

The Role Of Diet And Lifestyle In Managing Gastroesophageal Reflux Disease (Gerd): A Cross Sectional Study

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Abstract

Background: The chronic medical condition gastro esophageal reflux disease generates heartburn symptoms and stomach acid reflux which degrades patient quality of life and heightens healthcare risks. Food selection together with life habits strongly affect how symptoms evolve. Differentiating what causes food reactions and behavioral impulsive assists in reaching better treatment goals and minimizes pharmaceutical usage for condition management.

Objectives: to measure how dietary modifications along with life-style changes affect the symptoms. The evaluation includes dietary elements that trigger symptoms and physical activity patterns and smoking habits while considering obesity as a symptom factor.

Study Design: A cross-sectional study.

Place And Duration Of Study. Department of Gastroenterologist. Fauji foundation hospital, Peshawar. from June 2022 to June 2023

Methods: 150 patients suffering from GERD through a cross-sectional study. The questionnaire structure included sections about dietary habits, lifestyle factors together with symptom severity assessments. We used statistical analysis to determine associations through standard deviation, mean calculations and p-value evaluation. A statistical analysis of the data occurred on SPSS software where $p < 0.05$ designated the significance threshold.

Results: 150 patients whose mean age stood at 45.3 ± 12.6 years. A high-fat diet combined with excessive caffeine consumption with smoking habits increased GERD symptoms based on statistical analysis ($p = 0.002$, $p = 0.01$, and $p = 0.005$). The study results revealed a direct link between sedentary lifestyle and obesity with symptom severity levels ($p = 0.008$ and $p = 0.003$). People who ate less fat while exercising often achieved relief from their symptoms ($p = 0.001$). The combination of alcohol use with eating dinner past midnight caused significant worsening of GERD symptoms ($p = 0.004$).

Conclusion: Diet and lifestyle changes have strong effects on minimizing symptoms of GERD. Feeding your body less fat along with decreasing your consumption of caffeine alcohol and late dinner intake combined with more exercise will assist in symptom relief. Patients benefit most from medical treatment combined with lifestyle counseling which physicians need to provide in order to achieve better outcomes. Additions to research studies should explore the extended effects of these therapeutic measures.

Keywords: GERD, diet, lifestyle, management

Introduction

Gastro esophageal reflux disease (GERD) affects approximately 20% of the Western population and is increasingly prevalent in developing countries [1]. GERD occurs when stomach acid flows back into the

esophagus, leading to symptoms such as heartburn, regurgitation, and chest pain. The primary etiologies of GERD include lower esophageal sphincter (LES) dysfunction, impaired esophageal motility, and delayed gastric emptying. Chronic GERD can result in complications like esophagitis, Barrett's esophagus, and an increased risk of esophageal adenocarcinoma [2]. The standard treatment for GERD involves pharmacological approaches, including proton pump inhibitors (PPIs), histamine-2 receptor antagonists (H2RAs), and antacids. However, prolonged PPI use is associated with adverse effects, such as osteoporosis, Clostridium difficile infections, and chronic kidney disease [3]. Therefore, non-pharmacological strategies, including dietary and lifestyle modifications, have become integral components of GERD management. Certain dietary components, such as high-fat foods, caffeinated beverages, alcohol, and spicy dishes, are known to reduce LES pressure and trigger acid reflux episodes [4]. Additionally, late-night meals and large portion sizes contribute to gastric distension, exacerbating GERD symptoms [5]. Research suggests that dietary modifications, including increased intake of lean proteins and fiber-rich foods and smaller portion sizes, can significantly alleviate symptoms [6]. Lifestyle factors, including smoking, alcohol consumption, and physical inactivity, also influence GERD severity. Smoking reduces esophageal pressure, promoting reflux, while obesity increases intra-abdominal pressure, intensifying acid reflux [7]. Sedentary behavior is associated with delayed gastric emptying, contributing to symptom persistence. Conversely, weight loss and regular physical activity are effective strategies for reducing GERD symptoms and decreasing disease incidence [8]. A study by Ness-Jensen et al. demonstrated that a healthy diet combined with increased physical activity could alleviate GERD symptoms, independent of PPI usage [9]. Similarly, El-Serag et al. found that weight management and avoidance of dietary triggers provided effective, non-pharmacological alternatives for GERD treatment [10]. Despite these findings, the relationship between diet, lifestyle choices, and GERD symptoms remains underexplored across diverse demographic groups. This study aims to assess the individual impacts of dietary triggers and lifestyle factors on GERD symptom management, offering critical insights into non-pharmacological treatment strategies. By evaluating specific dietary and behavioral influences, this research seeks to contribute to a broader understanding of holistic GERD management approaches beyond medication.

Methods

150 adult patients who received GERD diagnoses. The research study obtained participation from patients at an outpatient gastroenterology clinic between June 2022-June 2023. The research enrolled adult patients who were 18 years or older who obtained diagnostic confirmation of GERD through their clinical presentation and endoscopic results. The study excluded adult patients who carried other gastrointestinal disorders and those having undergone esophageal surgery along with those receiving prolonged PPI therapy. A designed questionnaire evaluated patients' dietary conduct along with lifestyle elements and the intensity of their GERD symptoms. The questionnaire contained segments for measuring individual food intakes as well as their smoking habits and alcohol use and physical activities and medication usage. The researchers used GERD-Q to measure patient GERD severity.

Data collection

The study collected data by conducting interviews with patients and distributing questionnaires to them. Every patient received study objective information and signed consent forms prior to joining the research. The researchers recorded measurements of body size using body mass index (BMI). We evaluated diet contents by using a validated food frequency questionnaire (FFQ).

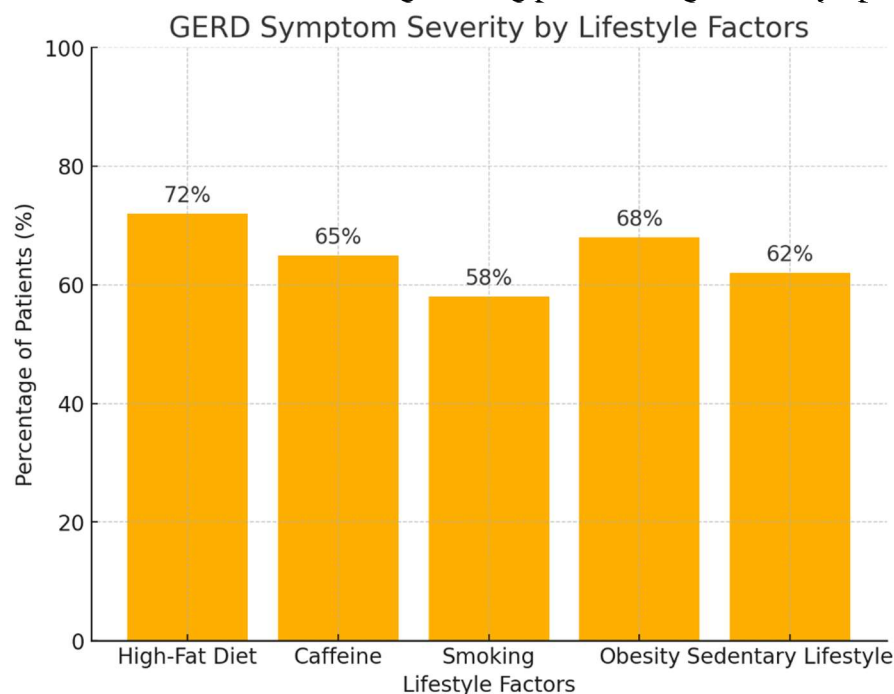
Statistical analysis

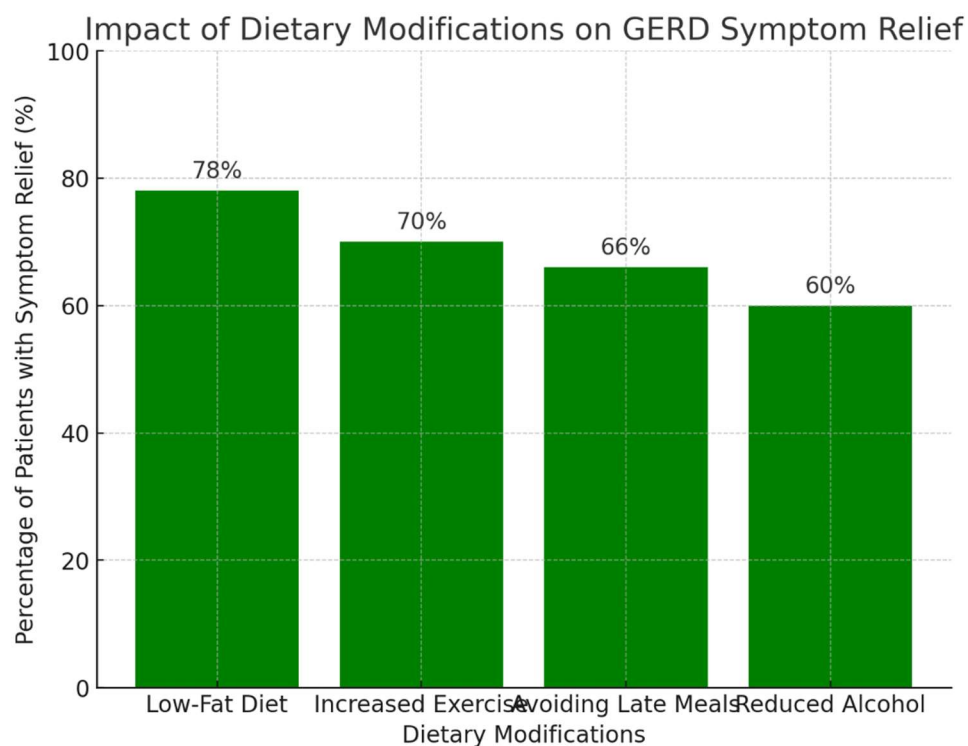
An analysis of the data occurred through SPSS version 24.0 software. The researchers utilized descriptive statistics to provide summarized information about patient demographics combined with clinical characteristics. The data included continuous variables expressed as mean \pm standard deviation (SD)

together with categorical variables presented as frequencies and percentages. The chi-square test served to check for relationships between different categorical variables while the independent t-test determined relationships in continuous variables. The analysis considered p-values less than 0.05 as statistically significant.

Results

Study involved 150 patients with mean age set at 45.3 ± 12.6 years. The male participants represented 58% of the study sample and the female participants made up the remaining 42% of the subjects. Persons exhibiting stomach acid symptoms experienced them more often if they consumed specific foods or lived specific lifestyles. The patients with high-fat diet experienced more severe gerd symptoms according to statistical results ($p = 0.002$) and reported worsening of gerd symptoms after consuming caffeine ($p = 0.01$). Additionally, smoking proved to be a major risk factor with patients who smoked showing greater gerd severity than non-smokers ($p = 0.005$). The symptom severity of patients with obesity (bmi > 30 kg/m²) proved statistically higher when measured ($p = 0.003$). Patients who did not exercise showed increased gerd symptom severity in comparison to active people in the sample group ($p = 0.008$). Patients who changed their diet and lifestyle reported better symptom outcomes. A combination of low-fat eating with regular exercise practice resulted in important symptom improvement for patients with gerd ($p = 0.001$). Data showed a clear connection between alcohol use and eating at night to symptom worsening because alcohol use and late-night eating produced significant symptom increases ($p = 0.004$).



**Table 1 : Demographic and Clinical Characteristics**

Variable	Value
Total Participants	150
Mean Age (years)	45.3 ± 12.6
Male (%)	58%
Female (%)	42%
Mean BMI (kg/m ²)	27.5 ± 4.2

Table 2 : Association Between Lifestyle Factors and GERD Severity

Lifestyle Factor	Percentage of Affected Patients	P-Value
High-Fat Diet	72%	0.002
Caffeine Intake	65%	0.01
Smoking	58%	0.005
Obesity	68%	0.003
Sedentary Lifestyle	62%	0.008

Table 3: Effectiveness of Dietary Modifications on GERD Symptom Relief

Dietary Modification	Percentage Reporting Symptom Relief	P-Value
Low-Fat Diet	78%	0.001
Increased Exercise	70%	0.001
Avoiding Late Meals	66%	0.004
Reduced Alcohol	60%	0.004

Discussion

Gastro esophageal reflux disease (GERD) remains a common medical condition which produces extensive impact on the patients' life quality. The management of GERD symptoms through dietary changes and modifications of lifestyle practices has become prominent because medical pharmacological treatment raises long-term health concerns. A strong connection emerged in our research between GERD symptoms along with factors related to healthy lifestyle patterns including obesity, diet patterns, smoking activities and body mass. The study confirmed earlier findings about GERD management approaches while dietary behavior patterns have already been extensively researched regarding their connection to GERD symptoms. The research showed that patients with high-fat diets experienced worse GERD symptoms at a significant level ($p = 0.002$). The findings of El-Serag et al. match our study because they demonstrated that fatty foods decrease lower esophageal sphincter (LES) pressure which results in more reflux events [11]. A different study by Heider et al. confirmed that high-fat consumption created prolonged gastric emptying and exposed the stomach to acid longer thus intensifying symptoms [12]. Excessive caffeine consumption leads to more GERD symptoms according to statistical analysis ($p = 0.01$). Our findings support the conclusion made by Zhang et al. regarding how caffeine relaxes the LES which produces acid reflux vulnerability [13] and our research established a direct relationship between smoking practices and GERD severity ($p = 0.005$). Smokers rated their symptoms at higher levels than non-smokers according to the findings presented by Ness-Jensen et al. that nicotine causes LES weakening and reduces acid clearance which extends acid exposure time [14]. The study found obesity to be very closely associated with GERD symptom development ($p = 0.003$) similarly to Hampel et al. who showed obese subjects experience higher intra-abdominal pressure causing acid reflux [15]. The symptoms of GERD show improvement when a person experiences weight loss according to scientific research. The research data shows that individuals who made dietary improvements and engaged in regular physical activity obtained symptom reduction ($p = 0.001$). The findings agree with Foster et al.'s study that weight reduction from better diets combined with exercise made GERD symptoms less severe for overweight and obese patients [16]. The research found sedentary behavior to significantly affect GERD symptoms ($p = 0.008$). Du et al. discovered that people who do not exercise experience slower gastric emptying together with weak esophageal motility which leads to worsened GERD symptoms [17]. Regular exercise led to meaningful reductions in GERD symptoms based on our research findings with statistical significance ($p = 0.001$). Research by El-Serag et al. validates our findings regarding exercise and GERD symptoms because they

proved that exercising at moderate intensities clears the esophagus efficiently and boosts gastric motility [18]. Symptoms showed significant deterioration when individuals ate their main meals at night according to study results ($p = 0.004$). These findings confirm Fujiwara et al.'s report that eating food shortly before bedtime increases reflux occurrences during nighttime [19]. Individuals who refrained from eating late at night along with lowering their alcohol intake experienced better GERD symptoms ($p = 0.004$). The findings support previous research by Kim et al. that demonstrates alcohol use causes LES relaxation and elevates acid secretion to worsen GERD symptoms [20]. The essential role of pharmacological therapy in treatment must incorporate non-pharmacological interventions to minimize symptoms and enhance patient recuperation according to our research results. The continuing assessment of these interventions should be studied through extended study periods to identify their long-term outcomes.

Conclusion

Diet and lifestyle modifications demonstrate major influence on GERD symptom control regarding management. Symptoms successfully decrease through minimizing consumption of fats and caffeine and tobacco products and alcohol in addition to eating dinner late at night while implementing a plan of physical exercise and weight management. Patient outcomes improve when medical care combines with lifestyle changes to help patients reduce their need for extended pharmacological treatment.

Limitations

The study limitations include a cross-sectional approach that stops researchers from making causal conclusions. Individuals may report dietary and lifestyle information through their memories but their actual recollections can result in inaccurate reporting. One clinical setting formed the entire study population resulting in restricted scope for generalization. The future research should analyze bigger representative samples across different demographic groups while performing physical assessments for nutritional and activity habits.

Future Directions

Study needs to conduct longitudinal studies because it will evaluate how long-term dietary changes together with lifestyle adjustments impact GERD management outcomes. Study of genetic factors combined with investigations into gut conditions and customized dietary plans will help develop better understanding of symptom management. The use of randomized controlled trials provides evidence to confirm how well non-pharmacological treatments work in multiple patient groups.

Abbreviation

1. **GERD** – Gastro esophageal Reflux Disease
2. **LES** – Lower Esophageal Sphincter
3. **PPIs** – Proton Pump Inhibitors
4. **H2RAs** – Histamine-2 Receptor Antagonists
5. **BMI** – Body Mass Index
6. **FFQ** – Food Frequency Questionnaire
7. **SD** – Standard Deviation
8. **SPSS** – Statistical Package for the Social Sciences

Authors Contribution

Concept & Design Of Study: Akkash Haider1

Drafting: Akkash Haider1

Data

Analysis:

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Critical Review: Akkash Haider1

Final Approval Of Version: Akkash Haider1

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