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Simplified Reflux-Qual Score among Students at Lédéa Bernard Ouédraogo University in 2025

Ouattara Zanga Damien[1]*, Ouedraogo Latif Sabane[1], Hien Siebou[2], Zoungrana Steve Léonce[1], Koura Mali[3], Dah Elias[4], Traoré Solo[5] and Sawadogo Appolinaire[3]

[1]*Department of Gastroenterology, Regional Teaching Hospital of Ouahigouya, Ouahigouya.*

[2]*Department of Nephrology, Regional Teaching Hospital of Ouahigouya, Ouahigouya.*

[3]*Department of Gastroenterology, Souro Sanou Teaching Hospital of Bobo-Dioulasso, Bobo-Dioulasso.*

[4]*Department of Public Health, Regional Teaching Hospital of Ouahigouya, Ouahigouya.*

[5]*Department of Internal Medicine, Regional Teaching Hospital of Ouahigouya, Ouahigouya.*

***Correspondence:**

Ouattara Zanga Damien, Department of Gastroenterology, Regional Teaching Hospital of Ouahigouya, Ouahigouya.

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ABSTRACT

Introduction: *Gastroesophageal reflux disease (GERD) is a common digestive disorder worldwide, with an increasing prevalence among young adults. It can significantly impair quality of life and promote certain digestive complications. In West Africa, few studies have investigated this condition in university settings, particularly in Burkina Faso.*

Objective: *This study aimed to determine the prevalence of GERD among students at Lédéa Bernard Ouédraogo University (ULBO), to assess its impact on quality of life, and to compare these aspects across different academic units.*

Methods: *A cross-sectional, descriptive, and analytical study was conducted from April 1 to June 30, 2025, involving 432 students at ULBO. Data were collected using an online self-administered questionnaire. Statistical analyses were performed with SPSS version 26, using the Chi-square test, Fisher's exact test, and logistic regression models.*

Results: *The prevalence of GERD was 25.5%. Students from the UFR/SS showed a prevalence of 11.1%, those from IFPM 8.6%, and those from UFR/ST 5.8%. The Simplified Reflux-Qual Score revealed moderate to severe impairment of quality of life in 25.5% of affected students. Students from IFPM experienced greater quality-of-life impairment, whereas medical students reported better quality of life compared to others.*

Conclusion: *GERD is a frequent condition among ULBO students, leading to moderate to severe quality-of-life impairment in one out of four cases. Future studies assessing the impact of this impairment on academic performance would be of great interest in university settings.*

Keywords

Gastroesophageal reflux disease, Students, Prevalence, Quality of life, Reflux-Qual score, Burkina Faso.

Introduction

Gastroesophageal reflux disease (GERD) is a common disorder of the upper digestive tract, classically manifested by a combination of ascending retrosternal burning or heartburn and food regurgitation. It may be associated with postural syndrome and, in some cases, progress to complications, particularly esophageal mucosal damage [1]. This condition results from dysfunction of the anti-reflux mechanism or from aggravating factors such as motility disorders, leading to abnormal passage of gastric contents into the esophagus [2].

Chronic GERD symptoms can significantly impair sleep,

productivity, and the patient's psychological well-being. An anxiety-inducing effect is also observed in some patients, due to persistent symptoms or fear of severe complications [3]. GERD is a chronic digestive disorder whose impact extends well beyond physical symptoms, considerably affecting patients' quality of life. Studies have shown that GERD is associated with a significant reduction in overall well-being, impacting physical, psychological, and social domains [4]. Among students and young adults, these repercussions may manifest as decreased concentration, chronic fatigue, reduced academic performance, and even deterioration of mental health.

To assess the impact of GERD on quality of life, several tools have been developed. Among these, the Simplified Reflux-Qual (RQS®) is a specific validated instrument designed to quantify GERD-related impairment in quality of life. It is a self-administered questionnaire composed of eight items covering the main functional, psychological, dietary, and sleep-related dimensions affected by the disease. Each item is scored from 0 to 4, allowing for a total score ranging from 0 to 32, with higher scores reflecting better quality of life [5].

Ouahigouya, a city in northern Burkina Faso facing major security challenges, has been home since 2010 to Lédéa Bernard Ouédraogo University (ULBO), which offers three training programs: Medicine (UFR/SS), Science and Technology (UFR/ST), and Vocational Training and Professional Development (IFPM). The socio-economic environment, stress related to the security situation, and academic pressure may represent fertile ground for GERD in this student population. However, no specific local data are available to assess the magnitude of the condition and its impact on students' quality of life, thereby limiting the implementation of targeted preventive measures. We therefore initiated this study, the first at the national level focusing on students, to document the reality of GERD in this specific academic context. Our objective was to assess the impact of GERD on the quality of life of ULBO students using the Simplified Reflux-Qual Score.

Methods

This was a cross-sectional study with descriptive and analytical aims, conducted over a 3-month period from April 1 to June 30, 2025.

Study Population

The study involved students enrolled at Lédéa Bernard Ouédraogo University (ULBO) during the 2024–2025 academic year.

Inclusion and exclusion criteria

- *Inclusion criteria:* all students enrolled at ULBO in the 2024–2025 academic year who consented to participate in the study were included.
- *Exclusion criteria:* students who declined participation and questionnaires with incomplete, inconsistent, or unusable responses were excluded.

Sampling

Sampling was non-probabilistic, based on convenience, through a call for participation disseminated on class digital platforms (WhatsApp groups), as well as through in-person outreach in common university areas (cafeteria, library, classrooms, etc.).

The minimum sample size was estimated using Schwartz's formula [6]:

$n = Z^2 . p(1-P)/d^2$

where n = minimum sample size, Z = 1.96 for a 95% confidence interval, p = 0.28 (the prevalence of GERD reported in Ouagadougou in 2005 [34]), and d = desired precision (5%, i.e., 0.05). Substituting these values, the minimum required sample size was estimated at 310 students.

Study variables and operational definitions

variables

- *Sociodemographic characteristics:* age, sex, marital status, living arrangements, academic unit, and level of study.
- *Behavioral and lifestyle data:* tobacco use, alcohol consumption, intake of carbonated beverages, fatty or acidic foods, physical activity, sleep habits, and academic stress level.
- *Clinical data:* personal and family history of digestive, metabolic, or chronic diseases.
- *GERD symptoms:* presence, frequency, and use of medications for relief.
- *Quality of life:* assessed using an adapted version of the Simplified Reflux-Qual Score (RQS®), measuring the functional and psychological impact of GERD on students' daily lives. Adaptation consisted of slight rewording of items for easier comprehension with simplified vocabulary and contextualized examples (including the university cafeteria). The introductory wording was reformulated into a general question, and the response scale was standardized (from 4 = "Not at all" to 0 = "Extremely") to ensure consistency and simplify analysis. The adaptation preserved the original questionnaire's integrity [7], maintaining its eight items and dimensions. Each item was scored from 0 to 4, with higher scores indicating better quality of life [8]. The total score ranged from 0 to 32.

Operational definitions

- *GERD case definition:* based on self-reported symptoms, following common epidemiological approaches. A student was considered to have GERD if at least one of the two typical symptoms—heartburn and/or acid regurgitation—was present occurring at a frequency of at least once per week. A binary variable "GERD presence" was created for statistical analysis.
- *Fatty meals:* defined as meals with a high lipid content,

typically from fried foods, fatty meats, rich sauces (oil- or butter-based), or whole dairy products. Common examples in Burkinabè cuisine include *riz gras*, *tô* with oily sauces (peanut, okra, etc.), and abundant fried foods (pastries, fried fish).

- *Spicy meals:* defined as dishes with significant amounts of hot or strongly aromatic spices such as chili, ginger, garlic, pepper, or cloves. These are widely used in local cuisine for both flavor and preservation.

- *Acidic meals:* defined as foods or preparations with low pH, including citrus fruits (lemon, orange), tomatoes, and acidic juices (tamarind, baobab, etc.).

- *Impact of GERD on quality of life:* measured with the RQS®, comprising eight items scored 0–4. The total score ranged from 0 (maximal impairment) to 32 (optimal quality of life). For analysis, the score was first treated as a continuous variable, then dichotomized using a threshold of 16 (50% of the maximum score), in line with methodological recommendations when standardized cut-off points are unavailable. Thus:

    - Moderate to severe impairment: RQS < 16
    - Mild or no impairment: RQS ≥ 16 [9].
- *Frequency definitions:*

    - "Rarely" = at most once per week
    - "Sometimes" = 2–3 times per week
    - "Often" = 4–6 times per week

Data collection tools and techniques

Data were collected using a self-administered online questionnaire created with the KoboToolbox platform. Prior to distribution, the study's objectives, procedures, and expectations were explained to students during visits to different academic units. The survey link was then generated via KoboToolbox and shared through class representatives, who disseminated it to their respective WhatsApp groups. Participation was anonymous and voluntary, and students completed the questionnaire over a four-week period.

To ensure accessibility for all students, including those with technical difficulties or without access to WhatsApp, paper versions of the questionnaire were also distributed via class representatives during visits to university facilities. Completed paper forms were subsequently entered manually into the KoboToolbox database by the research team.

Data processing and analysis

Statistical analyses were performed using IBM SPSS Statistics, version 26.0. A significance threshold of $p < 0.05$ was applied. Analyses followed a three-step approach: descriptive, univariate, and multivariate, in accordance with standard epidemiological methods.

Ethical considerations

The study received prior approval from ULBO administrative and academic authorities. Official authorization was granted for data collection among students from the different academic units. Participation was voluntary, following clear and comprehensible information regarding the study's objectives, procedures, and implications. Explicit, informed, and voluntary consent was obtained from each participant before submission of the questionnaire.

Results

Out of 4,121 students enrolled at ULBO, our targeted sample size was 310 students. We obtained responses from 432 students, including 175 from IFPM, 131 from UFR/SS, and 126 from UFR/ST. Among them, 110 students reported symptoms suggestive of GERD, distributed as follows: 37 from IFPM, 48 from UFR/SS, and 25 from UFR/ST.

Prevalence of GERD at ULBO

Among the 432 respondents, 110 reported symptoms consistent with GERD, yielding an overall prevalence of 25.5% (110/432). The prevalence was 11.1% in UFR/SS, 8.6% in IFPM, and 5.8% in UFR/ST. Pearson's Chi-square test indicated a statistically significant association between the academic unit and GERD prevalence ($\chi^2 = 12.444$; df = 2; p = 0.002).

Socio-demographic characteristics of students with GERD

In our study, the mean age of students was 22.31 ± 2.76 years, ranging from 18 to 32 years. Males were more represented (53.6%) compared to females (46.4%), giving a sex ratio of 1.15. Most students with GERD symptoms were single (93.6%), while 5.5% were married and 0.9% widowed. Regarding living arrangements, 40% lived alone, 33.6% with family, and 26.4% in shared housing. The majority of students were enrolled in UFR/SS (43.6%), followed by IFPM (33.6%) and UFR/ST (22.7%). The most represented academic levels were second-year undergraduate (25.5%), third-year undergraduate (24.5%), and first-year undergraduate (22.7%). Students in Master's programs accounted for 3.6% (Master 1) and 6.4% (Master 2).

Lifestyle habits of students with GERD

In our study, 6.4% of students reported tobacco use and 22.7% reported alcohol consumption. A majority (80%) reported regular consumption of coffee, tea, or carbonated beverages. Approximately 90.9% reported consuming fatty, spicy, or acidic foods, known for their irritant potential on the esophageal mucosa. More than half of the participants (68.2%) consumed chocolate, with 48.2% doing so occasionally. Furthermore, 85.5% of students reported lying down or going to bed within two to three hours after a meal. Regarding physical activity, 60.9% reported engaging in regular exercise. Sleep disturbances were reported by 41.8% of respondents, and 54.5% presented with a high level of academic stress (VAS >7). The mean stress score was 6.40 ± 1.94, with extremes ranging from 1 to 10.

Table 1: Distribution of students with GERD according to different lifestyle habits.

Frequency of Consumption Coffee, Tea, or Carbonated Drinks	Frequency (n)	Percentage (%)
No consumption	22	20
Sometimes	36	32.7
Rarely	28	25.5
Often	23	20.9
Every day	1	0.9
Total	110	100
Frequency of Consumption **Fatty, Spicy, or Acidic Meals**	**Frequency (n)**	**Percentage (%)**
No consumption	10	9.1
Sometimes	54	49.1
Rarely	13	11.8
Often	32	29.1
Every day	1	0.9
Total	110	100
Frequency of Consumption **Chocolate**	**Frequency (n)**	**Percentage (%)**
No consumption	35	31.8
Sometimes	14	12.7
Rarely	53	48.2
Often	7	6.4
Every day	1	0.9
Total	110	100
Frequency of Habit **Lying Down Soon After a Meal**	**Frequency (n)**	**Percentage (%)**
No consumption	16	14.5
Sometimes	29	26.4
Rarely	5	4.5
Often	39	35.5
Every day	21	19.1
Total	110	100
Frequency of Physical Activity	**Frequency (n)**	**Percentage (%)**
No activity	43	39.1
Sometimes	29	26.4
Rarely	18	16.4
Often	18	16.4
Every day	2	1.8
Total	110	100

Impact of GERD on quality of life among affected students

Descriptive statistics of the RQS® score

Analysis of data collected from 110 students with GERD showed a mean RQS® score of 20.54 ± 6.738, with values ranging from 5 to 32.

Distribution of students according to level of quality-of-life impairment

The distribution of students across the two categories of GERD-related quality-of-life impairment is presented in the table below:

Table 2: Distribution of students with GERD according to quality-of-life impairment.

Level of GERD-related quality-of-life impairment	n	%
Moderate to severe (0–16)	28	26
Mild to absent (17–32)	82	75
Total	**110**	**100**

n = frequency; % = percentage

Table 3: Bivariate analysis of factors associated with the RQS® score among students.

Variable crossed with RQS® score	Asymptotic p-value	Exact p-value
Sex	0.994	1
Academic unit (UFR)	0	0
Coffee/tea/soft drink consumption	0.827	1
Frequency of coffee/tea/soft drink consumption	0.759	0.762
Level of study	0.188	0.186
Marital status	0.735	0.768
Type of cohabitation	0.073	0.079
Tobacco use	0.845	1
Alcohol use	0.74	0.796
Consumption of fatty/spicy/acidic meals	0.678	0.734
Frequency of fatty/spicy/acidic meals	0.446	0.484
Chocolate consumption	0.966	1
Frequency of chocolate consumption	0.48	0.519
Lying down after meals	0.964	1
Frequency of lying down after meals	0.985	0.986
Physical activity	0.186	0.262
Frequency of physical activity	0.466	0.458
Sleep disturbances	0.671	0.823
Personal history of hiatal hernia	0.421	1
Personal history of obesity	0.983	1
Family history of GERD	0.172	0.29
Family history of hiatal hernia	0.156	0.335
Family history of esophagitis	0.015	0.063
Family history of esophageal or gastric cancer	0.445	0.6

Comparison of the impact of GERD on quality of life

The analysis of GERD-related quality of life measured by the RQS® score was performed according to the academic unit of the students. The mean RQS® scores by academic unit are presented in the table below:

Table 4: Descriptive statistics comparing RQS® scores between academic units.

Academic unit/institute	Mean RQS®	Standard deviation
IFPM	16.03	6.54
UFR/ST	21.64	5.75
UFR/SS	23.44	5.51

Students from IFPM had a mean score of 16.03, reflecting a more impaired quality of life due to GERD. In contrast, students from UFR/SS reported a mean score of 23.44, indicating a better GERD-related quality of life. Moreover, our study showed that 51.4% of IFPM students experienced moderate-to-severe impairment, compared with 12.5% in Health Sciences and 12.0% in Science and Technology. A one-way ANOVA test was conducted to assess whether the differences observed between the means were statistically significant. The analysis revealed a statistically significant difference in mean RQS® scores across academic units ($p < 0.001$).

Table 5: Analysis of variance (ANOVA) of RQS® scores according to students' academic unit.

Source of variation	Sum of squares	df	Mean square	F	p-value
Between groups	1186.81	2	593.41	16.9	< 0.001
Within groups	3762.55	107	35.16		
Total	4949.36	109			

F: ANOVA test statistic; df: degrees of freedom

After the ANOVA test, post-hoc comparisons (Bonferroni and Tamhane tests) were performed to identify which pairs of groups showed significant differences, given the possible inequality of variances. The results demonstrated that IFPM students had a significantly lower quality of life compared with those from UFR/ST ($p = 0.001$) and UFR/SS ($p < 0.001$). No statistically significant difference was observed between Science and Technology and Health Sciences students ($p = 0.665$).

Table 6: Multiple comparisons of RQS® scores (Bonferroni and Tamhane methods).

Comparison (I–J)	Mean difference (I–J)	p (Bonferroni)	p (Tamhane)
IFPM (1) – ST (2)	-5.61	0.001	0.002
IFPM (1) – SS (3)	-7.41	< 0.001	< 0.001
ST (2) – SS (3)	-1.8	0.665	0.498

Discussion

Study limitations and constraints

Our study has several limitations that should be acknowledged. First, its cross-sectional design does not allow for establishing a causal relationship between the identified factors and the occurrence of GERD.

Second, the data were collected through self-administered questionnaires, which exposes the study to a potential risk of reporting bias. Furthermore, the selection of students reporting GERD-related symptoms relied exclusively on subjective clinical criteria, which may have led to an overestimation or underestimation of the true prevalence of GERD.

In addition, the relatively small size of some academic units reduced the statistical power of the study. Finally, since the study participants were exclusively recruited from ULBO, the findings cannot be generalized to the entire student population of the country.

Prevalence

In our study conducted among 432 ULBO students in 2025, the prevalence of GERD was 25.5%. Distribution by academic units showed that UFR/SS was the most affected with 11.1% of cases, followed by IFPM with 8.6% and UFR/ST with 5.8%. This local prevalence is comparable to data reported in the international literature. Sharma et al. in India, in a study involving 600 medical students, reported a prevalence of 25% [10]. Essa, et al. in Egypt, among 602 medical students, found a slightly higher prevalence of 28.4% [11]. In Burundi, Ntagirabiri et al. reported a prevalence of 27.8% among 400 students [12]. Abdulrahman, et al. reported one of the highest figures, with a prevalence of 34.6% among 1,533 students in Saudi Arabia [13]. In Nigeria, Nwokediuko et al. found a prevalence of 26.34% among medical students [14]. Similarly, Belete, et al. reported a prevalence of 32.1% among 512 university students in the Amhara region of Ethiopia [15]. The 25.5% prevalence observed in our study is consistent with international data, both among students (25–35%) and worldwide [16]. It is lower than that reported in Ethiopia and significantly lower than in Saudi Arabia, which may be explained by differences in student lifestyle. It is close to the prevalence rates reported in India, Nigeria, and Burundi, which could reflect comparable nutritional and social contexts.

Impact of GERD on quality of life

GERD is well recognized not only for its clinical manifestations but also for its impact on quality of life. In our study, quality of life was assessed using the Simplified Reflux-Qual score, a validated tool designed to measure the perceived impact of GERD symptoms on daily life [8].

In our sample, 25.5% of students reported moderate to severe impairment of quality of life (score <16). Meyiz, et al., in Morocco, reported moderate to severe quality of life impairment in 62% of 100 symptomatic patients. This difference may be explained by the characteristics of the populations studied: our sample was young,

with a mean age of 22.7 years and generally healthy, whereas Meyiz's sample included older patients (mean age 47 years) consulting in specialized care [17].

In our study, no significant difference was found between sexes regarding quality of life impairment ($p = 0.994$), which is consistent with Almadi, et al., who also found that sex was not a determinant factor in the perceived impact of GERD on quality of life [18]. However, the academic unit was significantly associated with the level of quality of life impairment ($p < 0.001$). IFPM students reported moderate to severe impairment in 51.4% of cases, compared to only 12.5% in Health Sciences and 12.0% in Science and Technology. This disparity may partly reflect an information bias, with Health Sciences students likely to better understand the scoring system compared to their peers.

Although variables such as academic stress or sleep disorders were not statistically associated with quality of life impairment in our study, their potential role in the onset or exacerbation of GERD symptoms remains plausible, as suggested by Weldon [19].

Conclusion

Our study, conducted among 432 students at Lédéa Bernard Ouédraogo University, revealed a notable prevalence of GERD, estimated at 25.5%, with moderate to severe impairment of quality of life in one out of four students, as assessed by the Simplified Reflux-Qual score. This highlights a health issue that has not yet been explored in our context. Further research focusing on the impact of GERD on academic performance, still scarcely documented, could help demonstrate its repercussions on students' educational trajectories.

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