Intermittent Fasting and GERD Symptoms: A Cross-Sectional Study in a Medical Faculty Academic Community

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Abstract: Gastroesophageal Reflux Disease (GERD) is a chronic gastrointestinal disorder caused by the backflow of gastric contents into the esophagus and may reduce quality of life. Intermittent fasting (IF) is increasingly practiced among productive-age groups, including academic communities, yet alterations in eating windows may influence gastric acid dynamics and gastrointestinal motility, making its relationship with GERD symptoms clinically relevant. **Objective:** This study aimed to examine the association between intermittent fasting habits and the occurrence of GERD symptoms among the academic community at the Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Sumatera Utara. **Methodology:** An analytic observational study with a cross-sectional design was conducted among 64 respondents selected using purposive sampling. Data were collected using a structured questionnaire and analyzed with SPSS. The association between IF habits and GERD symptoms was tested using the Chi-square test at a significance level of $p < 0.05$. **Findings:** The analysis showed no statistically significant association between intermittent fasting habits and GERD symptoms ($p = 0.633$). **Research implications:** These findings suggest that intermittent fasting, as practiced in this population, may not be a key determinant of GERD symptoms; therefore, prevention and counseling efforts should emphasize other modifiable factors (e.g., meal composition, late-night eating, stress, caffeine intake, or obesity-related risk) when managing reflux complaints in academic settings. **Originality/value:** This study provides context-specific evidence on the IF–GERD symptom relationship within an Indonesian medical faculty academic community using a standardized symptom assessment approach, contributing local data to an area where findings remain variable across populations.

Keywords: Intermittent Fasting; GERD; GERD-Q; Dietary Patterns; Academic Community.

INTRODUCTION

Gastroesophageal Reflux Disease (GERD) is a chronic disorder caused by the backflow of gastric contents into the esophagus due to the impaired function of the lower esophageal sphincter. This condition can produce characteristic symptoms and cause changes in the esophageal mucosa, which ultimately negatively affects patients' quality of life. Based on clinical classification, GERD is divided into two main groups, namely erosive esophagitis (EE) and non-erosive reflux disease (NERD).

One dietary pattern that has recently been widely adopted as part of a healthy lifestyle is Intermittent Fasting (IF). Intermittent Fasting is a dietary approach that regulates eating time by restricting food intake within a specific period and extending fasting duration. Although IF does not limit the types of food consumed, this pattern has been shown to help reduce body weight, decrease oxidative stress, and improve insulin sensitivity (Nain & Jain, 2020). IF can improve gut microbiota, reduce systemic inflammation, and enhance digestive motility through the motilin hormone, thereby helping to alleviate GERD symptoms (Vasim et al., 2022).

Previous studies reported that the implementation of Time-Restricted Feeding (TRF) with a 16:8 pattern in patients suspected of having GERD was able to significantly reduce GERD symptom scores (Jiang et al., 2023). In addition, studies on Ramadan fasting indicated that fasting practices did not increase the incidence or severity of GERD symptoms based on the GERD-Q questionnaire assessment (Dan et al., 2020).

In Indonesia, based on the 2018 Basic Health Research (Riskesdas), the prevalence of GERD reached 40.8%, indicating that nearly half of the population experiences symptoms of acid reflux (PGI, 2022). Furthermore, a population-based study in Chile reported that the prevalence of GERD reached 44.8% and was more common among women and older individuals (Manterola et al., 2020). Other studies also indicate that lifestyle factors such as smoking, alcohol consumption, lack of physical activity, stress, and diets high in sugar and fat can increase the risk of GERD (Sadafi et al., 2024).

However, scientific evidence regarding the effect of Intermittent Fasting on the incidence of GERD among academic communities remains limited. Therefore, this study was conducted to analyze the relationship between Intermittent Fasting habits and the incidence of Gastroesophageal Reflux Disease among the academic community of the Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Sumatera Utara.

RESEARCH METHOD

This study employed an analytical observational research design with a cross-sectional approach. Data analysis and observation were conducted to assess the relationship between the independent variable, namely Intermittent Fasting habits, and the dependent variable, namely the incidence of Gastroesophageal Reflux Disease (GERD) symptoms, through a single measurement. This study was conducted at the

Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Sumatera Utara, from September to December.

The population of this study consisted of active members of the academic community who met the inclusion criteria and were not included in the exclusion criteria. The sampling technique used was non-probability sampling with a purposive sampling method.

The sample size was determined using power analysis with G*Power software version 3.1, which indicated a minimum required sample of 62 respondents. In its implementation, a total of 64 respondents met the inclusion and exclusion criteria and were willing to participate in the study; therefore, all respondents were included in the analysis.

Bivariate analysis was conducted using the Chi-square test to assess the relationship between Intermittent Fasting habits and the incidence of GERD symptoms, with statistical significance set at $p < 0.05$.

RESULT AND DISCUSSION

This section presents the findings of the study, focusing on the demographic, anthropometric, and clinical characteristics of the academic community respondents. The descriptive analysis provides an overview of the sample composition by age, gender, body weight, height, occupation, education level, and medical history. These baseline characteristics are essential to contextualize subsequent analyses and to ensure a clear understanding of the population profile represented in this study. Overall, the results highlight the distribution patterns of key variables and identify notable trends that may influence the interpretation of health-related outcomes. Table 1 begins by presenting the age distribution of academic community respondents by gender to describe the demographic composition of the sample. This information is essential because age differences may influence health behavior patterns, risk perception, and responses to health-related interventions examined in the study.

Table 1. Characteristics of Academic Community Respondents

Age Group	Gender		Percentage (%)	
	Male	Female	Male	Female
18–35 years	9	40	18.4%	81.6%
36–45 years	3	7	30.0%	70.0%
>46 years	1	4	20.0%	80.0%

The age distribution shows that the 18–35-year group is predominantly female (81.6%), with a similar female predominance in the 36–45 group (70.0%) and those older than 46 years (80.0%). This consistent pattern indicates that the sample is largely female across all age categories, suggesting that interpretation of findings should consider the potential influence of gender imbalance.

Table 2 also summarizes respondents' body weight by gender to provide an overview of anthropometric characteristics. Body weight is a relevant health indicator as it is commonly associated with nutritional status, metabolic risk, and may act as a confounding factor in health outcome analyses.

Table 2. Body Weight Distribution of Respondents by Gender

Body Weight	Gender		Percentage (%)	
	Male	Female	Male	Female
40–58 kg	0	24	0.0%	100.0%
59–77 kg	4	19	17.4%	82.6%
>77 kg	9	8	52.9%	47.1%

In the 40–58 kg category, all respondents are female (100.0%), while females remain dominant in the 59–77 kg range (82.6%). In contrast, the >77 kg category shows a more balanced distribution, with males slightly predominating (52.9%). This shift suggests that higher body weight categories include relatively more male participants, which may be relevant when interpreting associations with health indicators.

Height distribution is presented to complement the anthropometric profile of respondents. This variable is important for contextualizing body composition indicators, such as body mass index, and for understanding physical characteristic differences that may influence physiological measures.

Table 3. Height Distribution of Respondents by Gender

Height	Gender		Percentage (%)	
	Male	Female	Male	Female
148–158 cm	0	27	0.0%	100.0%
159–169 cm	3	24	11.1%	88.9%
>170 cm	10	0	100.0%	0.0%

The 148–158 cm group consists entirely of females (100.0%), and females also dominate the 159–169 cm category (88.9%). Conversely, all respondents taller than 170 cm are male (100.0%). This clear separation between genders across height categories

highlights the need to consider gender stratification when analyzing outcomes related to physical characteristics.

To contextualize respondents' social and professional background, Table 4 presents occupational status by gender. Occupational roles such as students, employees, and lecturers may reflect differences in daily activity levels, stress exposure, and access to health information.

Table 4. Occupational Status of Respondents by Gender

Occupation	Gender		Percentage (%)	
	Male	Female	Male	Female
Student	7	39	15.2%	84.8%
Employee	5	7	41.7%	58.3%
Lecturer	1	5	16.7%	83.3%

Most respondents are students, with a strong female predominance (84.8%). Among employees, the distribution is more balanced but still female-dominant (58.3%), and female respondents also predominate among lecturers (83.3%). This pattern indicates that the study findings may primarily reflect the experiences of student populations, and caution is warranted when generalizing results to broader working populations.

Educational attainment is included as an indicator of respondents' literacy and capacity to understand health information. Education level often influences knowledge acquisition, health awareness, and compliance with recommended practices.

Table 5. Educational Attainment of Respondents by Gender

Education Level	Gender		Percentage (%)	
	Male	Female	Male	Female
Senior High School	8	39	17.0%	83.0%
Bachelor's Degree	3	5	37.5%	62.5%
Diploma	1	2	33.3%	66.7%
Master's Degree	1	5	16.7%	83.3%

Respondents with a senior high school background form the largest group, with females comprising 83.0%. Females also outnumber males at the bachelor's (62.5%), diploma (66.7%), and master's levels (83.3%). This consistent pattern suggests that gender distribution remains skewed across all education strata, which may influence how educational level interacts with study outcomes.

Finally, Table 6 outlines respondents' medical history to describe baseline health conditions and potential comorbidities. This information is crucial for identifying confounding factors and ensuring that observed outcomes are interpreted within the appropriate clinical context.

Table 6. Medical History Profile of Respondents by Gender

Medical History	Gender		Percentage (%)	
	Male	Female	Male	Female
None	6	30	16.7%	83.3%
GERD	1	14	6.7%	93.3%
Obesity	1	2	33.3%	66.7%
Hypertension	4	1	80.0%	20.0%
Hyperlipidemia + Hypercholesterolemia	0	3	0.0%	100.0%
Obesity + Hypercholesterolemia	0	1	0.0%	100.0%
Obesity + Hypertension	1	0	100.0%	0.0%
Other diseases	0	0	0.0%	0.0%
Drug side effects	0	0	0.0%	0.0%

Most respondents report no medical history, with females comprising 83.3% of this group. GERD is also more prevalent among females (93.3%), whereas hypertension is more common among males (80.0%). Several combined conditions appear only among female respondents, while no cases are reported for "other diseases" or "drug side effects." This absence may reflect either a true lack of cases or limitations in reporting, and should be clarified in the methodology.

Based on data from 64 respondents, the majority of study participants were female, totaling 51 individuals, while 13 respondents were male. The most dominant age group was 18–35 years, comprising 49 respondents.

Among the 64 respondents, females predominated the sample. The largest age group was 18–35 years, with a mean age of 25.81 years and a mode of 20 years. The mean body weight of respondents was 65.59 kg, with a mode of 78 kg. Meanwhile, respondents' height was mainly distributed within the ranges of 148–158 cm and 159–169 cm, with a mean height of 160.05 cm and a mode of 160 cm.

Most respondents were students, followed by employees and lecturers. The highest proportion of respondents had completed senior high school education, while others had attained diploma, undergraduate, and master's degrees.

In terms of medical history, most respondents reported no previous medical conditions. However, several respondents reported certain health conditions, including GERD, hypertension, obesity, and hypercholesterolemia, either as single diagnoses or in

combination. Overall, the respondents were predominantly young adult females with a senior high school or higher educational background and without a prior history of disease.

Table 7. Intermittent Fasting Questionnaire Results of the Academic Community

Description	Frequency (n = 64)	Percentage (%)
Time-Restricted Feeding (TRF)	39	60.9
Monday–Thursday Fasting	25	39.1
Total	**64**	**100.0**

Based on the type of Intermittent Fasting practiced, the majority of respondents were classified under the Time-Restricted Feeding (TRF) group, totaling 39 respondents (60.9%). Meanwhile, 25 respondents (39.1%) practiced voluntary Monday–Thursday fasting.

Table 8. GERD-Q Results of the Academic Community

Description	Frequency (n = 64)	Percentage (%)
Experiencing GERD symptoms	11	17.2
Not experiencing GERD symptoms	53	82.8
Total	**64**	**100.0**

Based on the prevalence of GERD, 11 respondents (17.2%) experienced GERD symptoms, while 53 respondents (82.8%) did not report GERD symptoms.

Table 9. Association Between Intermittent Fasting Habits and the Incidence of Gastroesophageal Reflux Disease Among the Academic Community of the Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Sumatera Utara

GERD Status	Time-Restricted Feeding (TRF)		Monday–Thursday		Total		p value
	N	(%)	N	(%)	N	(%)	
Experiencing GERD symptoms	6	(15.4%)	5	(20.0%)	11	(17.2%)	
Not experiencing GERD symptoms	33	(84.6%)	20	(80.0%)	53	(82.8%)	0,633
Total	39	(60.9%)	25	(39.1%)	64	(100.0%)	

Of the 64 respondents, 39 practiced Time-Restricted Feeding (TRF) and 25 practiced Monday–Thursday fasting. Overall, 11 respondents (17.2%) experienced GERD symptoms, while 53 respondents (82.8%) did not experience GERD symptoms.

In the TRF group, 6 respondents (15.4%) experienced GERD symptoms, whereas 33 respondents (84.6%) did not. Conversely, among respondents who practiced Monday–Thursday fasting, 5 respondents (20.0%) experienced GERD symptoms, while 20 respondents (80.0%) did not experience GERD symptoms.

Based on the bivariate analysis using the Chi-square test to examine the association between the type of Intermittent Fasting practiced and the incidence of GERD, the results showed a p-value of 0.633 ($p > 0.05$), indicating that there was no statistically significant association between the type of Intermittent Fasting and the presence of GERD symptoms among the respondents.

DISCUSSION

The results of this study showed that most respondents were female (79.9%) and were within the age range of 18–25 years (71.9%). These findings are consistent with the characteristics of the student population and align with previous studies reporting that females and younger individuals are more likely to adopt intermittent fasting (IF) due to health motivations, weight management, and the tendency to follow healthy lifestyle trends (Wilkinson et al., 2022). Other studies have also found that younger age groups adapt more easily to dietary changes such as IF because of their more flexible activity patterns and psychological factors related to body image (Alnasser & Almutairi, 2022).

A total of 70.3% of respondents experienced a reduction in food intake after practicing IF. This finding is consistent with previous research indicating that IF can reduce ghrelin levels, thereby decreasing hunger and the need for large food portions (Marfu et al., 2022). Additionally, 57.8% of respondents reported reduced hunger, which aligns with previous findings suggesting that metabolic adaptation during IF may reduce overeating impulses (Lange et al., 2024). These dietary changes also contributed to weight reduction in this study, where 45.3% of respondents experienced weight loss of less than 2.2 kg. Previous studies have reported that weight loss of 1–3 kg is common during the first 2–4 weeks of IF, mainly due to reduced glycogen stores and body water (Wilkinson et al., 2020).

The most common motivations for practicing IF among respondents were weight loss (43.8%) and health-related reasons (31.3%). Previous studies have explained that these two motivations are the primary reasons individuals choose IF (Alnasser & Almutairi, 2022). Information regarding IF was mostly obtained from social media (60.9%), which is consistent with previous studies showing that social media is the main source for the dissemination of modern dietary trends such as IF among young populations (Wilkinson et al., 2020).

In this study, 17.2% of respondents experienced GERD based on the GERDQ score, a figure that is close to the prevalence of GERD among young adults as reported in previous research (Kuswono & Yurizali, 2021). In the group practicing Time Restricted Feeding (TRF), the proportion of GERD incidence was relatively high, reaching 15.4%, while 84.6% did not experience GERD. Conversely, in the Monday–Thursday fasting group, the proportion of GERD was considerably lower, at 20.0%, and the majority of respondents (80.0%) did not experience GERD. The notable difference in proportions between these two types of intermittent fasting suggests that stricter dietary pattern changes in TRF may more easily trigger reflux symptoms compared to religious fasting, which has a more stable rhythm.

Theoretically, these differences may be associated with certain physiological mechanisms, although no statistically significant relationship was found in this study. Previous research suggests that in TRF, a narrow eating window tends to encourage increased food volume in a single meal, which may cause gastric distension, increased intra-abdominal pressure, and relaxation of the lower esophageal sphincter, thereby physiologically triggering reflux (Jiang et al., 2023). Conversely, the lower prevalence of GERD in the Monday–Thursday fasting group is consistent with previous studies showing that fasting does not worsen and may even improve GERD symptoms in some individuals (Rahimi & Tavakol, 2018). This is also consistent with previous findings indicating that Monday–Thursday fasting in young adults promotes stable metabolic adaptation without causing significant disturbances (Marfu et al., 2022).

The bivariate analysis using the Chi-square test in this study showed no significant association between the type of Intermittent Fasting and GERD incidence, with a p-value of 0.633 (p > 0.05). Although proportional differences were observed, the TRF group appeared to have a higher risk of GERD symptoms compared to the Monday–Thursday fasting group.

These findings indicate that responses to intermittent fasting (IF) patterns are individual and influenced by various factors, such as the type and amount of food intake, the timing of the last meal before sleep, and the duration of the eating window. Variations in these factors may affect gastric acid secretion and intra-abdominal pressure, thereby contributing to the occurrence of reflux symptoms without producing statistically significant differences.

Therefore, the implementation of Intermittent Fasting as a lifestyle intervention should be carried out in a well-planned manner and tailored to individual characteristics, particularly among those with a predisposition to reflux, in order to achieve the expected metabolic benefits without increasing the risk of GERD symptoms.

This study has several limitations. The cross-sectional design does not allow causal relationships between IF and GERD to be established. Most respondents had practiced IF for less than one month, meaning that the findings mainly reflect short-term effects. The use of self-reported questionnaires may introduce information bias, and several confounding factors such as dietary patterns during eating windows, fluid intake, physical activity, stress, and medication use were not controlled in detail. The population limited to the academic community of FKIK UMSU restricts the generalizability of the findings. Furthermore, GERD assessment relied solely on questionnaires without objective clinical examination, which may result in underestimation or overestimation of symptoms.

Future studies are recommended to use longitudinal or interventional designs to assess causal relationships between Intermittent Fasting and GERD. GERD evaluation should not rely solely on questionnaires but should also involve clinical assessment by healthcare professionals or objective diagnostic methods such as endoscopy and pH monitoring to improve diagnostic validity. Additionally, the development of more quantitative Intermittent Fasting assessment instruments, including dietary and fluid intake records during eating windows, along with the inclusion of more diverse populations and larger sample sizes, is expected to improve the accuracy and generalizability of research findings.

CONCLUSION

This study demonstrated that there was no significant association between Intermittent Fasting (IF) habits and the incidence of Gastroesophageal Reflux Disease (GERD) among the academic community of FKIK UMSU. The respondents were

predominantly female, with a mean age of 26 years, and most were students. The prevalence of GERD based on GERD-Q assessment was 17.2%, while the majority of respondents did not experience GERD symptoms. Proportionally, the Time-Restricted Feeding (TRF) group showed a higher rate of GERD symptoms compared to the Monday–Thursday fasting group; however, this difference was not statistically significant.

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