Factors influencing adherence to lifestyle modifications among patients with peptic ulcer disease seeking health services at Masaka Regional Referral Hospital: A cross-sectional study.

Enock Kabanda*, Anthony Mawanda, Mayanja M. Magala.
International Paramedical Institute Maya.

Corresponding author details: Enock Kabanda **Email:** kabandaenock9@gmail.com
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Abstract

Background

Peptic ulcer disease is a big public health problem affecting a large number of people at some point in their lives. PUD requires significant lifestyle adjustments for effective management and recovery. This study aimed to explore the factors that influence adherence to lifestyle modifications among PUD patients at Masaka Regional Referral Hospital.

Methodology

The study used a descriptive cross-sectional design with quantitative methods of data collection. The data were collected using questionnaires from 100 conveniently sampled patients attending Masaka Regional Referral Hospital and aged 18 – 65 years.

Results

The majority of the participants (78.3%) were in the age group of 20-59 years; 58.3% were females; and 58.3% were married. Adherence to lifestyle modifications was highest among those aged 30-39 years (87%) and 40-49 years (83%); it was higher among females (71%); and among those who were married (74%). Highest adherence was observed among those earning 50k-100k (97%); those with tertiary education (80%); and those employed. Only 30% of those experiencing constant stress adhered, as well as only 33.3% of smokers and 35% of alcohol consumers. Adherence was highest among participants who reported easy access to healthcare (80%) and those receiving support services (77%).

Conclusions

Adherence to lifestyle modifications among patients with PUD is influenced by a combination of demographic, individual, health system, and socioeconomic factors. Younger age groups, financial constraints, unhealthy behaviour, limited access to healthcare services, and inadequate patient education are associated with lower adherence to lifestyle modifications.

Recommendation

Young people may benefit from enhanced education, while older patients may benefit from additional health support. Enhanced patient education and health support services should be provided to improve adherence to lifestyle modifications among patients with PUD.

Keywords: Adherence, Lifestyle modification, Peptic ulcer disease

Background of the study

Peptic Ulcer Disease (PUD) is a significant global health issue, affecting an estimated 10% of the population at some point in their lives, with millions suffering annually (World Health Organisation, 2017). This condition arises primarily from an imbalance between gastric acid secretions and the protective mechanisms of the stomach lining, with Helicobacter pylori infection and long-term use of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) identified as the leading causes (Huang et al., 2018). Despite the profound impact of lifestyle modifications—such as dietary changes, smoking cessation, limiting alcohol intake, and stress management—adherence to these vital strategies remains alarmingly inconsistent. In high-income countries, adherence rates are higher due to better access to healthcare and education. However, low- and middle-income countries face significant barriers, with a 2017 WHO study revealing that over 50% of patients with chronic diseases, including PUD, fail to follow recommended lifestyle changes. This gap in adherence highlights an urgent need for targeted interventions to address the barriers faced by patients, particularly in resource-limited settings.

In Africa, PUD is a prevalent gastrointestinal disorder influenced by H. Pylori infection, poor sanitation, and widespread NSAID use. The healthcare infrastructure in many countries remains underdeveloped, limiting patient education on chronic disease management. A study conducted in Nigeria and Kenya found that only 30% of PUD patients adhered to lifestyle changes, citing financial limitations, lack of education, and cultural resistance as major challenges (Lynch et al., 2021). These barriers exacerbate the already significant health burden of PUD across the continent, necessitating urgent action to improve adherence and overall patient outcomes.

In East Africa, rapid urbanisation has led to dietary shifts that heighten PUD risk factors, including increased fast food consumption, high caffeine intake, and elevated smoking rates. The urgent need for effective strategies to promote adherence among PUD patients is critical to mitigate the escalating health crisis in the region.

In Uganda, PUD poses a significant public health concern, with a high population unaware of its risk factors and management strategies. The leading causes of PUD in the country include H. Pylori infection and the use of NSAIDs. However, adherence to lifestyle modifications remains a persistent challenge. Financial constraints, limited education, and cultural beliefs significantly impact patients' ability to make necessary lifestyle adjustments. Alarmingly, a 2021 audit indicated that fewer than 20% of PUD patients adhere to lifestyle recommendations, underscoring the urgent need for targeted interventions in Uganda to improve adherence and reduce the burden of this disease.

In Masaka District, the situation is particularly alarming. The Health Management Information System (HMIS) records from Masaka Regional Referral Hospital indicate a concerning rise in PUD cases, with a reported prevalence of approximately 15% among patients seeking gastrointestinal treatment over the past year (Masaka Regional Referral Hospital HMIS, 2023). Furthermore, data reveal that a significant proportion of these patients present with advanced symptoms, exacerbated by inadequate adherence to lifestyle modifications. The HMIS indicates that only 25% of diagnosed patients receive proper education on lifestyle changes necessary for managing their condition. This deficiency in health education and patient follow-up has created a cycle of persistent health challenges, with patients frequently returning for treatment of complications related to PUD.

These HMIS records underscore the urgent need for a focused study in Masaka District to identify specific barriers to adherence and to develop tailored interventions that can enhance PUD management in this community. With PUD contributing significantly to morbidity and healthcare expenditure in the region, addressing these challenges is essential for improving health outcomes, reducing the financial burden on the healthcare system, and ultimately saving lives. The time to act is now; every day of inaction results in further suffering for patients and their families in Masaka District. This study aimed to identify the key factors influencing adherence to lifestyle modifications among PUD patients at Masaka Regional Referral Hospital.

Methodology

Study design

This was a descriptive cross-sectional survey approach. This was due to limited resources. Data were collected once, and there was no follow-up with the participants.

Study area

The study was conducted at Masaka Regional Referral Hospital in Masaka district.

Study population

The study encompassed patients being diagnosed with PUD, aged between 18 and 65 years, because they can provide consent. All were informed in the local language and had no history of mental illness

Sample size determination

This was obtained using Solvin's formula

Sample size formula (n) = $\frac{N}{1+N(0.05)^2}$

n= size of sample or number of participants

N=Estimated population of PUD patients (70); D = margin of error (0.5%)

n= $\frac{70}{1+70(0.05)^2}$=59.6 = 60 participants

Sampling technique
This employed a convenient sampling technique of recruiting a readily available PUD patient and selecting any patient in the outpatient department. 10 patients were selected in a day. The only criteria for selection were being a PUD patient.

Sampling procedure
The sample size was obtained by recruiting readily available PUD patients since there was no independent unit for PUD patients.

Data collection
It was a one-on-one interaction between a researcher and respondents. Some observations were also employed. Also, self-administered questionnaires assessing demographics, disease characteristics, patient knowledge and awareness, health beliefs and attitudes, social support and network, adherence to lifestyle modification, etc. However, these patients required interpretation, so the researcher and research assistants read and interpreted the questionnaire to the participants and filled them out on their behalf.

Data collection tools
A questionnaire was employed, having three sections. Section A contained multiple-choice questions on demographic and clinical characteristics influencing adherence to lifestyle modifications; Section B contained multiple-choice questions on specific lifestyle modifications that are most challenging for patients to adhere to; and Section C contained both multiple-choice questions and open-ended questions on how health beliefs of patients affect their adherence to lifestyle modifications.

Data analysis and presentation
Descriptive statistics like frequencies and pie charts were used in analysing and presenting data.

Ethical consideration
The researcher first received a recommendation letter from the institute, which he submitted to the research committee of MRRH, which issued an approval letter to the researcher. The approval from the Institutional Review Board of Masaka Regional Referral Hospital was presented to the

OPD department head and allowed the researcher to conduct data collection. Secondly, the researcher received consent from the research participant. Always first ensured confidentiality and anonymity and ensured that no harm was sustained by the participant.

Results

The demographic characteristics of PUD patients that influence their adherence to the lifestyle modifications.

Table 1: Demographic data for participants who adhered and those who did not.

Parameter	Variables	Participants	Adherent	Percentage adherence
Age	<20 years	5	1	20
	20 – 29 years	10	4	40
	30 -39 years	15	13	87
	40 -49 years	12	10	83
	50 -59 years	10	5	50
	> 60 years	8	5	63
Gender	Females	35	25	71
	Males	25	13	52
Marital status	Single	20	8	40
	Married	35	26	74
	Divorced/widowed	5	4	80

Individual factors influencing adherence to lifestyle modifications among PUD patients.

Table 2: showing individual factors of participants that adhered and those that did not.

Parameter	Variables	Participants	Adherent	Percentage adherence
Income level	< 50000	12	4	33
	50K-100K	15	13	97
	100K-500K	16	11	69
	>500K	17	10	59
Education level	No formal education	5	2	40
	Primary	15	7	47
	Secondary	25	17	68
	Tertiary	15	12	80
Employment status	Employed	25	19	76
	Self-employed	20	10	50
	Unemployed	15	9	60
Work schedule interface	Yes 16/25	16	7 can improve 9 cannot improve	64
	No 9/25	9	4	44

Figure 1: A pie chart showing the frequency of experiencing stress

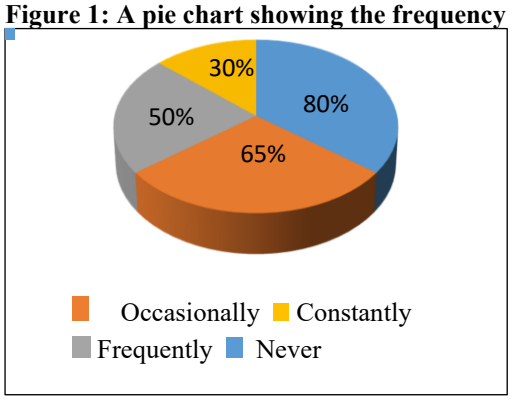


Figure 1 shows that 8/10 participants who never experience stress adhered, contributing 80%; 13/20 participants who experience stress adhered contributed 65%; 10/20 participants who experience stress frequently adhered contributed 50%; and 3/10 participants who experience stress constantly experienced pain contributed 30%.

Figure 2 shows the number of participants against those who smoke, take alcohol and eat spiced foods.

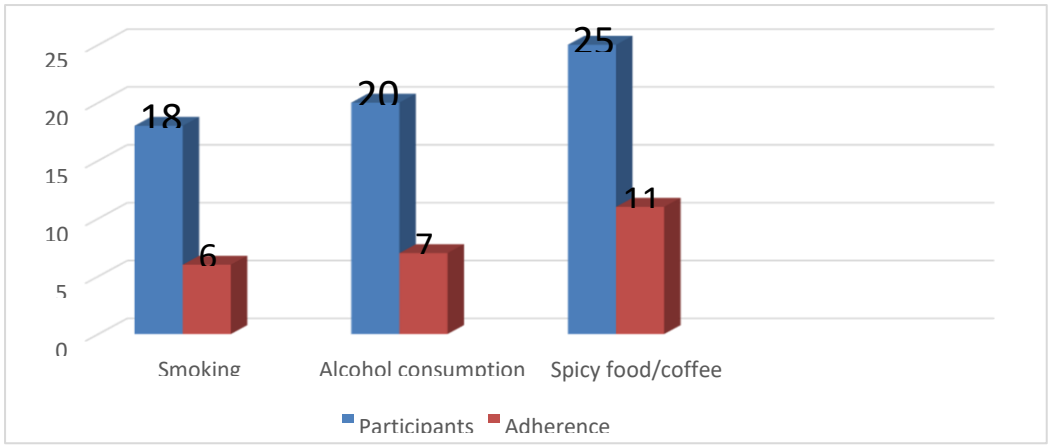


Figure 2 shows that 18 participants smoked, and out of those, 6 participants adhered. 20 participants consumed alcohol, of whom 7 adhered to lifestyle modification. Lastly, 25 participants consumed spicy foods/ coffee, with 11 participants adhering.

Health system factors

Table 3 showing health-related factors that affect lifestyle adjustments among PUD patients (n=60)

Parameter	Category	participant	Adherent	Percentage adherent rate
Access to health services	Very easy	15	12	80
	Easy	20	14	70
	Difficult	15	8	53
	Very difficult	10	4	40
Availability of support services	Yes	35	27	77
	No	25	11	44
Follow up appointment frequency	Regularly	20	17	85
	Occasionally	20	12	60
	Rarely	15	7	46
	Never	5	2	40
Quality of health care provider communication	Excellent	40	30	75
	Fair	20	8	40
Patient education on lifestyle modification	Received	45	32	71
	Did not receive	15	6	40
Geographical location	Urban	35	24	68
	Rural	25	12	48

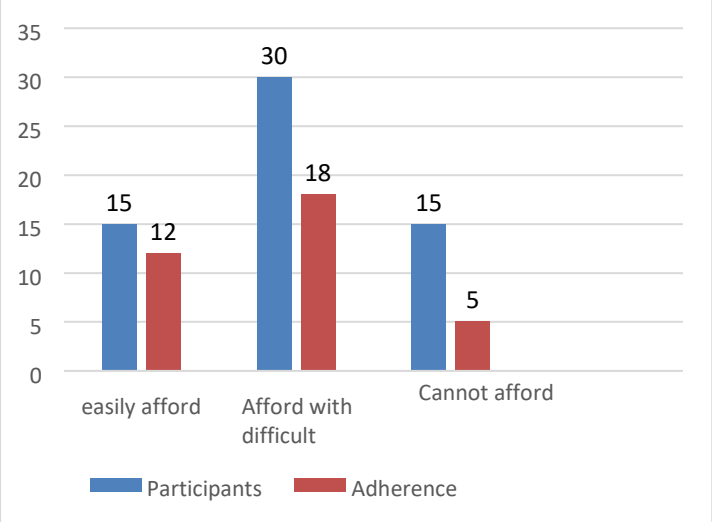
Health system factors that influence lifestyle modifications among PUD patients

Table 4 showing other health system-associated factors that influence adherence to lifestyle modifications among PUD patients (n=60).

Parameter	Category	Participants	Adherent	% adherence
Have enough information about PUD and lifestyle	Yes	34	27	79
	No	26	11	42

Socioeconomic factors

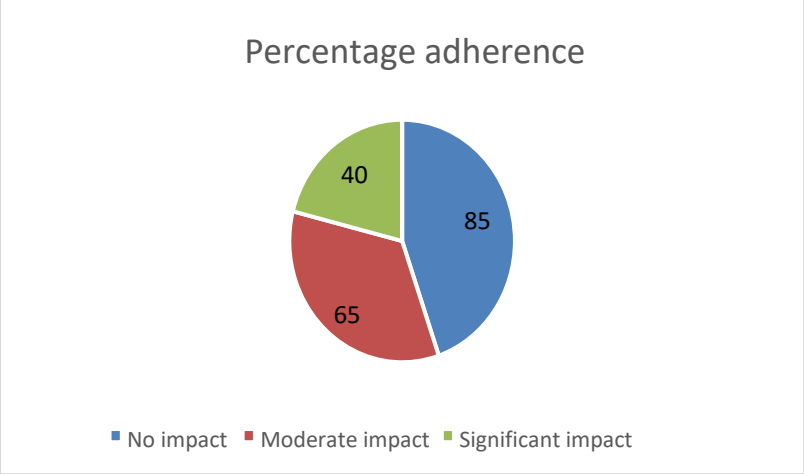
Figure 3: A bar graph showing financial situation and affordability of lifestyle changes



From Figure 3, 15 participants would easily afford the costs towards lifestyle modifications, of whom 12 adhered; 18/30 participants who would afford with difficulty adhered and only 5/15 participants who could not afford adhered to lifestyle modifications.

Impact of financial constraints

Figure 4: A pie chart showing the percentage adherence of participants at different financial capacity



Discussions

Individual factors influencing adherence to lifestyle modifications among patients living with PUD.

The majority of participants experiencing mild stress adhered to lifestyle modifications, with 65% indicating that mild stress does not significantly impact adherence. In contrast, a minority of participants experiencing frequent stress 50% and constant stress 30% adhered to lifestyle changes. Chronic stress had the most significant impact, as these participants struggled to manage both PUD and stress simultaneously.

A minority of smokers 33% and alcohol consumers 35% adhered to lifestyle modifications. These results highlight the difficulties in overcoming nicotine and alcohol dependence. A minority of participants who consumed spicy foods and coffee 44% adhered to lifestyle modifications. Many participants struggled to eliminate these items from their diet, especially those with long-standing habits. This finding supports the work of (Smith et al. 2018), who noted cultural dietary preferences as a barrier to adherence. Conversely, (Jenkins and Schraufnagel 2020) found that with proper education, patients could significantly reduce their intake of harmful foods, suggesting that educational interventions could mitigate these challenges.

Highest adherence rates are observed in the age group 30-39 years. This may mean that better management habits have been developed by this age. Similarly, adherence is also higher in the age group 40-49 years, maybe because individuals have more stable routines and better health management practices. This is in line with (Kim et al., 2019), according to whom older patients tend to be more adherent.

However, adherence greatly reduces for the age group 50-59 years. This reflects challenges such as increased comorbidities, difficulty adopting new habits and other life complications that affect adherence.

On comparison, young adults exhibit lower adherence 20-29 years, possibly due to a lower perceived severity of their condition and a greater tendency to engage in risky behaviours (Smith et al., 2018), middle adults have higher adherence, so there is increased understanding of the disease as the individual ages well as older adults are moderately adherent which may be attributed to increased health issues, drug side effects and increasing resistance to change with age.

The adherence rate of females is notably higher than that of males by 19%. This could be attributed to higher literacy and greater focus on preventive health measures. Men, on the other hand, show lower adherence, and this may often be influenced by social and cultural norms that prioritise stoicism and risk-taking behaviours over health maintenance (Huang et al., 2018)

Meaning that married individuals are 59.1% more adherent than single participants. The higher adherence rates among married individuals 90.4%) suggest that spousal support plays a significant role in encouraging lifestyle modifications. Similar findings were observed by (Kim et al. 2019), who noted that the family support system often provided the necessary motivation for chronic disease management. On the other hand, single individuals may lack this support, leading to lower adherence rates 31.3%. This highlights the need for targeted support systems for unmarried patients.

Higher income earners generally correspond to higher adherence rates than low-income earners, although the highest adherence was obtained at 100K-500K. This correlates with Lin et al. 2020), who suggested that higher socioeconomic status is associated with better adherence due to greater access to health care resources, healthier food options and more education about disease management. Also, Huang et al. 2018) suggested that patients from lower socioeconomic backgrounds may struggle with adherence due to financial constraints, limited access to healthy food, and lower health literacy.

The data show a clear trend where adherence rates increase with higher levels of education. This suggests that individuals with higher education may better understand the importance of lifestyle modifications and have better access to resources and information. The substantial increase in adherence from informal to tertiary education levels indicates that education plays a critical role in health management. Higher education levels are correlated with better adherence, as these individuals are more likely to comprehend medical advice and the long-term benefits of lifestyle changes (Zhao et al., 2019). Lower education levels can lead to misunderstandings about disease management and scepticism towards medical recommendations (Choi et al., 2018)

Employed individuals have the highest adherence rate, which might be due to stable incomes, better access to healthcare, and possibly greater health awareness. Employment might also provide a structured routine that supports adherence to health recommendations. Self-employed individuals have the lowest adherence rate, possibly due to irregular income, financial pressures, and less stable access to healthcare resources. They might also face higher stress levels, which can impact adherence.

Patients without chronic illness have a significantly higher adherence rate; the significantly lower adherence rate among those with chronic illness suggests that managing multiple health conditions can be overwhelming, making it harder to adhere to lifestyle modifications. This group may also face more complex treatment regimens or have additional barriers that impact their ability to adhere. Those without chronic illnesses generally show better adherence, possibly due to fewer health complications and a more straightforward management of PUD.

Patients with multiple health issues are often more motivated to follow lifestyle modifications to manage their overall health (Huang et al., 2018). However, managing multiple conditions can also be overwhelming, leading to potential non-adherence due to the complexity of treatment regimens (Huang et al., 2018).

Adherence to lifestyle modification increased as the duration or the time intervals between severe symptoms reduced. The severity of PUD symptoms directly affects adherence to lifestyle modifications. Patients experiencing severe symptoms are more likely to adhere to dietary restrictions, medication and other lifestyle changes to alleviate discomfort (Kim et al., 2019). Mild or asymptomatic cases often result in lower adherence rates, as patients may not perceive an immediate need to modify their lifestyle.

All participants reported having immediate relief after taking medications. The medications are 100% effective in symptom relief. The findings are consistent with the prior research by (Smith et al., 2018) that suggested Patients who experience significant relief from medications may be more likely to continue adhering to lifestyle modifications.

Participants who had suffered from PUD for a period of over 1 year had an adherence rate of over 81.8%. This is probably because these people have developed better coping and adherence mechanisms. The results are consistent with prior research (Kim et al., 2019).

Health system factors that influence lifestyle modifications among PUD patients

The majority of participants with very easy 75% and easy 65% access to healthcare adhered to lifestyle modifications. In contrast, a minority of participants with difficult 47% and very difficult 30% access adhered to lifestyle changes. These findings suggest that ease of access to healthcare services significantly influences adherence rates. (Kumar et al. 2020) support this, noting that access to healthcare significantly impacts adherence.

The majority of participants with access to support services 70% adhered to lifestyle modifications, while a minority without support services 40% adhered. This finding supports the importance of comprehensive support services. The majority of participants with regular follow-ups 80% adhered to lifestyle modifications. In contrast, a minority with occasional follow-ups (55%, rare 40%, and no follow-ups 20% adhered. The majority of participants who rated communication as excellent or good 75%) adhered to lifestyle modifications.

The majority of participants who received education 71% adhered to lifestyle modifications, while a minority who did not receive education 40% adhered. This finding aligns with Pignone et al. 2002), who noted that educational interventions improve adherence. However, Nutbeam 2000) suggests that education must be tailored to individual needs for maximum impact, indicating that generic education may not be as effective.

The majority of urban participants 68% adhered to lifestyle modifications, while a minority of rural participants 44% adhered. These results are consistent with Ricketts 2000), who found that rural patients face significant access challenges.

Socioeconomic factors that influence adherence to lifestyle modifications among PUD patients

The majority of participants who could easily afford lifestyle changes 80% adhered to the recommendations. In contrast, a minority of those who could afford it with difficulty 60% and those who could not afford it (30% adhered. These findings are consistent with (Braveman et al. 2021), who noted that income disparities contribute to unequal health outcomes. Conversely, (Peery et al. 2002) found that targeted financial assistance programs can mitigate these barriers, suggesting that financial support can improve adherence.

The majority of financially secure participants 85% adhered to lifestyle modifications. In contrast, a minority of those facing slight to moderate financial issues 65% and those significantly impacted by financial challenges 40% adhered. These results align with those of Braveman et al. 2021), who highlighted the impact of financial constraints on health outcomes. However, some studies suggest that community support programs can help alleviate these issues, indicating that external support can play a role in improving adherence.

The majority of participants influenced by cultural beliefs and social norms showed lower adherence to lifestyle changes. This supports (Smith et al. 2018), who found that cultural dietary preferences can be a barrier to adherence. Conversely, Jenkins and Schraufnagel 2020) suggest that culturally tailored interventions can improve adherence, indicating that cultural sensitivity in healthcare can enhance outcomes.

Conclusion

Adherence to lifestyle modifications among PUD patients is influenced by a complex interplay of individual, health system, and socioeconomic factors. Stress levels, smoking, alcohol consumption, and dietary habits significantly impact individual adherence. Health system factors such as access to healthcare services, availability of support services, frequency of follow-up appointments, and quality of healthcare provider communication play crucial roles in adherence. Socioeconomic factors, including financial situation, education, employment status, social support, geographic location, and cultural beliefs, also significantly affect adherence rates.

Study limitations

Personally, I experienced a challenge that PUD patients were scarce and not readily available; the majority requested material benefits to participate in the study.

Secondly, some patients are too confidential and not willing to provide most of the essential data, like their financial status, their employment status, etc.

Recommendations

Develop and provide stress reduction strategies and support systems to help patients manage stress and improve adherence to lifestyle modifications.

Offer targeted interventions and support programs to assist patients in quitting smoking and reducing alcohol consumption.

Improve access to healthcare services, particularly in rural areas, to ensure patients can receive timely and consistent care.

Promote regular follow-up appointments to maintain patient accountability and adherence to lifestyle modifications.

Create financial assistance programs to help patients afford necessary lifestyle changes and medications.

Acknowledgement

The successful completion of the research project on factors influencing adherence to lifestyle modification among PUD patients seeking health services at Masaka Regional Referral Hospital has been a profound journey marked by the support and contribution of numerous individuals.

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Abbreviations and acronyms

PUD: Peptic Ulcer Disease

GIT: Gastrointestinal tract

NSAIDs: Non-Steroid Anti-Inflammatory Drugs

PPIs: Proton pump inhibitors

MRRH: Masaka Regional Referral Hospital

UAHEB: Uganda Allied Health Examination Board

Source of funding: The study received no external funding.

Conflict of interest: The authors declared no conflicts of interest.

Author contribution: Enock Kabanda conceptualised the study, developed the proposal, collected and analysed the data, interpreted the findings, and prepared the final research report. Anthony Mawanda supervised the whole research process.

Data availability: Data supporting the findings may be obtained upon request from the corresponding author.

Ethical approval: The study was reviewed and cleared for data collection by the Masaka Regional Referral Hospital Research Ethics Committee.

Informed consent

Written informed consent was obtained from all participants before their inclusion in the study. Participants were informed about the purpose of the study, procedures involved, potential risks and benefits, and their right to withdraw at any time without penalty.

Author biography:

Enock Kabanda is a student of International Paramedical Institute Maya, Uganda, pursuing a diploma in clinical medicine and community health.

Anthony Mawanda is a tutor at the International Paramedical Institute Maya, Uganda; and Mayanja M. Magala is the principal of the institute.

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