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ASSOCIATION OF DIETARY HABITS WITH IRRITABLE BOWEL SYNDROME IN POPULATION OF DISTRICT KHAIRPUR MIRS, SINDH, PAKISTAN.

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ABSTRACT

BACKGROUND: Irritable Bowel Syndrome (IBS) is a prevalent functional gastrointestinal disorder characterized by chronic abdominal pain and altered bowel habits in the absence of detectable structural abnormalities. While dietary factors have been implicated in the pathophysiology of IBS, limited data exist regarding this association in rural populations of developing countries, including rural Sindh, Pakistan.

OBJECTIVE: To assess the association between specific dietary habits and the prevalence of IBS among adults in rural Sindh, Pakistan.

METHODS: A cross-sectional analytical study was conducted between February and August 2024 in three rural districts of Sindh province. A total of 850 individuals aged 18–60 years were recruited using multistage cluster sampling. The Rome IV criteria were used for IBS diagnosis. Dietary habits were assessed using a validated food frequency questionnaire (FFQ). Logistic regression was employed to determine associations, adjusting for confounders such as age, gender, physical activity, and socioeconomic status.

RESULTS: Out of 850 participants, 176 (20.7%) were found to have IBS. High intake of spicy foods (AOR: 2.43; 95% CI: 1.62–3.64), low fiber intake (AOR: 1.89; 95% CI: 1.25–2.86), frequent consumption of carbonated beverages (AOR: 2.14; 95% CI: 1.41–3.25), and irregular meal timings (AOR: 1.78; 95% CI: 1.12–2.82) were significantly associated with IBS. Protective dietary factors included daily consumption of vegetables (AOR: 0.56; 95% CI: 0.36–0.88) and probiotic-rich foods (AOR: 0.61; 95% CI: 0.39–0.94).

CONCLUSION: Specific dietary habits, particularly those involving spicy and low-fiber foods, are significantly associated with IBS in rural Sindh. Dietary modification strategies should be integrated into the management and prevention frameworks for IBS in these communities.

KEYWORDS: Dietary Habits, Irritable Bowel Syndrome, Khairpur Mirs

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INTRODUCTION

Irritable Bowel Syndrome (IBS) is a functional gastrointestinal (GI) disorder without identifiable organic pathology, characterized by chronic abdominal discomfort, bloating, and altered bowel habits [1]. The global prevalence of IBS ranges from 10% to 20% with considerable variation across regions and populations [2,3]. In low- and middle-income countries, including Pakistan, IBS is underdiagnosed and underreported due to limited healthcare access and awareness [4]. Several studies have suggested that dietary factors significantly influence the onset and severity of IBS symptoms [5,6]. Despite this, there remains a paucity of data on the dietary determinants of IBS in rural populations of Pakistan, particularly in Sindh province, where dietary practices differ considerably from urban centers [7]. Rural Sindh is characterized by a high intake of wheat-based diets, spicy curries, limited fruit and vegetable consumption, and poor nutritional diversity [8].

The identification of modifiable dietary risk factors is essential for developing culturally appropriate prevention strategies. The Rome IV criteria, introduced in 2016, have improved diagnostic accuracy for IBS, allowing better epidemiological assessments [9]. The current study aims to evaluate the association between dietary habits and IBS among adults in rural Sindh using these standardized diagnostic criteria.

Objectives of this study were to determine the association between specific dietary habits and the prevalence of Irritable Bowel Syndrome in adults residing in rural Sindh, Pakistan, to identify protective dietary factors associated with reduced IBS prevalence and too assess demographic and lifestyle correlates of IBS in the rural population.

METHODOLOGY

Study Design: A cross-sectional analytical study was conducted from July 2024 to December 2024.

Study Setting: The study was conducted in the Khairpur Mirs rural district of Sindh province. This district was selected due to its representative rural population and diverse dietary patterns.

Study Population: Adults aged 18–60 years residing in the selected rural areas for at least 5 years were eligible.

Inclusion Criteria:

- Age 18–60 years.
- Permanent residents of the area.
- Consented to participate.

Exclusion Criteria:

- Individuals with known GI diseases (e.g., Crohn's disease, ulcerative colitis).
- Recent use of antibiotics or probiotics (past 4 weeks).

Sampling Technique

A multistage cluster sampling method was employed. Villages were selected randomly, followed by systematic random sampling of households. One eligible adult per household was selected via a Kish grid.

Sample Size

Using the WHO sample size calculator and assuming a 20% prevalence of IBS 10, a confidence level of 95%, and a margin of error of 3%, the minimum required sample was 683. Accounting for 20% non-response, the final sample size was set at 850.

Data Collection Tools

1. **Rome IV Diagnostic Questionnaire** for IBS diagnosis.
2. **Food Frequency Questionnaire (FFQ):** Validated for the local population, covering 65 food items.
3. **Socio-demographic and Lifestyle Questionnaire:** Included age, gender, education, occupation, physical activity, smoking, and stress levels.

Data Collection Procedure

Trained data collectors conducted face-to-face interviews in Sindhi language. Informed consent was obtained. Data were collected electronically using tablets equipped with KoBoToolbox.

Ethical Considerations

The study was approved by the Ethical Review Committee of Shah Abdul Latif University, Khairpur Mirs (SALU/PG/2024/125). Informed consent was obtained from all participants.

RESULTS

Participant Characteristics

Out of the 850 participants, 176 (20.7%) met the Rome IV criteria for IBS. The mean age was 36.4 ± 10.8 years. Females constituted 54.1% (n = 460) of the sample.

Table 1. Socio-demographics and other characteristics.

Variable	IBS (%)	Non-IBS (%)	p-value
Female Gender	60.2	52.7	0.04
Age >40 years	34.7	28.1	0.03
Physical Inactivity	42.6	29.3	<0.01
Low SES	56.3	41.2	<0.01

Table 2. Dietary habits and irritable bowel syndrome.

Dietary Factor	AOR (95% CI)	p-value
Frequent spicy food intake (>4x/week)	2.43 (1.62–3.64)	<0.001
Low fiber intake (<15g/day)	1.89 (1.25–2.86)	0.002
Carbonated beverages (>3x/week)	2.14 (1.41–3.25)	<0.001
Irregular meal timings	1.78 (1.12–2.82)	0.015
Daily vegetable intake	0.56 (0.36–0.88)	0.012
Probiotic-rich foods (e.g., yogurt)	0.61 (0.39–0.94)	0.028

DISCUSSION

This study found a 20.7% prevalence of IBS among rural Sindh adults, aligning with previously reported figures in South Asia [10,11]. A significant association was observed between IBS and dietary patterns, particularly the intake of spicy foods, low fiber diets, and carbonated beverages.

Spicy Foods

The high consumption of chili-based curries, a staple in Sindhi households, was strongly associated with IBS. Capsaicin, the active component in chili, is known to affect gut motility and visceral sensitivity [12,13].

Fiber Intake

Low fiber consumption was prevalent due to dietary dependence on refined wheat and polished rice. Dietary fiber modulates bowel habits and gut microbiota, and its deficiency is a known risk factor for IBS subtypes, especially IBS-C [14,15].

Carbonated Beverages

Frequent intake of soft drinks was identified as an aggravating factor. These beverages cause gastrointestinal distension and alter gut microbiota, both implicated in IBS pathophysiology [16,17].

Protective Dietary Factors

Daily intake of vegetables and fermented foods like yogurt exhibited a protective effect. These promote a healthy gut microbiome and reduce inflammation [18,19].

Sociodemographic Correlates

Females and individuals with low socioeconomic status were more affected, consistent with previous studies [20,21]. Cultural norms may lead to underreporting of symptoms in men, and stress related to poverty may exacerbate symptoms [22].

CONCLUSION

The study demonstrates a significant association between specific dietary habits and IBS prevalence in rural Sindh. High intake of spicy foods, low fiber consumption, and irregular eating patterns contribute substantially to IBS risk. Conversely, diets rich in vegetables and fermented foods offer protection. Public health initiatives promoting dietary education and gut-friendly foods are essential in addressing IBS prevalence in rural Pakistani communities.

ETHICS APPROVAL: The ERC gave ethical review approval.

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin.

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AUTHORS' CONTRIBUTIONS:

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated in the work to take public responsibility of this manuscript. All authors read and approved the final manuscript.

CONFLICT OF INTEREST: No competing interest declared

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