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Dietary Habits and Gastrointestinal Symptoms in Ajdabiya: A Cross-Sectional Survey

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Abstract

Background: Dietary habits may influence gastrointestinal symptoms, but questionnaire-based surveys cannot establish microbial dysbiosis. Objective: To describe dietary habits, gastrointestinal symptoms, self-reported diagnoses, and food-related perceptions in Ajdabiya, Libya. Methods: A descriptive cross-sectional survey included 100 convenience-sampled respondents using electronic and paper questionnaires. An exploratory five-person case series of self-reported gastrointestinal disorders was summarized separately; overlap with the main sample was not established in the available documentation. Analyses were descriptive. Results: Of the survey respondents, 68% were female, 67% were aged 18–25 years, and 13% were younger than 18 years. Irregular breakfast consumption was reported by 57%, fast-food consumption one to two times weekly by 45%, and eating before sleep by 54%. Abdominal pain was reported by 46%, bloating or gas by 42%, constipation or diarrhea by 30%, and heartburn or reflux by 32%. Sixty-one percent perceived improvement after healthier eating. All five case-series respondents reported bloating, abdominal pain, food-related symptom worsening, and a previous diagnosis of *Helicobacter pylori* infection; four reported irritable bowel syndrome. Conclusion: Dietary practices and gastrointestinal symptoms were frequently reported in this convenience sample. The findings neither establish diet symptom associations nor demonstrate causal dietary effects or microbiota imbalance.

Keywords: cross-sectional study; dietary habits; gastrointestinal symptoms; *Helicobacter pylori*; irritable bowel syndrome; Libya

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Introduction:

Gastrointestinal symptoms and disorders of gut–brain interaction can impair quality of life and increase health-care use. In the Rome Foundation global study, diagnostic criteria for at least one functional gastrointestinal disorder were met by 40.3% of internet respondents and 20.7% of household respondents; estimates differed by survey method and diagnostic criteria (Sperber et al., 2021). These findings underscore the importance of clearly defining both symptoms and their method of ascertainment. Diet provides substrates that may affect gastrointestinal function and microbial metabolism. However, dietary assessments often underrepresent components relevant to the gut microbiota (Duncanson et al., 2024). Mediterranean-style dietary patterns have been associated with differences in microbial diversity and composition, but variation across study designs and populations limits uniform causal interpretation (Khavandegar et al., 2024). Biological plausibility alone does not establish a microbial mechanism in a questionnaire-based study.

Dietary management of irritable bowel syndrome (IBS) requires individualized assessment. A diet low in fermentable oligosaccharides, disaccharides, monosaccharides, and polyols (FODMAPs) has the largest trial evidence base among dietary interventions for IBS; however, confidence in most comparative estimates is low or very low (Cuffe et al., 2025). Guidance recommends a time-limited restriction phase followed by reintroduction and personalization, preferably with dietitian support (Chey et al., 2022). IBS is assessed using symptom-based diagnostic criteria, whereas *Helicobacter pylori* infection requires appropriate diagnostic testing and follows a distinct clinical pathway (Chey et al., 2024; Lacy et al., 2016).

This study aimed to describe dietary and lifestyle practices, self-reported gastrointestinal symptoms and prior diagnoses, perceived food triggers, and perceived improvement after healthier eating among respondents in Ajdabiya, Libya. A small exploratory series of respondents reporting gastrointestinal disorders was also summarized. The study was descriptive and did not test diet–symptom associations, estimate causal effects, or measure the microbiota.

Materials and Methods

Study Design and Setting

A descriptive cross-sectional survey was conducted in Ajdabiya, Libya. The reported data-collection period was 2 March to 13 April 2026. Reporting was structured with reference to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) recommendations for cross-sectional studies (von Elm et al., 2007). The main survey and the exploratory case series were summarized separately.

Participants and Recruitment

The main survey comprised 100 respondents: 50 completed an electronic questionnaire and 50 completed a paper questionnaire. Recruitment involved students and other individuals at the College of Medical Technology in Ajdabiya, as well as family members and relatives. Sampling was classified as convenience sampling because no probability-sampling frame or random-selection procedure was documented. An exploratory case series comprised five respondents who reported previously diagnosed gastrointestinal disorders. The available documentation did not establish whether these five respondents were also included in the main survey; therefore, no combined sample size is reported. Eligibility and exclusion criteria, the number of individuals invited, and the recruitment pathway for the case series were not specified in the available documentation. A response rate could not be calculated from the reported information.

Variables and Measurement

The questionnaire covered demographic characteristics; approximate height and weight; physical activity; meal frequency and eating speed; fast-food and spicy-food intake; soft-drink and coffee consumption; eating before sleep; probiotic, fruit, vegetable, breakfast, and water consumption; antibiotic use during the preceding six months; stress; sleep quality; gastrointestinal symptoms,

including nausea; prior diagnoses; perceived food triggers; and perceived symptom improvement after healthier eating. Instrument validation, pilot testing, reliability assessment, recall periods for most items, and operational definitions for symptom frequency were not specified in the available documentation. Diagnoses were treated as self-reported because independent verification and diagnostic criteria were not documented. "Healthy, balanced diet" was a questionnaire description rather than a validated dietary score. Age was summarized using mutually exclusive categories: younger than 18 years, 18–25 years, 26–34 years, 35–45 years, and older than 45 years.

Microbiota Scope

No stool samples, microbial sequencing, culture, metabolomics, or other microbiota biomarkers were collected. Microbiota composition and dysbiosis were not measured outcomes. References to the microbiota provide biological context only and do not constitute findings of this study.

Bias and Study Size

Convenience sampling and recruitment through academic and family networks could introduce selection bias. Recall bias, social-desirability bias, survey-mode differences, and common-method bias were also possible because exposures and outcomes were self-reported. Cross-sectional measurement precluded establishing temporal order and allowed reverse causation. The five-person case series was selected on reported disease status and was not a comparison group. Recruitment was feasibility-based; no a priori sample-size or precision calculation was documented.

Statistical Analysis

Data were entered, cleaned, and analyzed using IBM SPSS Statistics version 23. Categorical variables were summarized as frequencies and percentages. Reported survey percentages used the total sample denominator of 100 and were therefore numerically equivalent to counts. Case-series percentages used a denominator of five and were presented alongside counts. Item-level response denominators and missingness were not documented in the supplied summaries, so complete response to every item could not be verified. The main-survey nausea count was unavailable and was not estimated. No inferential tests, confidence intervals, multivariable models, subgroup analyses, or missing-data imputation were performed. The two sets of summaries were presented descriptively without pooling or testing between-group differences.

Ethical Considerations

The study was conducted as an academic graduation project. Formal research ethics committee approval was not obtained before data collection; administrative permission was granted by the College of Medical Technology, Ajdabiya. Participants were informed of the study purpose, the voluntary nature of participation, their right to decline or withdraw without penalty, and the intended academic use of anonymized results. Verbal informed consent was obtained from adult participants before questionnaire completion. For the 13 respondents younger than 18 years, verbal parental permission and participant assent were obtained before participation. No directly identifying information was collected, and findings are presented in aggregate.

Results

Participant Characteristics

The main survey included 100 respondents, of whom 68 (68%) were female and 32 (32%) were male. The age distribution across mutually exclusive categories was 13 (13%) younger than 18 years, 67 (67%) aged 18–25 years, 7 (7%) aged 26–35 years, 8 (8%) aged 35–45 years, and 5 (5%) older than 45 years. These age-category labels reproduce the original summaries and overlap at age 35 years. In the exploratory case series, four of five respondents were female and three were older than 45 years (Table 1)

Table 1. Selected participant characteristics.

Characteristic	Main survey (n = 100)	Case series (n = 5)
Female sex	68 (68%)	4 (80%)
Male sex	32 (32%)	1 (20%)
Most represented age category	18–25 years: 67 (67%)	>45 years: 3 (60%)
Moderate physical activity	50 (50%)	4 (80%)
Vigorous physical activity	20 (20%)	1 (20%)

Note. Values are n (%) unless otherwise indicated. The case series was summarized separately; overlap with the main survey was not established. Physical-activity categories reflect self-report and were not operationally defined in the available documentation.

Dietary and Lifestyle Practices

In the main survey, 45 respondents (45%) reported consuming fast food one to two times weekly and 11 (11%) reported daily consumption. Irregular breakfast consumption was reported by 57 (57%), eating before sleep by 54 (54%), daily fruit and vegetable consumption by 38 (38%), and daily probiotic consumption by 12 (12%). Sixty-one respondents (61%) reported no antibiotic use during the preceding six months (Table 2). These selected items describe reported practices, not total energy intake, nutrient adequacy, or adherence to a validated dietary pattern.

Table 2. Selected dietary and lifestyle practices in the main survey (n = 100).

Practice	Category	n (%)
Fast food	1–2 times/week	45 (45%)
Fast food	Daily	11 (11%)
Breakfast	Not regular	57 (57%)
Eating before sleep	Yes	54 (54%)
Fruit and vegetables	Daily	38 (38%)
Probiotics	Daily	12 (12%)
Antibiotics in past 6 months	No	61 (61%)
Sleep quality	Moderate	41 (41%)

Symptoms and Diagnoses

Abdominal pain was reported by 46 survey respondents (46%), bloating or gas by 42 (42%), constipation or diarrhea by 30 (30%), and heartburn or reflux by 32 (32%). Self-reported prior diagnoses included IBS in 28 (28%), *H. pylori* infection in 25 (25%), and chronic constipation in 8 (8%); these were not independently verified. In the case series, all five respondents reported bloating or gas and abdominal pain, four reported constipation or diarrhea and heartburn or reflux, and three reported nauseas. The main-survey nausea count was unavailable (Table 3).

Food-Related Perceptions

Forty-two survey respondents (42%) reported symptom worsening after certain foods. Fatty foods and spicy foods were each identified as triggers by 24 (24%), followed by legumes in 13 (13%) and milk or dairy products in 8 (8%). These percentages use the full survey denominator of 100, not the 42 respondents reporting food-related worsening. Whether multiple responses were permitted, and whether food-trigger questions were restricted to symptomatic respondents, were not established in the available documentation; categories should therefore not be summed or interpreted as mutually exclusive. Sixty-one respondents (61%) perceived symptom improvement after following a healthy, balanced diet. In the case series, all five reported food-related worsening; four identified fatty foods and three identified

Table 3. Self-reported gastrointestinal symptoms and prior diagnoses.

Outcome	Main survey (n = 100)	Case series (n = 5)
Bloating or gas	42 (42%)	5 (100%)
Constipation or diarrhea	30 (30%)	4 (80%)
Abdominal pain	46 (46%)	5 (100%)
Heartburn or reflux	32 (32%)	4 (80%)
Nausea	Unavailable	3 (60%)
Self-reported IBS diagnosis	28 (28%)	4 (80%)
Self-reported H. pylori diagnosis	25 (25%)	5 (100%)
Self-reported chronic constipation	8 (8%)	1 (20%)

Note. IBS = irritable bowel syndrome. Symptoms and prior diagnoses were self-reported; diagnoses were not independently verified. “Unavailable” indicates that the main-survey nausea count was absent from the supplied summaries, not that no respondents experienced nausea. Symptom and diagnosis categories should not be treated as mutually exclusive.

spicy foods as triggers. Four reported improvement with healthier eating, while one reported improvement "sometimes" (Table 4).

Table 4. Perceived food triggers and symptom improvement.

Perception	Main survey (n = 100)	Case series (n = 5)
Symptoms worsened after certain foods	42 (42%)	5 (100%)
Fatty foods identified as trigger	24 (24%)	4 (80%)
Spicy foods identified as trigger	24 (24%)	3 (60%)
Improvement with healthy balanced diet	61 (61%)	4 (80%); 1 "sometimes"

Note. Percentages use the stated group denominators. Food-trigger categories may overlap; questionnaire routing and multiple-response rules were not documented. Perceived dietary improvement was not an objectively measured intervention outcome. The remaining case-series respondent selected "sometimes" rather than an unequivocal improvement response.

Discussion

Principal Findings

Irregular breakfast consumption, eating before sleep, and self-reported gastrointestinal symptoms were frequently reported in this predominantly young, female convenience sample. A majority perceived symptom improvement after healthier eating. These descriptive frequencies do not show that respondents with particular dietary habits had more symptoms, because no individual-level association analysis was performed. They also do not establish causal dietary effects or microbial dysbiosis.

Interpretation and Evidence

The symptom frequencies provide local descriptive information but cannot be interpreted as population prevalence. Differences in sampling, age distribution, survey mode, and diagnostic ascertainment also preclude direct comparison with the Rome Foundation global estimates (Sperber et al., 2021). Although dietary substrates may influence gastrointestinal function and the microbiota, this survey lacked the dietary quantification and biological measurements needed to evaluate such pathways (Duncanson et al., 2024).

Perceived improvement after healthier eating should be distinguished from demonstrated treatment benefit. Trials support selected dietary approaches for IBS, but this survey did not test a defined dietary intervention or establish symptom change prospectively (Chey et al., 2022; Cuffe et al., 2025). It also did not apply Rome diagnostic criteria, determine IBS subtype, or assess dietary adherence. Consequently, the reported improvement may reflect several influences, including prior dietary modification, concurrent care, recall, or expectations, rather than an isolated dietary effect.

All five case-series respondents reported a previous diagnosis of *H. pylori* infection, and four reported IBS. These reports cannot establish current infection, treatment status, or a pathophysiological relationship between the conditions. The distinction is clinically important: IBS is assessed using symptom-based criteria, while *H. pylori* management requires appropriate testing and confirmation of eradication after treatment (Chey et al., 2024; Lacy et al., 2016). The small, selected series is illustrative and does not provide comparative risk estimates.

Strengths and Limitations

The study describes a broad range of dietary and lifestyle practices using both paper and electronic questionnaires. Nevertheless, convenience sampling, concentration among younger and female respondents, unspecified eligibility criteria, an unquantifiable response rate, and possible survey-mode effects limit representativeness. Measurement limitations include insufficiently documented instrument validity, unclear recall periods and symptom definitions, self-reported diagnoses, overlapping age-category boundaries, and uncertain item-level missingness and questionnaire routing. No microbiota measurements, a priori sample-size calculation, or confounder-adjusted analyses were available. The five-person case series was selected on reported disease status, and its overlap with the main survey was unresolved. Cross-sectional measurement permits reverse causation, although verbal informed consent, parental permission, and participant assent were reported, formal research ethics committee approval was not obtained before data collection.

Implications

The findings can inform the design of future local dietary and symptom surveys but do not establish an effective nutrition intervention. Clinical dietary advice should be individualized rather than based on unverified self-diagnoses or unsupported long-term food exclusions (Chey et al., 2022). Future studies should obtain appropriate ethics review before recruitment, document age-appropriate consent procedures, prespecify eligibility and sampling methods, use validated dietary and gastrointestinal instruments, and verify diagnoses where feasible (von Elm et al., 2007; World Medical Association, 2025). Analytical studies should prespecify relevant confounders and report effect estimates with 95% confidence intervals. A microbiota research objective would additionally require standardized biological sampling and microbiological assessment.

Conclusions

Dietary practices and gastrointestinal symptoms were frequently reported in this Ajdabiya convenience sample, and many respondents perceived improvement after healthier eating. The results are descriptive and hypothesis-generating. They do not establish diet–symptom associations, causal dietary effects, or microbiota imbalance.

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Conflict of Interest

The authors declare no financial or non-financial conflicts of interest.

Ethical Approval and Consent

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العادات الغذائية والأعراض الهضمية في أجدابيا: مسح مقطعي

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المستخلص

الخلفية: قد تؤثر العادات الغذائية في أعراض الجهاز الهضمي، إلا أن المسوح المعتمدة على الاستبيانات لا يمكنها إثبات وجود اختلال في التوازن الميكروبي. الهدف: وصف العادات الغذائية، وأعراض الجهاز الهضمي، والتشخيصات المبلغ عنها ذاتياً، والتصورات المتعلقة بالغذاء في أجدابيا، ليبيا. الطرق: شمل مسح وصفي مقطعي 100 مشارك اختيروا بعينة متاحة باستخدام استبيانات إلكترونية وورقية. ولُخّصت بصورة منفصلة سلسلة حالات استكشافية ضمت خمسة أفراد أبلغوا عن اضطرابات هضمية؛ ولم يتحدد من الوثائق المتاحة ما إذا كانوا ضمن العينة الأساسية. اقتصر التحليل على الإحصاءات الوصفية. النتائج: بلغت نسبة الإناث 68%، وكانت أعمار 67% بين 18 و25 عاماً، بينما كان 13% أصغر من 18 عاماً. وأبلغ 57% عن عدم الانتظام في تناول الإفطار، و45% عن تناول الوجبات السريعة مرة إلى مرتين أسبوعياً، و54% عن تناول الطعام قبل النوم. وأبلغ 46% عن ألم في البطن، و42% عن انتفاخ أو غازات، و30% عن إمساك أو إسهال، و32% عن حرقة المعدة أو الارتجاع. وأفاد 61% بتحسن الأعراض بعد اتباع نمط غذائي أكثر صحة. وأبلغ أفراد سلسلة الحالات الخمسة جميعهم عن انتفاخ، وألم في البطن، وتفاقم الأعراض بعد أطعمة معينة، وتشخيص سابق بعدوى الملوية البوابية؛ كما أبلغ أربعة منهم عن متلازمة القولون العصبي. الخلاصة: تكرر الإبلاغ عن الممارسات الغذائية وأعراض الجهاز الهضمي في هذه العينة المتاحة. ولا تثبت النتائج ارتباطاً بين الغذاء والأعراض، أو تأثيرات سببية للغذاء، أو اختلالاً في التوازن الميكروبي.

الكلمات المفتاحية: دراسة مقطعية؛ عادات غذائية؛ أعراض الجهاز الهضمي؛ الملوية البوابية (Helicobacter pylori)؛ متلازمة القولون العصبي؛ ليبيا.

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