9.09
Which foods are to be avoided?	19	86.4
What are antacids?	17	77.3
Coffee or caffeinated drink should be avoided?	17	77.3
What do you think is peptic ulcer disease?	14	63.6
Persons with peptic ulcer should rest after eating?	17	77.3
Do you think peppery foods are suitable for PUD?	20	90.9
Carbonated drinks can cause pain for persons with PUD	17	77.3
Eating fried food should be encouraged?	20	90.9
Do grainy foods such as corn, groundnut, cashew affect ulcer	3	13.6

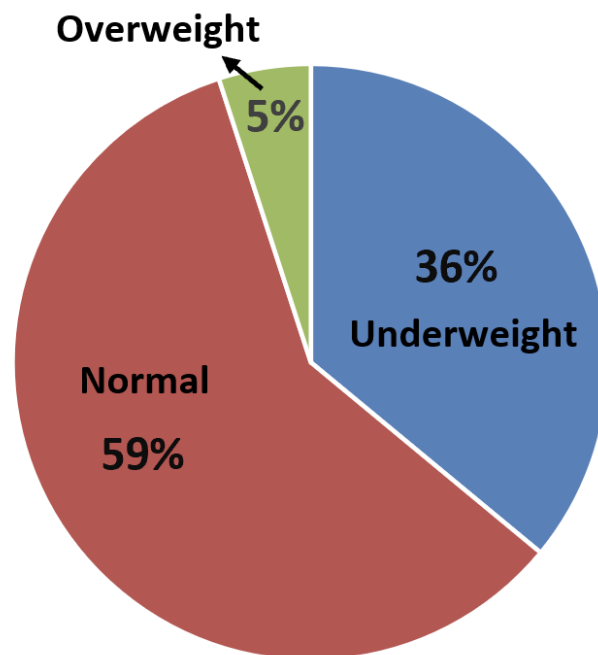
**Lifestyle Practice of the Respondents**

Table 4 displays the lifestyle of the participants living with PUD. It discloses that 54.5% of the respondents took aspirin or pain killer while 68.2% of them skipped breakfast, smoked cigarette and indulged in alcohol. About 59.1% of these students observed fasting periods. On the positive side, it was found that most of the respondents (63.2%) often do chew their food properly before swallowing.

**Table 4.**  
Lifestyle Practice of the Respondents (%)

Variables	Often	Occasionally	Never
3 meals daily	63.6	0.0	36.4
Peppery food	0.0	100.0	0.0
Breakfast	31.8	68.2	0.0
Proper mastication	63.6	36.4	0.0
Carbonated drinks	31.8	68.2	0.0
Slow meals//rest after	31.8	68.2	0.0
Fried foods	63.3	36.4	0.0
Cold snacks/drinks	63.3	36.4	0.0
Hot foods/drinks	31.8	68.2	0.0
Grainy food (nuts/corn)	31.8	68.2	0.0
Citrus Fruits	63.3	36.4	0.0
Alcohol/smoking	0	68.2	31.8
Pain killer/aspirin	54.5	27.3	18.2
Fasting	0	59.1	36.4

**Nutritional status of students with PUD:** About a third of the students with confirmed PUD were underweight (Figure 1). Daily mean energy and protein intake were  $1510 \pm 344.51$  kcal and  $38.50 \pm 17.34$ g, respectively.



**Figure 1:**  
Nutritional status of the students living with PUD

**Table 5.**  
Association between Nutritional status and Knowledge

Knowle dge	Nutritional status			p
	Underweight	Normal	Total	
<b>Poor</b>	2 (9.5%)	7(33.3%)	9 (42.9%)	0.195
<b>Good</b>	6 (28.6%)	6 (28.6%)	12 (57.1%)	
<b>Total</b>	8 (38.1%)	13 (61.9%)	21(100%)	

**Factors affecting practice of good lifestyle in persons living with PUD (Table 6):** More than 80% of the students reported early morning lectures as the major factor discouraging regular meals. Other factors mentioned were food vendors arriving late (54.5%), reduced food choices (50%) and lectures without break (45.5%).

**Table 6.**  
Factors affecting good diet practice in Peptic Ulcer Disease

Factors	Percent
Peppery foods	45.5
Early morning lectures	81.8
Lectures without break	45.5
Drinks/snacks as breakfast/lunch	36.4
Vendors opening late	54.5
Laziness to get food	59.1
Fear of food poisoning	18.2
Too many fried foods	27.3
Attitude of vendors	27.3
Reduced food choices	50.0

## DISCUSSION

The low prevalence rate of PUD observed in this study agrees with the works of Onoh *et al.* (2017) and Zibima *et al.* (2020) who reported PUD prevalence rates of 5.70% and 6.25% among students of Federal University of Technology, Owerri and South-South students, respectively. This could be attributed to low diagnostic rate as opined by Ray-Offor and Opusunji, (2020). It could also be linked to the global reduction in PUD prevalence attributed to better medical therapy. Based on the findings of this study, PUD occurred more among females (72%) than males as also reported by Eniojukan *et al.* (2017) and Zibima *et al.* (2020) in their works. Higher prevalence of *H.pylori* related PUD was also found among female students of an Iraq University (Hussen *et al.* 2013). They attributed the higher prevalence of *H.pylori* infection in developing countries to poor hygiene practices and crowded living conditions. Considering the possible presence of these conditions in most universities in Nigeria, further investigation of the actual rate of PUD cases among university students is necessary.

Majority of the students had signs suggestive of PUD which were worse during the school period. This finding is supported by that of Bayana *et al.*, (2021) which reported that 41.3% of the students of Jimma University, Ethiopia had symptoms suggestive of PUD which developed most after enrolling at the university. Ogunmodede *et al.*, (2016) reported a slightly lower prevalence of dyspeptic symptoms (37.5%) among university staff. Dyspeptic symptoms are typical of PUD as also confirmed in more than 83% of patients with gastric ulcer in a study in Iran (Koroush and Hamed, 2016). It is important that diseases are precisely diagnosed because most gastrointestinal diseases share similar signs. Consequently, majority of the students resorted to self-medication without confirmatory diagnosis. About 46.4% of the total students use antacids regularly due to gastritis. Eniojukan *et al.*, (2017) also found that most of the respondents comprising of university staff and students used over-the-counter medications without proper diagnosis. Use

of antacids over a long period may predispose persons to nutrient deficiencies (Vomera and Colpo, 2014). According to a report, PUD-like symptoms were found among students who exhibited practices such as use of NSAIDs, smoking, prolonged fasting and anxiety (Bayana *et al.*, 2021). It was also reported that the use of NSAIDs accounted for the majority of the PUD cases in another study (Narayanam *et al.*, 2018). Alcohol may irritate the intestinal mucosa and induce acidity while smoking impairs healing process (Eniojukan *et al.*, 2017). These factors affect morbidity in PUD and may increase frequency and duration of hospital admissions among students living with PUD. Increased PUD related illness or admissions would definitely affect academic performance and quality of life negatively.

It was not surprising that majority of the students had good knowledge of PUD. Awareness on health related issues has increased greatly over the years due to improved information technology. Students are the major players in information dissemination through the social media. A study among college students also reported that 50% of the students were aware of the risk factors of PUD and their effects (Ushanthika and Mohanraj, 2019).

The role of milk in the incidence and management of PUD is controversial. The use of milk to soothe the gastric pain in PUD patients is a common practice but not evidence based. Moreover, the ingestion of milk triggers gastric acid production which worsens pain after a period. More importantly, the issue of discomfort with dairy products and legumes among the students is worrisome because it might result to low calcium intake and subsequent calcium deficiency among the teens. Energy and protein consumption of the students with PUD were lower than the recommended dietary allowances for the age group and might explain the underweight rate. Unfortunately, data on previous weight of the students was not obtained to ascertain if there was weight loss. Poor food intake due to factors relating to time and availability of meals, lecture periods as well as irritation associated with some dietary substances might be related to the underweight rate found in this study. These factors may cause starvation and aggravate morbidity in PUD. Zibima *et al.* (2020) reported 100% starvation among the students with PUD which they attributed to lack of time to eat due to congested academic schedules. Severe and recurrent morbidity in PUD may also affect weight negatively (Nix, 2017). Coffee and soft drinks raise gastric acid production resulting to mucosal irritations, gastric distention and dyspepsia (Vomera and Colpo, 2014). Reduction of gastric acid by antacids/antiulcer medications may disrupt food digestion and result to folic acid and Vitamin B<sub>12</sub> deficiencies (Heidelbaugh, 2013). In terms of risk association, according to Pyo *et al.*, (2019), PUD had a higher recurrence rate among obese subjects than non-obese subjects. Healthy lifestyle including regular consumption of healthy diet and good living standards may contribute to reduction of symptoms by up to 80% among students living with PUD (Nix, 2017; Kainat *et al.* 2020).

In conclusion, although, the prevalence of PUD was low among the students, presence of PUD related symptoms was high. Students living with PUD face challenges which affect lifestyle practice and appreciable proportion of students with

PUD were underweight. Strategies aimed at tackling these challenges would not only contribute to improving the quality of life of students living with PUD but would prevent PUD occurrence. School authorities should organize health seminars on lifestyle changes which include regular/healthy eating, discontinuing smoking and consumption of alcohol, caffeinated beverages and NSAIDs because they are modifiable risk factors of PUD. Further investigation should be undertaken to confirm actual prevalence of peptic ulcer disease among these students for proper management

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