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Individual factors contributing to peptic ulcer disease among student nurses at Kampala University School of Health Science. A cross-sectional study.

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Abstract

Background:
The study aims to investigate Individual factors contributing to peptic ulcer disease among student nurses at Kampala University School of Health Science.

Methodology:
A descriptive cross-sectional study design employing quantitative methods of data collection, which involved the use of numerical values to assess the information. The target population was student nurses of Kampala University because they were the most affected by peptic ulcer disease due to the prevailing conditions faced by students. A sample size of 56 respondents was used.

Results:
Out of 50 (100%) of the respondents11(20%) took alcohol, whereas 8(14%) took NSAID drugs, 1(2%) smoked or chewed tobacco, while 36(64%) neither took alcohol, smoked, nor chewed tobacco nor took NSAID drugs. The majority of 40(71%) of the respondents did not have their meals on time, while 16(29%) of the respondents had their meals on time. 25(44%) of the respondents had at least two meals daily,16(29%) had three meals in a day 10(18%) had at least one meal daily and 5(9%) had four meals daily. 23(41%) of the respondents were of blood group A, 14(25%) were of blood group B, 11(20%) were of blood group AB, and 8(14%) were of blood group O. According to the graph in Figure 5 above, 15(27%) of the respondents fed on rice, 12(21%) fed on meat, 11(20%) fed on beans,10(18%) fed on posho while 8(14%) fed on other food.

Conclusion:
Individual factors contributed to a great number of PUD cases among students this including NSAID use, H.pylori infection, skipping of meals, starvation, stress, poor meal timing, eating spiced food, fasting, and taking alcohol.

Recommendations
The university should provide a counseling section for students to avoid psychological stress, hence reducing the risk of PUD.

Keywords: *Peptic Ulcer Disease, Student Nurses, Individual Factors, Helicobacter pylori, Stress, Dietary Habits, Kampala University School of Health Science.*
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Background
Peptic ulcer disease (PUD) arises from an imbalance between aggressive and defensive factors in the gastroduodenal mucosa (Jaiswal et al., 2021). The most established causes are Helicobacter pylori infection and the use of nonsteroidal anti-inflammatory drugs (NSAIDs) (Kavitt et al., 2019; Jaiswal et al., 2021). NSAID use has a substantiated impact on a significant portion of the population (Park et al., 2023).

Stress is a major modifiable risk factor, particularly common among student populations. (Salari et al., 2021). It can lead to erosive and ulcerative lesions in response to stressful mental and physical situations (Krishna et al., 2021). The mechanism involves complex brain-immune interactions and neurotransmitter changes (Ray et al., 2020), including vegetative regulation disruption, mucoprotein depolymerization, and oxidative stress activation (Honcharuk et al., 2023). Psychosomatic factors make individuals susceptible to psychological stress, leading to ulcers (Dong, 2022), and mental and psychosocial factors are significant across genders (Paik et al., 2020).

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Other modifiable lifestyle factors include smoking, alcohol consumption, and starvation (Soupriye et al., 2020). Dietary elements, such as consuming spicy food, may also play a role (Khesba, 2023). Demographically, *H. pylori* prevalence is higher in duodenal ulcers than gastric ulcers, in males compared to females, and among Hispanic and East Asian populations (Sonnenberg et al., 2020). Specific bacterial genotypes, like VacA m1 and s1m1, are also correlated with ulcer development (Keikha et al., 2020). Genetic factors contribute to susceptibility, with familial associations and genetic links to other gastrointestinal disorders like GERD and IBD (Wa et al., 2021). Rare causes of PUD include Zollinger-Ellison syndrome, malignancy, Crohn's disease, and vascular insufficiency (Malik et al., 2023). The pathophysiology ultimately involves an imbalance between aggressive factors like hydrochloric acid, pepsin, and reactive oxygen species, and defensive factors like the mucus-bicarbonate barrier and prostaglandins (Jaiswal et al., 2021). The study aims to investigate Individual factors contributing to peptic ulcer disease among student nurses at Kampala University School of Health Science.

METHODOLOGY

Study design and rationale

The study used a descriptive cross-sectional study design employing quantitative methods of data collection, which involved the use of numerical values to assess the information. This design was used to enable the researcher to obtain data at one point in time.

Study setting and rationale

The study was conducted at Kampala University School of Nursing and Health Science, Kampala District, located in the central region of Uganda.

This Campus was established in 2005 to close the country's gap in training its citizens in the areas of Nursing, Midwifery, and Health Sciences. The campus also houses KU's Graduate School and the Research Directorate. It is located in Kigagga Zone, Mutundwe parish, Lubaga division, Kampala District, about 4 km from the city center and ½ a km off Kabuusu-Kitebi road at Muteesa II Memorial stadium (Wankulukuku) junction.

Study population

The target population was student nurses of Kampala University because they were the most affected by peptic ulcer disease due to the prevailing conditions faced by students.

Sample size determination

A sample size of 56 respondents was used; the sample size was determined using the Krejcie and Morgan (1970) table, as shown below, which is a true representative of the study population.

Table 1: Table for determining sample size from a given population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

***Note: N** is for the population size, which is **65,** and **S** is the sample size, which is **56**.*

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Sampling procedure
This was achieved through convenient sampling of student nurses who were present for data collection.

Inclusion criteria/exclusion criteria
The study specifically targeted the student nurses of Kampala University who were present during the days of data collection and were given informed consent.
The excluded were the student nurses who were not willing or those who declined to participate in the study, and those who were absent.

Independent variables
The independent variables were individual factors.

Dependent variable
The dependent variable was peptic ulcer disease.

Research instruments
A pre-testing questionnaire with both open and closed-ended questions was designed and administered to the selected respondents who consented to participate in the study. Face-to-face interviews were conducted with the selected respondents who filled in responses by themselves since all students were literate. This method was also opted for because it enabled easy acquisition of information within a short period.

Data collection procedure
An introductory letter from Kampala University School of Nursing and Health Sciences was presented, which introduced the interviewer to the respondents. An introduction was made to the respondents, along with a brief explanation of the study. The respondents who accepted signed the informed consent form and were interviewed using the questionnaires. Four respondents were sampled per day over about 11 days.

Data management
The filled questionnaires were cross-checked, coded, and edited before leaving the study area to minimize errors during data analysis. The filled questionnaires were put in an envelope and kept in safe custody under lock and key, accessible only to the interviewer. Analyzed data on the computer was protected from access by using a password known only to the interviewer.

Data analysis and presentation
The collected data was manually analyzed and tallied; the results were processed using Microsoft Word and Excel programs, which were processed and presented inform of frequency tables, figures, pie charts, graphs, and narratives.

Ethical considerations
Approval was obtained from the research supervisor; permission was sought and granted from the principal of Kampala University School of Nursing and Health Sciences by obtaining an introductory letter. The study only commenced with the topic and objectives being introduced and explained to the respondents, who had to understand and voluntarily consent to participate in the study. Respondents were also informed that participation was voluntary, with an informed consent form being signed, and it was affirmed to them that the information given was strictly confidential and that serial numbers would be used instead of the respondent's name.

RESULTS
Demographic Data

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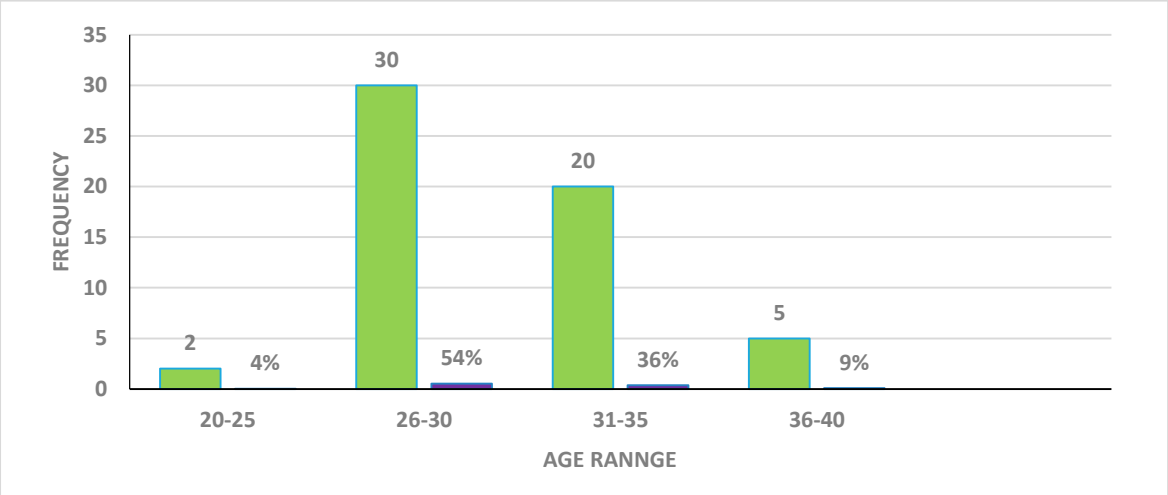
Figure 1: A graph showing the distribution of respondents by age n=56)



Source: Primary data, 2024.

In Figure 1, most of the respondents were in the age range of between 26 to 30 years
30 (54%), 20(36%) were in the range of 31 to 35 years, 5(9%) were between 36 to 40 years, and 2(4%) were in the age range of 20 to 25 years.

Table 2: Shows the distribution of respondents by sex (n=56)

Gender	Frequency (f)	Percentage (%)
Male	11	20
Female	45	80
Total	**56**	**100**

Source: Primary data, 2024.

In Table 2, majority 45(80%) of the respondents were female while 11(20%) were male.

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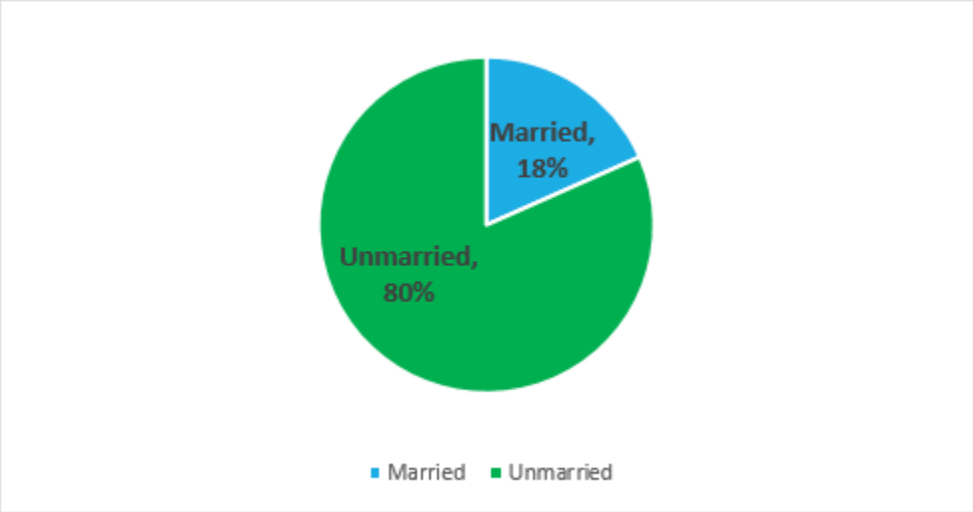
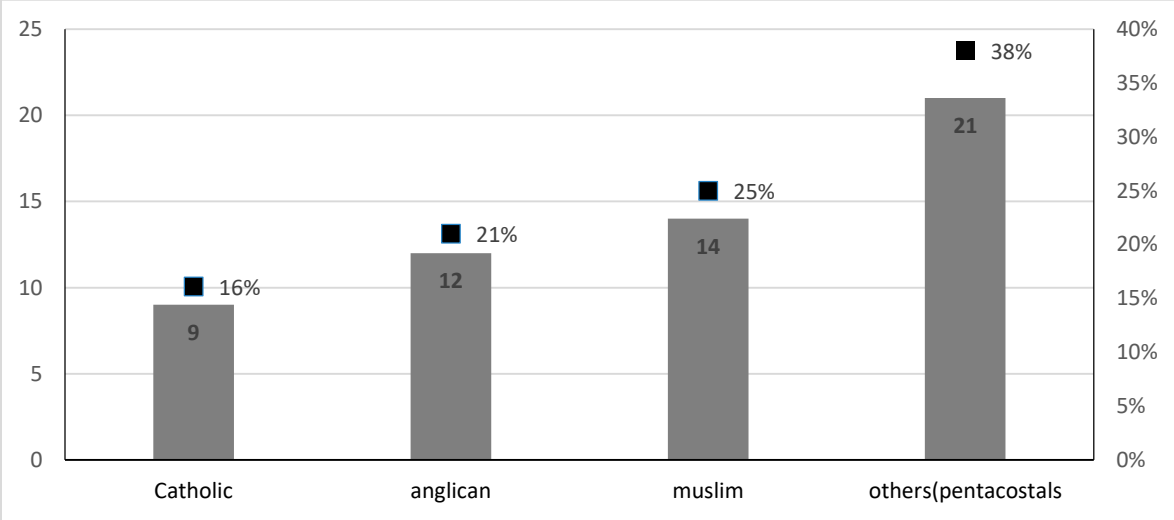
Figure 2: A pie chart showing the distribution of respondents by marital status (n=56)



Source: Primary data, 2024.

In Figure 2, the majority, 46(82%) of the respondents were not married, while 10(18%) were married.

Figure 3: A graph showing the distribution of respondents by religion (n=56)



Source: Primary data, 2024.

In Figure 3, 21 (38%) of the respondents were for other religions (Pentecostals), followed by 14(25%) who were Muslims, 12 (21%) who were Anglicans, and 9(16%) who were Catholics.

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Table 3: Shows the distribution of respondents by profession (n=56)

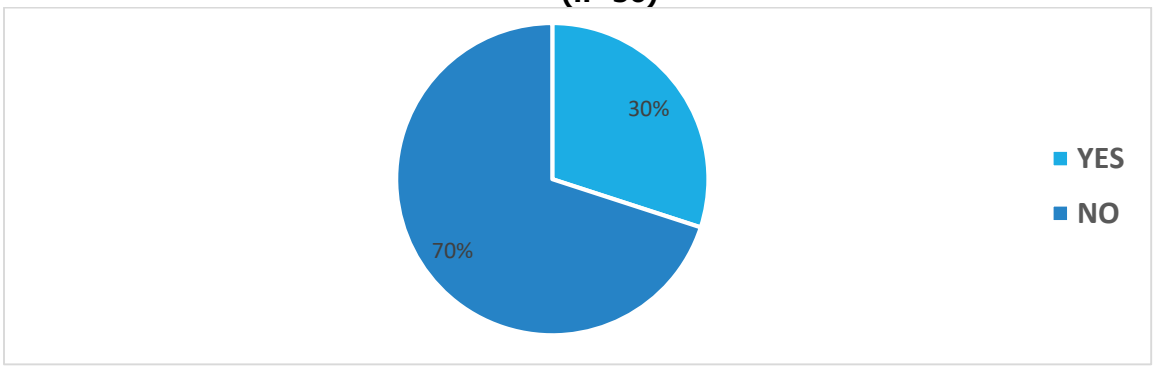
Course	Frequency (f)	Percentage (%)
Diploma in midwifery	12	21.0
Diploma in Nursing	44	79.0
Total	**56**	**100**

Source: Primary data, 2024.

In Table 3, the majority of the respondents, 44(79%), were diploma in nursing students while 21(21%) were diploma in midwifery students. At the time of the exercise, the certificate students were not readily available to participate in the interview.

individual factors Contributing to peptic ulcer disease

Figure 4: A pie chart showing whether respondents had ever been diagnosed with a peptic ulcer or not (n=56)



Source: Primary data, 2024.

In Figure 4, 17(30%) of the respondents have ever been diagnosed with PUD, while 39(70%) of the respondents have never had.

Table 4: Shows whether the respondents had signs and symptoms of PUD (n=56)

sign/symptom	Frequency (f)	Percentage (%)
Epigastric pain	14	25
Nausea and vomiting	10	18
Bloated abdomen	7	13
Heartburn	05	9
None of the above	20	36
Total	**56**	**100%**

Source: Primary data, 2024.

In Table 4, 14(25%) of the respondents experienced epigastric pain before or after a meal, 10(18%) experienced nausea and vomiting, 7(13%) experienced a bloated abdomen, 5(9%) suffered from heartburn, while 20(36%) did not experience any of the signs and symptoms.

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Table 5: Shows whether respondents smoke or chew tobacco, take alcohol, take NSAID drugs, or not (n=56)

Factor	Frequency (f)	Percentage (%)
Drink alcohol	11	20
Smoke or chew tobacco	1	2
Take NSAID drugs	8	14
None of the above	36	64
Total	**56**	**100**

Source: Primary data, 2024.

In Table 5, out of 50 (100%) of the respondents11(20%) took alcohol, whereas 8(14%) took NSAID drugs, 1(2%) smoked or chewed tobacco, and 36(64%) neither took alcohol, smoked or chewed tobacco, nor took NSAID drugs.

Table 6 shows whether the respondents had their meals on time (n=56)

Response	Frequency (f)	Percentage (%)
Yes	16	29
No	40	71
Total	**56**	**100**

Source: Primary data, 2024.

In Table 6, the majority of 40(71%) of the respondents did not have their meals on time, while 16(29%) of the respondents had their meals on time.

Table 6: the number of daily meals the respondents had (n=56)

Response	Frequency (f)	Percentage (%)
One	10	18
two	25	44
three	16	29
four	05	9
Total	**56**	**100**

Source: Primary data, 2024.

In Table 7, 25(44%) of the respondents had at least two meals daily,16(29%) had three meals in a day, 10(18%) had at least one meal daily, and 5(9%) had four meals daily.

Table 7: Shows whether respondents had some psychological issues (n=56)

Response	Frequency (f)	Percentage (%)
Yes	46	82
No	10	18
Total	**56**	**100**

Source: Primary data, 2024.

In Table 8, 46(82%) of the respondents had psychological issues, while 10(18%) had no psychological issues.

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Table 8: Shows the type of blood groups the respondents had (n=56)

Blood group	Frequency (f)	Percentage (%)
A	23	41
B	14	25
AB	11	20
O	08	14
Total	**56**	**100**

Source: Primary data, 2024.

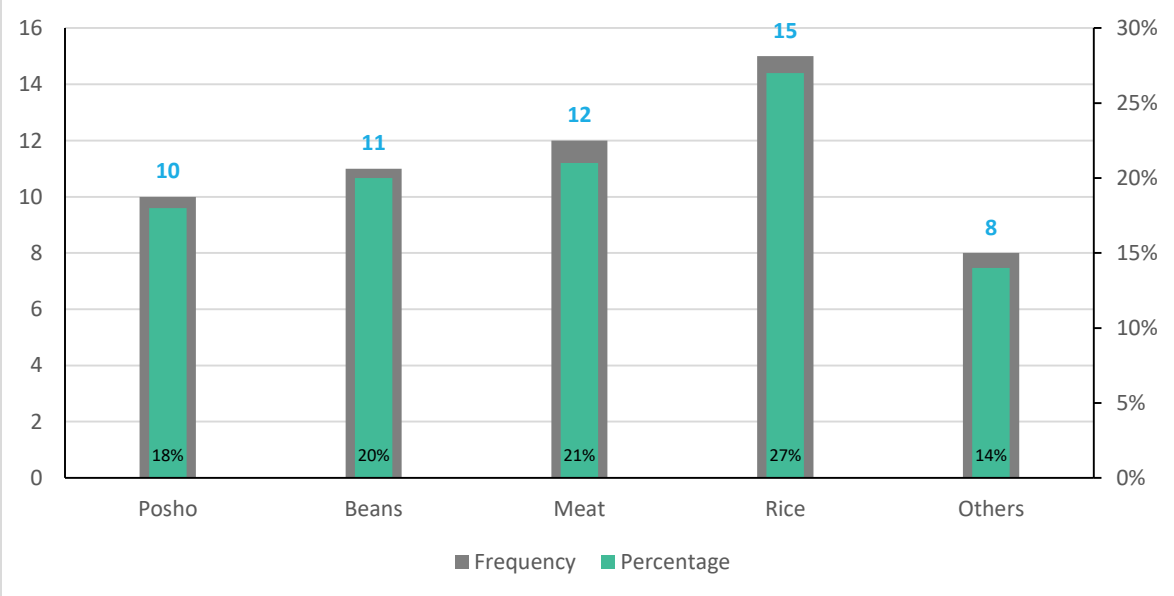
In Table 9, 23(41%) of the respondents were of blood group A, 14(25%) were of blood group B, 11(20%) were of blood group AB, and 8(14%) were of blood group O.

Table 9: Shows the distribution of data according to what the respondents ate most time. (n=56)

Responses	Frequency (f)	Percentage (%)
posho	10	18.0
beans	11	20.0
meat	12	21.0
rice	15	27.0
Others	08	14.0
TOTAL	**56**	**100**

Source: Primary data, 2024.

Figure 5: Which foods do you eat most times?



Source: Primary data, 2024.

According to the graph in Figure 5, 15(27%) of the respondents fed on rice, 12(21%) fed on meat, 11(20%) fed on beans,10(18%) fed on posho while 8(14%) fed on other food. This implies that the majority of the students feed on rice.

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Table 10: shows if the respondents ate spiced foods (n=56)

Response	Frequency (f)	Percentage (%)
Yes	38	68
No	18	32
Total	**56**	**100**

Source: Primary data, 2024.

According to the table, 38(68%) of the respondents fed on spiced food, while 18(32%) did not eat spiced food.

DISCUSSION

Demographic information

Most of the respondents were in the age range of 26 and 30 years. (30 or 54%), 20(36%) were in the range of 31 to 35 years, 5(9%) were between 36 and 40 years, and 2(4%) were in the age range of 20 to 25 years, which were the right target because they were mature enough to give good responses, which facilitated the research process. Kakooza (2021) from the Students' Journal of Health Africa found H. pylori to be high among adults between the ages of 18-40 and associated it with smoking cigarettes, drinking alcohol, and poor sanitation.

The majority, 45(80%) of the respondents were female, while 11(20%) were male, as seen in Table 2. This was expected because in Uganda, a high number of females pursue nursing courses compared to their male counterparts.

In Figure 2, the majority, 46(82%) of the respondents were not married, while 10(18%) were married. It was expected because most people prefer to get married after their studies, while a few continue with their studies after getting married.

In Figure 3, 21 (38%) of the respondents were for other religions (Pentecostals), followed by 14(25%) who were Muslims, 12 (21%) who were Anglicans, and 9(16%) who were Catholics. The greatest number of students at Kampala University were mostly Pentecostal, followed by Muslims, then Anglican, while a few were Catholics.

In Table 3, the majority of the respondents, 44(79%), were diploma in nursing students, while 12(21%) were diploma in midwifery students; certificate students were not available at the time of the data collection exercise due to the University schedule. The majority of students at Kampala University School of Health Science were nursing students compared to the midwives, who were few. Since all students were literate, they were able to understand the questions and answer with ease.

individual factors contributing to peptic ulcer disease

In Figure 4, 17(30%) of the respondents have ever been diagnosed with PUD, while 39(70%) of the respondents have never had it. This has a relationship with the study done by Namyalo et, al., (2021) where the overall 5-year H. pylori prevalence was 35.7% (1298/3634) and the prevalence of H. pylori infection was significantly higher (39.4%) among patients who belonged to the age group of 19–35 years (OR = 1.49, 95% CI: 1.22–1.82) because most of the respondents were in the same age range.

In Table 3, 14(25%) of the respondents experienced epigastric pain before or after a meal, 10(18%) experienced nausea and vomiting, 7(13%) experienced a bloated abdomen, 5(9%) suffered from heartburn, while 20(36%) did not experience any of the signs and symptoms. This could have been associated with NSAID use and helicobacter pylori infection, as Kavitt et. al. (2019) from the American Journal of Medicine reviewed a study that most cases of peptic ulcer disease are associated with helicobacter pylori infection with the use of nonsteroidal anti-inflammatory drugs (NSAIDs), or both.

In Table 4, out of 50 (100%) of the respondents11(20%) took alcohol, whereas 8(14%) took NSAID drugs, 1(2%) smoked or chewed tobacco, and 36(64%) neither took alcohol, smoked, nor chewed tobacco nor took NSAID drugs. Zibima et. al. (2020) conducted a study at a university in Southern Nigeria and found that some of the established risk factors of PUD, like Starvation, stress, NSAID use, alcohol consumption, and cigarette smoking, were the major modifiable risk factors of PUD documented.

In Table 5, the majority, 40(71%) of the respondents did not have their meals on time, while 16(29%) of the respondents had their meals on time. This corresponds to the study done by Phomphithak et. al. (2020), who found that people having food at incorrect times are at a higher risk of developing peptic ulcers than those having food at the correct time.

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In Table 6, 25(44%) of the respondents had at least two meals daily,16(29%) had three meals in a day, 10(18%) had at least one meal daily, while 5(9%) had four meals daily. This corresponds to the study done by Zibima et. al. (2020), who documented Starvation as one of the major modifiable risk factors of PUD. Therefore, those who did not have the recommended number of daily meals stood a high chance of getting PUD.

In Table 8, 46(82%) of the respondents had psychological issues, while 10(18%) had no psychological issues. Simon Xin Min Dong (2022) identified that the psychosomatic factor makes the individual susceptible to current psychological stress, leading to peptic ulcers.

In Table 9, 23(41%) of the respondents were of blood group A, 14(25%) were of blood group B, 11(20%) were of blood group AB, and 8(14%) were of blood group O. This is in line with a study done by Edyedu et al. (2023), who found perforated PUD to be more prevalent amongst male peasants of rural residence, with the majority of the participants being of blood group O.

According to Figure 6, 15(27%) of the respondents fed on rice, 12(21) fed on meat, 11(20%) fed on beans, 10(18%) fed on posho while 8(14%) fed on other food. This has a relationship with Jaiswal et. al., (2021) that explains PUD to be caused by an imbalance between aggressive factors like hydrochloric acid (HCL), pepsin, refluxed bile, leukotrienes (LTs), reactive oxygen spices (ROS), and defensive factors like the mucus bicarbonate barrier, prostaglandins (PGs), mucosal blood flow, cell renewal and migration, nonenzymatic and enzymatic antioxidants. In addition, spicy food and nutritional deficiency are implicated in the pathogenesis of gastric ulcers.

Limitations of the Study

- Time constraint: The time given to complete research was not adequate to acquire enough representative samples, meaningful, and sufficient data for the study, since there were other commitments, such as doing clinical practice and state final exams. However, drawing a timetable helped to overcome this challenge.
- Making appointments with selected respondents was a challenge due to their busy schedules, which did not allow them to participate freely in the study. However, flexibility was shown with the respondents' schedules for the day by utilizing their free periods.
- Inadequate finances were a limitation, given the high operating costs of transport, photocopying, typing, and other research costs. However, this limitation was overcome by drawing up a budget that was strictly followed through, utilizing the available resources.

Conclusions

Individual factors contributed to a great number of PUD cases among students, including NSAID use, H.pylori infection, skipping of meals, starvation, stress, poor meal timing, eating spiced food, fasting, and taking alcohol.

Recommendations

The students should be encouraged to always take their meals on time and avoid skipping meals.
The university administration should ensure that all meals are served at the right time without delay.
Students should be encouraged to seek proper medical care in case they develop signs and symptoms of PUD.
The students should be health educated about PUD preventive measures.
The university should provide a counseling section for students to avoid psychological stress, hence reducing the risk of PUD.
The government should organize PUD eradication campaigns targeting students.

Implications for Nursing Practice

Peptic ulcer disease is a gastrointestinal condition affecting a large portion of the population worldwide with life-threatening complications that, if left untreated, can lead to death. This calls for putting in measures like prevention and early management to avoid further complications.

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List of Abbreviations

GERD: Gastro-Esophageal Reflux Disease
GWAS: Genome-Wide Association Study
H. pylori: *Helicobacter pylori*
IBD: Inflammatory Bowel Disease
NSAIDs: Non-Steroidal Anti-Inflammatory Drugs
PGs: Prostaglandins
PUD: Peptic Ulcer Disease
ROS: Reactive Oxygen Species

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Source of funding
The study was not funded.

Conflict of interest
The author did not declare any conflict of interest.

Author contributions
Babra Chekwemoi was the principal investigator.
Mrs. Nalwoga Elizabeth supervised the research.

Data availability
The data is available upon request.

Author Biography
Babra Chekwemoi is a student at Kampala University School of Nursing and Health Sciences.
Nalwoga Elizabeth is a tutor at Kampala University School of Nursing and Health Sciences.

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