

# PREVALENCE AND SOCIO-DEMOGRAPHIC CORRELATES OF ANXIETY AND DEPRESSIVE DISORDERS IN PATIENTS WITH NON-ULCER DYSPEPSIA AT TERTIARY CARE HOSPITAL

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## ABSTRACT

**Background:** Non-Ulcer Dyspepsia (NUD), or Functional Dyspepsia, is a prevalent functional gastrointestinal disorder that imposes a substantial psychological and healthcare burden. Despite the absence of detectable structural abnormalities, NUD often presents with persistent upper abdominal discomfort and significant psychosocial distress.

**Objective:** This study aimed to determine the prevalence and socio-demographic correlates of anxiety and depressive disorders among patients with NUD in a tertiary care setting in Peshawar, Pakistan.

**Methods:** A cross-sectional analytical study was conducted at the Gastroenterology and Hepatology Department, KTH Hospital, from June to December 2023. One hundred patients aged 18–40 years diagnosed with NUD (Rome IV criteria) were enrolled through purposive sampling. The Hospital Anxiety and Depression Scale (HADS) was used to assess psychiatric comorbidities, and data were analyzed using SPSS v26.

**Results:** Nearly half of the patients (48%) exhibited psychiatric comorbidities, with anxiety disorders (24%) predominating, followed by depressive (10%) and mixed anxiety–depression (14%) disorders. Females accounted for 79% of all psychiatric cases, and the 18–25-year age group represented 54% of the total psychological burden. Epigastric burning (40%) and pain (36%) were the leading symptoms, and younger patients reported the highest symptom multiplicity.

**Conclusion:** The findings confirm a strong gut–brain link in NUD, emphasizing that nearly one in two patients suffers from concurrent psychiatric illness—most commonly anxiety. Young women emerged as the most vulnerable subgroup. Integrating routine psychological assessment and multidisciplinary management within gastroenterology practice may significantly improve patient outcomes and reduce chronic symptom persistence.

**KEYWORDS:** Non-Ulcer Dyspepsia, Functional Dyspepsia, Anxiety, Depression, Gut–Brain Axis, Pakistan

## INTRODUCTION

Functional gastrointestinal disorders represent complex clinical challenges characterized by persistent symptoms without detectable structural abnormalities. Among these, Non-Ulcer Dyspepsia (NUD), or Functional Dyspepsia, ranks as the second most prevalent functional gastrointestinal disorder worldwide, following irritable bowel syndrome in both prevalence and healthcare burden [1]. The condition manifests through diverse upper abdominal symptoms including pain, postprandial fullness, early satiation, bloating, and nausea, all occurring despite normal diagnostic evaluation [2]. The etiology of NUD remains incompletely understood, with current evidence supporting a multifactorial origin. While conventional risk factors like NSAID use, dietary elements, and *Helicobacter pylori* infection have shown inconsistent associations [3], substantial evidence establishes robust correlations between psychological factors and dyspeptic symptoms [4]. The remarkably high prevalence of psychological morbidity in NUD populations—ranging from 57% to 100% across studies—underscores the central role of psychological factors in this condition [5]. Systematic psychometric assessments consistently demonstrate that NUD patients exhibit significantly higher levels of psychological symptoms compared to healthy controls [6]. This relationship is particularly relevant given the chronic, fluctuating nature of NUD symptoms that

often prove refractory to conventional pharmacological interventions [7]. The complex interplay between physical symptoms and psychological factors has led to explanatory models involving visceral hypersensitivity, altered central processing, and brain-gut axis dysregulation [8]. Within this framework, anxiety and depression in NUD patients may represent either predisposing vulnerability factors, perpetuating elements, or consequences of chronic symptom burden [9]. This study aims to systematically investigate the prevalence and patterns of anxiety and depressive disorders among NUD patients in our local population, addressing a significant gap in literature dominated by Western studies [10]. Our findings will inform integrated treatment approaches that address both gastrointestinal and psychological dimensions, potentially leading to improved patient outcomes and reduced healthcare utilization [11]

## METHODOLOGY

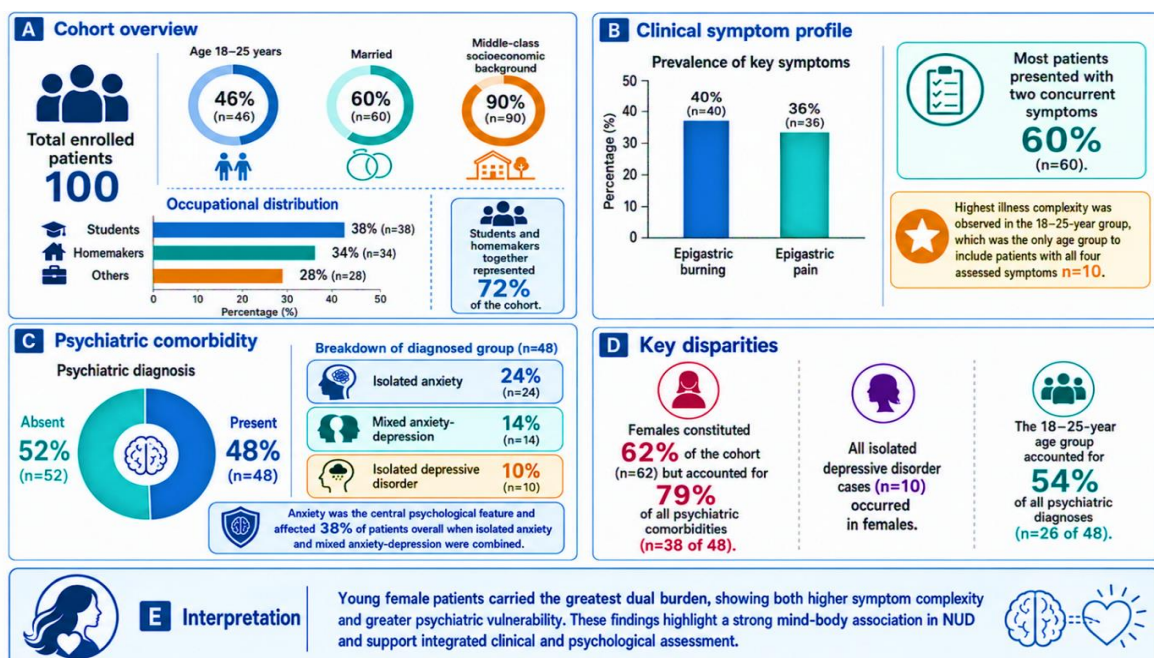
This cross-sectional analytical study was conducted at the Gastroenterology and Hepatology Department of KTH Peshawar from June to December 2023. A purposive sampling method was used to enroll 100 adult participants aged 18-40 years diagnosed with non-ulcer dyspepsia (NUD) according to Rome IV criteria. Exclusion criteria comprised patients with organic gastrointestinal pathologies, lower GI symptoms, irritable bowel syndrome, pre-existing psychiatric conditions, and those outside the specified age range. All participants underwent comprehensive diagnostic investigations including complete blood count, liver/pancreatic/renal function tests, urinalysis, ECG, abdominal imaging (X-ray, ultrasound, and selective CT scans), and upper GI endoscopy to confirm the functional nature of their dyspepsia and rule out organic causes. Data collection utilized structured questionnaires administered through face-to-face interviews and medical record reviews, capturing detailed sociodemographic profiles and clinical symptom patterns. Psychiatric evaluation was conducted using the Hospital Anxiety and Depression Scale (HADS) administered by trained professionals. Statistical analysis was performed using IBM SPSS Version 26.0, employing descriptive statistics (frequencies, percentages, means, standard deviations) and inferential analyses (cross-tabulations, chi-square tests). The study received ethical approval from the KTH Hospital Ethical Review Committee. The research strictly adhered to ethical principles including written informed consent, confidentiality protection, voluntary participation with right to withdraw, and appropriate referral pathways for identified psychiatric comorbidities.

## RESULT

A total of 100 patients with Non-Ulcer Dyspepsia (NUD) were enrolled in the study. The cohort was predominantly young, with 46% (n=46) aged 18-25 years, and a majority were married (60%, n=60) and from a middle-class socioeconomic background (90%, n=90). The occupational distribution was notably skewed, with students (38%, n=38) and homemakers (34%, n=34) together constituting 72% of the participants. Clinically, epigastric burning (40%, n=40) and epigastric pain (36%, n=36) were the most prevalent symptoms. Analysis of symptom burden revealed that the majority of patients (60%, n=60) presented with two concurrent symptoms. A critical finding was the significantly higher illness complexity in the youngest demographic (18-25 years), which was the only group to include patients (n=10) presenting with all four assessed symptoms. The evaluation of psychiatric comorbidity revealed a profound mind-body link, with 48% (n=48) of the cohort receiving a clinical diagnosis. Anxiety was the central psychological feature, present in 38% of patients when considering both isolated anxiety (24%, n=24) and mixed anxiety-depression (14%, n=14). Further stratification uncovered significant disparities: female patients, who comprised 62% (n=62) of the cohort, accounted for a disproportionate 79% (n=38) of all psychiatric comorbidities. Notably, all cases of isolated depressive disorder (n=10) were found in females. Concurrently, the 18-25-year age group was identified as the most vulnerable, accounting for over half (54%, n=26) of all psychiatric diagnoses. This intersection demonstrates that young female patients are at the highest risk for the dual burden of functional dyspepsia and psychological distress.

**Table 1: Consolidated Sociodemographic, Clinical, and Psychiatric Profile of Patients with Non-Ulcer**

Domain	Category	Sub-Category	Count (n)	Proportion (%)	
<b>Demographics</b>	<b>Age Profile</b>	18-25 yrs	46	46.0	
		26-30 yrs	18	18.0	
		31-35 yrs	14	14.0	
		36-40 yrs	22	22.0	
	<b>Life Stage</b>	Unmarried	40	40.0	
		Married	60	60.0	
	<b>Economic Background</b>	Middle Class	90	90.0	
		Lower Class	10	10.0	
	<b>Occupation</b>	<b>Professional Role</b>	Students	38	38.0
			Homemakers	34	34.0
Business			14	14.0	
Service Holders			4	4.0	
Other			10	10.0	
<b>Clinical Presentation</b>	<b>Primary Symptom</b>	Epigastric Burning	40	40.0	
		Epigastric Pain	36	36.0	
		Early Satiation	14	14.0	
		Postprandial Fullness	10	10.0	
	<b>Symptom Burden</b>	Single Symptom	16	16.0	
		Dual Symptoms	60	60.0	
		Triple Symptoms	14	14.0	
		Four Symptoms	10	10.0	
	<b>Psychiatric Comorbidity</b>	<b>Overall Diagnosis</b>	No Diagnosis	52	52.0
			Any Comorbidity	48	48.0
<b>Type of Comorbidity</b>		Anxiety Only	24	24.0	
		Depression Only	10	10.0	
		Mixed A&D	14	14.0	
<b>Gender &amp; Comorbidity</b>		♀ Female with Illness	38	38.0	
		♂ Male with Illness	10	10.0	
<b>Age &amp; Comorbidity</b>	18-25 yrs with Illness	26	26.0		



*Figure: Demographic, clinical, and psychiatric characteristics of 100 patients diagnosed with Non-Ulcer Dyspepsia. The cohort was mainly young, with 46 percent of patients aged 18 to 25 years. Most participants were married and belonged to a middle-class socioeconomic background. Students and homemakers formed the largest occupational groups, together representing 72 percent of the study population. Clinically, epigastric burning and epigastric pain were the most frequent presenting symptoms, while 60 percent of patients reported two concurrent symptoms. The greatest symptom complexity was observed among patients aged 18 to 25 years, including all cases with four*

*concurrent symptoms. The figure also highlights the high psychiatric burden in this population. Psychiatric comorbidity was identified in 48 percent of patients. Anxiety was the dominant psychological feature, affecting 38 percent of the cohort when isolated anxiety and mixed anxiety depression were considered together. Female patients showed a disproportionate psychiatric burden, accounting for 79 percent of all diagnosed psychiatric comorbidities despite representing 62 percent of the sample. All cases of isolated depressive disorder occurred in females. The 18-to-25-year age group also showed marked vulnerability, accounting for 54 percent of all psychiatric diagnoses. Overall, the figure demonstrates a strong mind body association in Non-Ulcer Dyspepsia and suggests that young female patients may require integrated gastrointestinal and psychological assessment.*

## DISCUSSION

This study investigated the complex relationship between non-ulcer dyspepsia (NUD) and psychiatric comorbidity. Our analysis of 100 carefully selected NUD patients, excluding those over 40 and individuals with other systemic illnesses to minimize confounding factors, revealed several key findings that align with and expand upon existing literature. The demographic profile of our cohort, predominantly female (62%) and young (46% aged 18-25), is consistent with global epidemiological trends for functional gastrointestinal disorders [11, 12]. The overrepresentation of students (38%) and homemakers (34%) suggests that occupation-specific psychosocial stressors—such as academic pressure and the demands of caregiving—may be significant contributing factors to the NUD phenotype [13]. Clinically, epigastric burning (40%) and pain (36%) were the hallmark symptoms. A critical finding was the high symptom burden, with 60% of patients experiencing dual symptoms. The most severe and complex presentations, including all cases with the full quartet of symptoms, were exclusively found in the 18-25 age group, indicating a particularly vulnerable period in early adulthood [14]. The core of our investigation confirmed a profound mind-gut connection, with 48% of NUD patients having a co-existing psychiatric diagnosis. Anxiety was the predominant disorder, present in 38% of patients when considering both isolated and mixed cases. This aligns with previous work establishing anxiety as a central feature in functional dyspepsia [15, 16]. However, the prevalence in our study was lower than the 87% reported by Magni et al., a discrepancy likely attributable to differing diagnostic criteria and assessment tools [17]. A granular analysis revealed significant disparities in psychiatric morbidity. A stark 79% of all psychiatric cases were female, with all instances of isolated depression occurring in women. Furthermore, the 18–25-year age group bore over half (54%) of the psychiatric burden. This identifies young females as the highest-risk subgroup for NUD with psychiatric comorbidity, a finding supported by other studies on psychosocial vulnerability [18, 19]. While the psychiatric morbidity in our cohort was generally mild, its high prevalence underscores a critical clinical reality. The variations in reported rates of disorders like depression across studies, including contrasts with findings by Bennett et al. and Kok et al., highlight the need for standardized, validated assessment tools in future research [11, 20]. Ultimately, our data solidifies the positive correlation between NUD and psychiatric illness and identifies key demographic subgroups that warrant targeted clinical attention and holistic management strategies.

## CONCLUSION

The present findings indicate that Non-Ulcer Dyspepsia is closely associated with both clinical symptom burden and psychiatric comorbidity. The study population was largely young, middle class, and predominantly composed of students and homemakers, suggesting that NUD may substantially affect socially and occupationally active groups. Epigastric burning and epigastric pain were the most common clinical complaints, while most patients experienced more than one symptom at the same time. The highest symptom complexity was observed in the 18-to-25-year age group, indicating that younger patients may present with a more severe or multifaceted clinical pattern. Psychiatric comorbidity was present in nearly half of the patients, with anxiety emerging as the most frequent psychological feature. The burden was especially high among females and younger patients, showing a clear overlap between functional gastrointestinal symptoms and psychological distress. These findings support the concept of a strong mind body relationship in Non-Ulcer Dyspepsia. Therefore, clinical management should not be limited to gastrointestinal symptoms alone. A combined approach that includes psychological screening, early identification of anxiety and depression, and integrated medical and mental health care may improve patient outcomes, particularly among young female patients who appear to be the most vulnerable group.

### Author contribution

Shafie Ul Amin contributed to study conception,

Abdullah contributed to study design, methodology development, psychiatric assessment planning, data interpretation, correspondence, and critical revision of the manuscript.

Daud Musharaf Din Ishaqi contributed to intellectual revision of the manuscript.

Atif Hussain contributed to manuscript editing.

All authors reviewed and approved the final manuscript and agreed to be accountable for the accuracy and integrity of the work.

### **Conflict of interest**

The authors declare that they have no conflict of interest regarding the conduct, analysis, interpretation, or publication of this study.

### **Funding source**

This research received no external funding. The study was conducted using institutional and authors' academic resources.

### **Acknowledgement**

The authors acknowledge the support of the Gastroenterology and Hepatology Department of KTH Hospital, Peshawar, for facilitating patient recruitment and clinical evaluation. The authors also thank the study participants for their cooperation and willingness to provide information. Appreciation is extended to the clinical and support staff involved in patient assessment, data collection, and referral support for psychiatric comorbidities identified during the study. The study was conducted among 100 patients with Non-Ulcer Dyspepsia using Rome IV criteria and HADS based psychiatric assessment.

### **Future research directions**

Future studies should use larger, multicenter samples to confirm the relationship between Non-Ulcer Dyspepsia and psychiatric comorbidity across different regions of Pakistan. Longitudinal research is needed to determine whether anxiety and depression act as predisposing factors, consequences, or maintaining factors in symptom persistence. Future work should also compare HADS with structured psychiatric interviews to improve diagnostic precision. Further studies may evaluate the effect of integrated gastroenterology and psychological care on symptom severity, treatment response, quality of life, and recurrence rates. Research should also explore biological mechanisms such as gut brain axis dysregulation, visceral hypersensitivity, sleep disturbance, and stress related autonomic changes.

### **Recommendations**

Routine screening for anxiety and depression should be incorporated into the clinical assessment of patients presenting with Non-Ulcer Dyspepsia, especially young female patients. Gastroenterology clinics should adopt an integrated care model that includes medical treatment, psychological assessment, patient education, and referral pathways for mental health support. Clinicians should pay closer attention to patients with multiple concurrent symptoms because symptom multiplicity may indicate greater clinical and psychological burden. Health education should emphasize the gut brain relationship, stress management, dietary regulation, treatment adherence, and early consultation. Hospitals should develop multidisciplinary protocols to improve diagnosis, reduce chronic symptom persistence, and enhance patient outcomes.

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