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Beyond Acid Suppression: A Mixed-Methods Assessment of the Lived Experience of Gastroesophageal Reflux Disease and Concerns Regarding Long-Term Proton Pump Inhibitor Therapy

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Abstract

Background: Proton pump inhibitors (PPIs) are effective standard treatment for gastroesophageal reflux disease (GERD), yet clinical symptom control does not fully describe the burden of living with reflux or the experience of long-term treatment. We examined patient-reported symptom burden, everyday functioning, and perceptions of PPI therapy alongside healthcare provider perspectives. **Methods:** This exploratory mixed-methods study combined independent, self-selected online surveys of adults reporting reflux symptoms (n = 185) and healthcare providers (n = 55) with six semi-structured patient interviews. Survey findings were summarized descriptively using item-specific denominators and Wilson score 95% confidence intervals; available interview accounts were examined thematically. **Results:** Reflux symptoms occurred daily or several times weekly in 116/183 patient respondents (63.4%; Wilson 95% CI: 56.2 - 70.0). Concern about taking a PPI was reported by 107/151 patients answering that item (70.9%; 95% CI: 63.2 - 77.5); the question did not specifically address long-term use, and PPI exposure eligibility was not confirmed. All 54 providers answering the separate long-term PPI-safety item expressed concern (100%; 95% CI: 93.4 - 100.0). Interviews described food restrictions, persistent symptoms during treatment, difficult medication changes, and uncertainty about long-term management. **Conclusions:** In these self-selected samples, recurrent reflux symptoms and concerns about taking PPIs coexisted with substantial day-to-day treatment burdens. The findings support assessing patient-defined treatment goals and medication concerns along-

side conventional GERD outcomes; they do not establish PPI-related harm or population prevalence.

Keywords

Gastroesophageal Reflux Disease, GERD, Proton Pump Inhibitors, Lived Experience, Patient-Reported Outcomes, Quality of Life, Mixed-Methods Research, Wilson Confidence Intervals

1. Introduction

Gastroesophageal reflux disease (GERD) is among the most common gastrointestinal disorders worldwide, affecting roughly one in five adults in North America and contributing substantially to reduced quality of life and healthcare utilization [1] [2]. Although classically defined by heartburn and acid regurgitation, GERD is increasingly recognized as a chronic condition that can affect sleep, dietary choices, work productivity, emotional wellbeing, and social participation.

Current management focuses on reducing gastric acid exposure through proton pump inhibitors (PPIs), histamine-2 receptor antagonists, antacids, and lifestyle modification. PPIs remain the most effective pharmacologic therapy for healing erosive esophagitis and controlling symptoms in many patients and remain central to guideline-based care [3] [4]. Nonetheless, a substantial proportion of individuals continue to experience persistent or recurrent symptoms during acid-suppressive therapy; previous studies estimate that 20% - 40% of patients report incomplete symptom control despite PPI treatment, indicating that symptom burden is not always explained by acid exposure alone [5] [6].

In parallel, patients and clinicians have expressed growing interest in the long-term management of GERD. While PPIs remain appropriate and beneficial for many individuals, observational studies have reported associations between prolonged PPI use and adverse outcomes including nutrient deficiencies, enteric infections, chronic kidney disease, fractures, cognitive decline, and gastric cancer [3] [7]-[10]. These associations are derived from observational data, are subject to confounding, and should not be interpreted as causal; however, they have influenced patient perceptions and treatment discussions.

Historically, GERD research has emphasized symptom scores, esophageal acid exposure, and endoscopic healing, with comparatively less attention to how chronic reflux affects everyday life from the patient's perspective. The broader movement toward patient-reported outcomes in chronic disease has highlighted domains such as treatment burden, emotional wellbeing, dietary freedom, sleep quality, and social functioning as complements to conventional endpoints [11] [12]. Contemporary guidance has similarly emphasized a personalized approach to GERD that accounts for symptom patterns, patient priorities, and mechanisms beyond acid secretion [4] [13].

The objective of this study was to examine the difference between controlling reflux symptoms and managing GERD as an ongoing lived experience. We assessed 1) the frequency and daily-life consequences of reflux symptoms, 2) patient concerns about taking PPIs and provider concerns about long-term PPI safety, and 3) how interview accounts illuminate the practical challenges of treatment decisions. We did not test an intervention or seek to determine whether PPI treatment causes harm.

2. Methods

2.1. Study Design

This exploratory mixed-methods study examined the lived experience of GERD from patient and healthcare provider perspectives. Two cross-sectional online surveys were analyzed descriptively, while six semi-structured patient interviews were reviewed thematically to provide additional context and depth to the quantitative findings. The survey and interview data were analyzed as distinct sources and integrated narratively during interpretation to identify common themes and complementary perspectives. Reporting was informed by the STROBE recommendations for cross-sectional studies, CHERRIES guidance for internet surveys, and COREQ criteria for qualitative research. Completed reporting checklists are provided in Table S1 and Table S2.

2.2. Patient Survey

An investigator-developed questionnaire was administered as an open online survey using Google Forms between June and October 2025. The instrument was designed to explore domains not routinely captured by symptom-based GERD measures, including the impact of reflux on everyday activities, treatment experiences, medication perceptions, and quality of life. It was informed by the GERD literature and by patient-reported-outcome concepts but was not formally validated or independently pilot-tested. The research-relevant patient survey items are provided in **Supplementary File A**.

Participants were recruited through digestive-health educational platforms, community-based online groups, and social media. Eligible participants self-identified as adults with recurrent heartburn, reflux, or GERD-related symptoms; a physician's diagnosis was not required, because the aim was to capture the experience of individuals managing reflux in community settings. Recruitment through shareable links means the number of individuals who viewed the invitation is unknown, and a denominator-based response rate cannot be calculated. The survey did not require sign-in and did not apply technical safeguards against duplicate submissions; repeat entries therefore cannot be excluded. A response was counted when a participant submitted the form. In total, 185 completed patient surveys were analyzed. No formal a priori sample-size calculation was performed; the sample reflects all eligible responses received during the recruitment window.

2.3. Healthcare Provider Survey

A separate investigator-developed questionnaire was administered as an open online survey over the same period. It explored clinical experience with GERD, perceptions of current treatments, concerns about long-term management, factors influencing clinical decisions, and attitudes toward complementary or integrative approaches. Providers were recruited through professional networks, educational mailing lists, and health-focused social media. Respondents spanned several disciplines involved in digestive health, including physicians, nurse practitioners, registered nurses, dietitians, naturopathic physicians, health coaches, pharmacists, and others. As with the patient survey, recruitment was by open link; no response rate is calculable, and duplicate submissions could not be technically excluded. Fifty-five completed provider surveys were analyzed. The provider survey items are provided in **Supplementary File B**.

2.4. Qualitative Interviews

Six patient interview accounts (P1-P6) were included in the qualitative component of this exploratory mixed-methods study. Interviews explored participants' experiences with reflux, including symptom history, daily-life impacts, medication use, treatment challenges, and clinical decision-making.

Interviews were conducted remotely and transcribed using automated transcription software. The lead investigator reviewed the transcripts and conducted an inductive thematic analysis, identifying four recurring themes. Participants were offered the opportunity to review their transcripts but declined; consequently, participant member checking was not performed.

The qualitative findings were used to provide context and depth to the quantitative survey results rather than to estimate theme prevalence or establish thematic saturation. Analysis was conducted by a single investigator without independent double-coding.

2.5. Data Analysis

Survey responses were summarized using descriptive statistics. Frequencies and percentages were calculated for categorical variables, and Wilson score 95% confidence intervals were computed for key proportions. Analyses used complete-case data for each item; the number of respondents contributing to each analysis, and the corresponding missing counts, are reported in the tables.

The PPI-concern item, Q9, asked, "Do you have concerns taking a PPI, if taking one?" Because this item was not technically restricted to respondents who selected prescription PPIs in the treatment-use item, it was analysed primarily among respondents who answered Q9. A secondary descriptive analysis used a selection of "Prescription PPIs (e.g., Nexium, Omeprazole)" in Q2 as a self-reported prescription-PPI-use subgroup. This subgroup did not verify current, daily, prior, or long-term PPI exposure.

No inferential or comparative statistical testing was performed, consistent with

the descriptive, exploratory aim of the study.

Free-text survey responses were grouped into descriptive categories. Available interview transcripts were reviewed using an inductive thematic approach informed by Braun and Clarke [14]. The lead investigator identified recurring concepts and grouped them into four interpretive themes. This was a single-investigator, exploratory analysis without independent coding, or a claim of thematic saturation. The quantitative and qualitative findings were integrated narratively, with attention to both their convergence and their differences.

2.6. Ethics and Informed Consent

The study was conducted with consideration of the ethical principles outlined in the Declaration of Helsinki, particularly those relating to voluntary participation, informed consent, participant privacy, and confidentiality.

Survey participants were informed that their responses could be used for research and publication purposes. Participation was voluntary, and submission of the completed questionnaire constituted consent to participate. Interview participants provided consent for the publication of anonymized accounts and quotations.

Formal institutional review board or research ethics committee review was not obtained, and no institutional exemption determination was issued.

3. Results

3.1. Patient Characteristics

A total of 185 adults with recurrent reflux symptoms completed the patient survey (Table 1). Respondents were predominantly female (68.6%, 95% CI: 61.6 - 74.9) and older than 50 years (78.9%, 95% CI: 72.5 - 84.2). Missing responses were 4.3% for gender and 4.9% for age.

3.2. Healthcare Provider Characteristics

Fifty-five healthcare providers completed the provider survey (Table 2). The sample was multidisciplinary but weighted toward nutrition and integrative disciplines: dietitians and nutrition professionals were the largest group (29.1%), followed by physicians (16.4%), naturopathic physicians (12.7%), and nurse practitioners or registered nurses (12.7%). Because physicians constituted a minority of respondents and integrative practitioners were well represented, provider responses describe this particular sample rather than clinicians managing GERD in general.

Table 1. Characteristics of patient survey respondents (n = 185).

Characteristic	n	% (95% CI)
Gender		
Female	127	68.6 (61.6 - 74.9)
Male	49	26.5 (20.7 - 33.3)
Prefer not to say	1	0.5 (0.1 - 3.0)

Continued

Missing	8	4.3 (2.2 - 8.3)
Age group		
20 - 30 years	3	1.6 (0.6 - 4.7)
31 - 40 years	7	3.8 (1.9 - 7.6)
41 - 50 years	20	10.8 (7.1 - 16.1)
51 - 60 years	40	21.6 (16.3 - 28.1)
61 - 70 years	54	29.2 (23.1 - 36.1)
70+ years	52	28.1 (22.1 - 35.0)
Missing	9	4.9 (2.6 - 9.0)

Percentages are calculated on the full sample (n = 185) including missing responses; 95% confidence intervals (CI) are Wilson score intervals. Respondents older than 50 years accounted for 78.9% (95% CI: 72.5 - 84.2) of the sample.

Table 2. Characteristics of healthcare provider survey respondents (n = 55).

Professional role	n	% (95% CI)
Dietitians/nutrition professionals	16	29.1 (18.8 - 42.1)
Physicians (MD)	9	16.4 (8.9 - 28.3)
Naturopathic physicians (ND)	7	12.7 (6.3 - 24.0)
Nurse practitioners/registered nurses	7	12.7 (6.3 - 24.0)
Health coaches	6	10.9 (5.1 - 21.8)
Integrative/complementary practitioners*	5	9.1 (3.9 - 19.6)
Other healthcare professionals†	5	9.1 (3.9 - 19.6)
Total	55	100

†Includes pharmacists, physical therapists, and other professionals represented by a single respondent. *Includes chiropractors, functional medicine practitioners, and other integrative or complementary health professionals where applicable. Physicians constituted 16.4% of the provider's sample; the majority of respondents were non-physician practitioners, and integrative or nutrition-oriented disciplines were prominently represented. This composition should be considered when interpreting provider responses (see Limitations).

3.3. Patient Symptom Burden and Treatment Experience

Patient respondents described frequent symptoms and continuing treatment challenges (Table 3). Of 183 respondents to the symptom-frequency item, 116 reported reflux symptoms daily or several times per week (63.4%; Wilson 95% CI: 56.2 - 70.0). Of 184 respondents answering the over-the-counter treatment item, 53 reported never using these products. Among the 131 respondents who had used over-the-counter products, 110 reported that these products provided only temporary relief or no meaningful improvement (84.0%; Wilson 95% CI: 76.7 - 89.3).

Table 3. Patient-reported symptom burden and treatment experience.

Variable	n/N	% (95% CI)
Reflux symptoms daily or several times per week	116/183	63.4 (56.2 - 70.0)
OTC products provide only temporary relief or do not help[a]	110/131	84.0 (76.7 - 89.3)
Reported concern about taking a PPI among Q9 respondents[b]	107/151	70.9 (63.2 - 77.5)
Reported concern about taking a PPI among self-reported prescription-PPI users answering Q9[c]	33/42	78.6 (64.1 - 88.3)
Would consider a natural product backed by clinical research, "Yes" or "Maybe"[d]	184/185	99.5 (97.0 - 99.9)

Notes. N denotes the number of respondents contributing to each item; percentages use item-specific denominators. CI, Wilson 95% confidence interval; OTC, over-the-counter; PPI, proton pump inhibitor. [a]One respondent did not answer the OTC-treatment item, and 53 reported never using OTC products. The percentage is calculated among the 131 respondents reporting OTC-product use. [b]Q9 asked, "Do you have concerns taking a PPI, if taking one?" The item did not specifically measure long-term PPI concern. Of 185 respondents, 151 answered Q9 and 34 did not. Because Q9 was not restricted to respondents who selected prescription PPIs in the treatment-use item, the denominator represents respondents who answered Q9, not confirmed PPI users. The available data do not establish whether the 34 nonresponses were inapplicable skips, unanswered questions, or other forms of nonresponse. [c]Self-reported prescription-PPI use was defined by selection of "Prescription PPIs (e.g., Nexium, Omeprazole)" in Q2, "What do you usually take when symptoms flare up?" Among 47 respondents selecting prescription PPIs in Q2, 42 answered Q9 and five did not. This subgroup does not verify current, daily, prior, or long-term PPI exposure. [d]The item asked, "Would you consider trying a natural product backed by clinical research?" It was positively framed and combined "Yes" and "Maybe" responses; the result should not be interpreted as evidence of demand for a specific product.

Concern about taking a PPI was reported by 107 of 151 respondents who answered Q9, "Do you have concerns taking a PPI, if taking one?" (70.9%; Wilson 95% CI: 63.2 - 77.5). This item did not specifically measure long-term PPI concerns. In addition, Q9 was not restricted to respondents who selected prescription PPIs in the treatment-use item; therefore, the 107/151 result is reported as an item-response finding rather than as the prevalence of concern among confirmed PPI users. Of the full patient sample, 34 respondents did not answer Q9, and the available data do not establish whether these were inapplicable skips, unanswered questions, or other forms of nonresponse.

In a secondary descriptive analysis, respondents who selected "Prescription PPIs (e.g., Nexium, Omeprazole)" in Q2 were treated as a self-reported prescription-PPI-use subgroup. Among these respondents, 33/42 answering Q9 reported concern about taking a PPI (78.6%; Wilson 95% CI: 64.1 - 88.3). Five respondents in this subgroup did not answer Q9. This subgroup was based on self-reported treatment selection and did not verify current, daily, prior, or long-term PPI exposure.

A single item asked whether respondents would consider trying a natural product backed by clinical research; 184 of 185 respondents answered "Yes" or "Maybe" (99.5%; Wilson 95% CI: 97.0 - 99.9). This item was positively framed and combines two response categories. The near-unanimous result should therefore be interpreted as a general expression of openness to a clinically supported natural product rather than as evidence of demand for any specific product or treatment category.

3.4. Reported Impact of Reflux on Daily Life

Of 185 patient survey respondents, 165 (89.2%) supplied free-text accounts of reflux-related frustrations and quality-of-life impacts. Responses were coded inductively into non-mutually exclusive categories (Table 4). The most frequently coded categories were social avoidance or isolation (31/165, 18.8%), loss of enjoyment of favorite foods (27/165, 16.4%), sleep disruption (23/165, 13.9%), and anxiety or frustration (19/165, 11.5%). These descriptive codes are not exhaustive. The original written responses also reveal overlapping restrictions on diet, meal timing, sleep and social activities.

Table 4. Most frequently coded quality-of-life impacts of reflux, from free-text responses (n = 165 respondents).

Quality-of-life impact	n	% of respondents (95% CI)
Social isolation or avoidance of meals with family and friends	31	18.8 (13.6 - 25.4)
Loss of enjoyment of favorite foods	27	16.4 (11.5 - 22.8)
Sleep disruption or nocturnal symptoms	23	13.9 (9.5 - 20.0)
Anxiety, frustration, or reduced emotional wellbeing	19	11.5 (7.5 - 17.3)

Of 185 patients, 165 (89.2%) provided a free-text description of how reflux affects daily life; percentages use this responder denominator (n = 165). Categories were derived by inductive coding, were not mutually exclusive, and a single response could be coded into more than one category. The four domains shown were the most frequently coded; the remaining responses described other or non-specific impacts (e.g., physical discomfort, dietary restriction, work or activity limitation) that did not fall into these four categories or were too brief to classify. Because coding was performed by a single investigator, these frequencies are descriptive and illustrative rather than definitive.

Because respondents were recruited on the basis of self-reported reflux symptoms, these results describe the experiences of the recruited sample rather than a population with independently verified GERD. The quotations below are verbatim written survey responses, not interview excerpts.

Illustrative Verbatim Patient Survey Responses

One respondent wrote: "I have cut out many favorite foods—tomatoes, oranges, chilli powder of all sorts, having to sit 3 - 5 hrs after a meal daily before being able

to lie down, sleeping on a wedge pillow. I feel like a zombie due to not getting enough sleep".

Another described the effect of meal timing on relationships: "I have to stop eating early and it affects plans with friends".

A third described overlapping restrictions: "Pain, discomfort affects every area. Can't sleep, eat, work out. It's just a truly miserable feeling".

Other respondents reported nocturnal symptoms despite positioning changes: "Even sleeping with two pillows to raise my head at night, acid reflux occasionally occurs, causing me to awaken, and sometimes to vomit". and longstanding food restrictions: "My diet is extremely limited for the past 20 years".

These quotations were taken from the patient survey's free-text quality-of-life item, not from the six Zoom interviews. They are illustrative examples selected for relevance to the prespecified research question; they do not indicate how common each specific experience was. Spelling and punctuation are retained as submitted.

3.5. Healthcare Provider Perspectives

Among healthcare providers, 54/55 (98.2%; Wilson 95% CI: 90.4 - 99.7) reported seeing patients or clients with reflux symptoms daily or weekly (Table 5). All 54 respondents answering the long-term PPI-safety item reported being somewhat or very concerned about long-term PPI use (100%; Wilson 95% CI: 93.4 - 100.0); 48/54 described themselves as "very concerned" (88.9%; Wilson 95% CI: 77.8 - 94.8) and 6/54 as "somewhat concerned" (11.1%; Wilson 95% CI: 5.2 - 22.2).

The provider sample was weighted toward nutrition and integrative disciplines, with nine physicians (16.4%); these findings cannot be generalized to physicians. Clinical studies (48/54; 88.9%), ingredient transparency (43/54; 79.6%), and patient experiences (38/54; 70.4%) were commonly cited as factors that would increase confidence in recommending a new reflux supplement (Table 5).

3.6. Qualitative Findings

Six interviews were conducted. Four themes summarize these accounts and are not intended as prevalence estimates or evidence of thematic saturation. Participant identifiers are anonymized and consistent throughout.

3.6.1. Theme 1—Restoration of Daily Life

For participants, managing reflux involved practical choices about eating and drinking, not simply the presence or absence of heartburn. The importance of dietary freedom is illustrated by P2, who described balancing symptom avoidance against enjoyment of familiar foods and beverages.

P2 explained: "I know what I can and can't have. But I love coffee". The account shows how symptom anticipation can shape everyday decisions even when patients understand their personal triggers.

Table 5. Healthcare provider perspectives on reflux management.

Variable	n/N	% (95% CI)
See patients with reflux symptoms daily or weekly	54/55	98.2 (90.4 - 99.7)
Somewhat or very concerned about long-term PPI use[a]	54/54	100.0 (93.4 - 100.0)
Recommend natural or integrative approaches in at least some cases	54/55	98.2 (90.4 - 99.7)
Clinical studies sought before recommending a new reflux supplement[a]	48/54	88.9 (77.8 - 94.8)
Ingredient transparency sought for a new reflux supplement[a]	43/54	79.6 (67.1 - 88.2)
Patient success stories sought for a new reflux supplement[a]	38/54	70.4 (57.2 - 80.9)

N denotes respondents contributing to each item; CI, Wilson 95% confidence interval; PPI, proton pump inhibitor. [a]One provider did not answer this item (N = 54).

3.6.2. Theme 2—Medication Fatigue and Concerns about Long-Term Therapy

Long-term medication use was a distinct source of uncertainty for some participants. Interview accounts included both gradual and abrupt discontinuation, with different symptom experiences. They do not establish that PPI therapy caused harm or that discontinuation was clinically appropriate.

P2 described symptoms during an attempt to taper Nexium after years of treatment: "I actually did taper off of it, but I had been on it for so long that it was just my body's reaction. No matter how slow I did it, I was still getting just the rebound stuff". P3 reported approximately a decade of daily omeprazole-type medication use before stopping abruptly. Neither account can distinguish rebound acid symptoms from recurrent GERD or other causes.

3.6.3. Theme 3—Stability beyond Symptom Suppression

Treatment uncertainty was not limited to people attempting to stop medication. One participant described continuing acid-suppressive therapy while experiencing troubling symptoms, illustrating why medication use and symptom control should be evaluated separately.

P4 described continued omeprazole use alongside nausea and episodes of acidic vomiting. He subsequently reported improvement while using more than one intervention, so the interview does not support attributing improvement to any single treatment.

3.6.4. Theme 4—Trust and Clinical Guidance

The available interviews also described how participants sought information and weighed treatment decisions. The material supports identifying uncertainty and a desire for clearer guidance, but does not establish how commonly patients trust or distrust clinicians.

Participants discussed advice from clinicians alongside their own attempts to understand symptoms and treatment options. One participant recalled a Physician Assistant advising that she "probably need[ed] to try to get off of those as soon as we can" (P5). This quotation was checked against the available interview transcript; it does not establish the clinical rationale for the recommendation. Interviewer explanations were not treated as patient statements or independent clinical evidence.

Across interviews, medication experience was not uniform. Some participants described difficult attempts to discontinue PPIs, while another discussed uncertainty during continued omeprazole treatment. These accounts are experiences of individual respondents; they do not establish the incidence of withdrawal symptoms, prove that symptom recurrence was caused by rebound acid hypersecretion, or demonstrate that PPIs are unsafe.

3.7. Integration of Quantitative and Qualitative Findings

The sources answer different parts of the same research question. Patient survey responses quantify frequent symptoms and reported concerns about taking PPIs; provider responses identify long-term PPI-safety concerns within a separate, multidisciplinary sample; interviews show what prolonged treatment and symptom anticipation can mean in daily life. The independent surveys were not matched and did not establish that patients and providers shared the same reasons for concern. The interview material adds explanatory context, not estimates of frequency.

4. Discussion

The principal finding of this study is that effective GERD management cannot be evaluated solely through the control of acid-related symptoms but must also consider patients' broader experiences, treatment concerns, and quality of life. Among respondents, frequent reflux symptoms were common, concerns about taking PPIs were prominent, and interview accounts described restrictions on eating, persistent symptoms despite treatment, difficulties with medication discontinuation, and uncertainty surrounding long-term treatment decisions.

This study does not suggest that acid suppression is ineffective or inappropriate. PPIs remain an established and important component of GERD management. Rather, the findings highlight a distinction between achieving pharmacological symptom control and addressing the practical, emotional, and behavioral challenges associated with living with chronic gastrointestinal conditions. These aspects of treatment experience may not be adequately captured by conventional symptom measures alone.

In the patient survey, 116/183 respondents (63.4%; Wilson 95% CI: 56.2 - 70.0) reported reflux daily or several times per week, while 107/151 respondents answering the PPI-concern item (70.9%; 95% CI: 63.2 - 77.5) expressed concern about taking a PPI. The PPI-concern result should be interpreted as an item-response finding rather than as the prevalence of concern among confirmed PPI

users, because Q9 was not restricted to respondents with verified PPI exposure. Together, these findings suggest that symptom burden and medication-related concerns are important considerations within the surveyed population. However, because the survey items were analysed independently, it cannot be determined whether respondents reporting frequent symptoms were the same individuals expressing concerns about PPI use. Furthermore, the self-selected nature of the sample limits the generalizability of these findings.

The qualitative interviews provide additional context by illustrating how reflux and its treatment can influence daily routines, personal choices, and interactions with healthcare professionals. P2 described restricting enjoyable drinks and experiencing symptoms during a gradual attempt to discontinue Nexium. P3 reported many years of daily acid-suppressive medication use before abruptly discontinuing treatment, while P4 described persistent symptoms despite continued omeprazole use. P5 introduced a further dimension, recalling advice from a treating Physician Assistant regarding the possibility of discontinuing PPI therapy. This account highlights the role that clinical guidance may play when patients consider changes to established treatment regimens.

Taken together, these experiences demonstrate that the challenges of GERD management extend beyond the presence or absence of heartburn. Patients may face difficult choices involving dietary restrictions, symptom recurrence, continued medication use, and uncertainty about whether or when treatment should be adjusted. Importantly, these experiences were not uniform, reinforcing the need for individualized rather than generalized approaches to long-term management.

Although rebound acid-related symptoms after PPI withdrawal have been described experimentally [15], these accounts do not establish PPI toxicity, confirm rebound acid hypersecretion in individual participants, or demonstrate the efficacy of alternative interventions.

The provider survey offers a second, independent perspective. All 54 respondents to the PPI-concern item expressed at least some concern about long-term PPI use (Wilson 95% CI: 93.4 - 100.0), including 48/54 who reported being very concerned (88.9%; 95% CI: 77.8 - 94.8). This finding suggests that questions surrounding prolonged acid suppression were also prominent among the healthcare professionals participating in the study.

However, the provider sample included only nine physicians and was weighted toward nutrition and integrative disciplines. These results therefore reflect the perspectives of the recruited group and cannot be generalized to healthcare professionals managing GERD more broadly. Furthermore, the provider survey specifically addressed long-term PPI safety, whereas the patient survey asked more generally about concerns associated with taking a PPI. These findings should therefore be interpreted as related but distinct perspectives rather than directly comparable measures of concern.

The clinical implication is not to replace acid suppression or encourage routine PPI discontinuation. PPIs remain evidence-based treatments when appropriately

indicated, and observational associations between prolonged PPI use and adverse health outcomes do not independently establish causation [3] [4]. For many patients, continued acid suppression is both appropriate and necessary. However, the presence of an established treatment does not eliminate the need to evaluate whether patients feel adequately informed, whether their symptoms are sufficiently controlled, and whether treatment aligns with their individual circumstances and goals.

These findings support a more comprehensive approach to GERD assessment that incorporates patient-reported treatment burden alongside traditional clinical outcomes. Relevant domains may include dietary freedom, sleep quality, social participation, emotional wellbeing, medication-related concerns, and confidence in long-term treatment decisions. Such measures could help identify unmet needs that are not apparent from symptom frequency or acid suppression alone. Future research should evaluate these domains using validated patient-reported outcome measures and clinically characterized patient populations.

The findings also provide a patient-centered context for investigating complementary approaches to reflux management. Brown *et al.* [16] reported a retrospective chart analysis of a polyphenol-based nutraceutical formulation marketed as Re:flux. That study represents a separate line of investigation and should not be interpreted as evidence that the participants in the present study would benefit from this or any other complementary intervention. The present surveys and interviews did not evaluate Re:flux, compare it with PPIs, or establish the effectiveness or safety of alternative treatments. The relationship between the authors and the product developer is disclosed.

Future prospective, controlled investigations should examine whether treatment approaches can improve not only validated GERD symptom outcomes but also the broader dimensions of patient experience identified in this study. Particular attention should be given to treatment satisfaction, quality of life, medication-related concerns, and the role of shared decision-making in long-term management. Such research may help clarify which outcomes matter most to patients and how these can be incorporated into evidence-based GERD care.

4.1. Limitations

The findings are exploratory and subject to important limitations. Both surveys relied on self-selected online convenience samples and investigator-developed, nonvalidated items; they cannot provide population prevalence estimates. Reflux symptoms and medical diagnoses were self-reported, and physician-confirmed GERD was not required. Patient and provider samples were independent and unmatched. Item nonresponse and uncertain PPI exposure limit interpretation of the patient PPI-concern item. Q9 was not restricted to respondents with verified PPI exposure, and the secondary prescription-PPI subgroup was based only on self-reported selection of prescription PPIs in Q2 rather than confirmed current, daily, prior, or long-term use. The provider group was small and weighted toward

nutrition and integrative disciplines. Wilson confidence intervals quantify binomial uncertainty but do not correct selection bias. Six semi-structured interview accounts were analyzed by one investigator; the small sample does not establish thematic saturation, causation, or treatment efficacy.

The selected patient survey quotations are illustrative, not representative, and the survey did not independently verify medical diagnoses, symptom causes, or treatment history. No additional code counts or subgroup estimates were inferred from the illustrative quotations.

4.2. Future Directions

Future studies should recruit clinically characterized groups, distinguishing confirmed GERD from self-reported reflux symptoms. Prospective designs should assess symptom control alongside validated quality-of-life measures that capture dietary freedom, meal timing, sleep, social participation, treatment satisfaction, and medication-related concerns. Studies of treatment changes should document clinical indications, concomitant therapies, and outcomes before attributing benefits or harms to a specific intervention.

5. Conclusion

In these exploratory, self-selected samples, people reporting acid reflux described recurring symptoms and a substantial burden on eating, sleep, social activities, and treatment decisions. First-person survey accounts illustrate how avoiding foods, delaying bedtime after meals, and disrupted rest can become part of everyday life. Concerns about taking PPIs were also common among respondents to that item, but the findings do not establish medication-related harm or the appropriateness of discontinuation. Assessing reflux care requires attention to patient-defined functioning alongside clinical outcomes. The study did not establish GERD prevalence or test any treatment.

Data Availability

De-identified aggregate data supporting the findings are available from the corresponding author on reasonable request.

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Author Contributions

Paula Owen: conceptualization, study design, survey and interview-guide development, participant recruitment, data collection, quantitative analysis, thematic analysis, and manuscript drafting and revision. Kenneth Brown: clinical interpretation, review of the gastroenterology literature, and manuscript review and revi-

sion. Both authors approved the final manuscript.

Conflicts of Interest

Paula Owen is a paid consultant to KBS Research Inc., which develops gastrointestinal nutraceuticals. Kenneth Brown is the founder of KBS Research Inc. Owen contributed to study design, survey and interview-guide development, participant recruitment, data collection, analysis, and manuscript preparation. Brown contributed clinical interpretation and manuscript review and revision. Recruitment through digestive-health educational networks and the product-development context of some interviews may have influenced participation and responses. No product efficacy was evaluated in this study.

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Supplementary Materials

Table S1. CHERRIES checklist for the online patient and provider surveys.

CHERRIES item	How addressed in this study
Design/open vs. closed survey	Open online surveys using Google Forms; anyone with the link could respond. No closed or invitation-only sampling frame was used.
Target population and recruitment	Patient survey: adults self-identifying with recurrent reflux, recruited via digestive-health educational platforms, community online groups, and social media. Provider survey: professionals involved in reflux care, recruited via professional networks, mailing lists, and health-focused social media.
Survey administration/duration	Administered June-October 2025.
Informed consent	Participation was voluntary. A statement that responses could be used for research and publication preceded participation, and survey completion constituted consent.
Development and pre-testing	Investigator-developed instruments informed by GERD literature and patient-reported-outcome concepts; not formally validated or independently pilot-tested. This is stated as a limitation.
Response/completion definition	A response was counted as complete when the participant submitted the form; 185 patient and 55 provider completed submissions were analysed.
Response rate	Not calculable: for an open survey distributed by shareable link, the number of individuals who viewed the invitation is unknown, so a denominator-based response rate cannot be computed.
Prevention of multiple entries	Google Forms was not configured to require sign-in; technical prevention of duplicate submissions, such as one-response-per-account, cookie checks, or IP checks, was not applied. Duplicate or repeat entries cannot be excluded.
Handling of incomplete responses/missing data	Complete-case analysis was used per item; item-specific denominators and missing counts are reported in the tables.
Statistical methods	Descriptive statistics only, including frequencies, percentages, and Wilson 95% confidence intervals. No inferential or comparative testing was performed.

Table S2. COREQ checklist for the qualitative interview component.

COREQ domain/item	How addressed in this study
Interviewer and credentials	Interviews were transcribed using automated transcription software. Transcripts were subsequently reviewed by the lead investigator for accuracy and qualitative analysis.
Relationship with participants	Not consistently documented across the available interview records.
Reflexivity/potential bias	The lead investigator's affiliation with KBS Research is disclosed in the Conflicts of Interest section.
Theoretical framework	Inductive thematic analysis informed by Braun and Clarke (2006).
Participant selection and sample size	Six interview accounts, designated P1-P6, were included in the qualitative analysis. Selection criteria were not consistently documented.

Continued

Setting and mode	Interviews were conducted remotely.
Interview guide	Topics included reflux history, treatment experiences, daily-life impacts, medication use, and treatment decision-making.
Recording and transcription	Interviews were transcribed using automated transcription software.
Participant transcript review	Participants were offered the opportunity to review their transcripts but declined.
Member checking	Participant member checking was not performed, as participants declined transcript review.
Number of coders	Transcripts were reviewed and analysed by the lead investigator (P.O.) using an inductive thematic approach. Independent double-coding was not undertaken.
Derivation and presentation of themes	Four interpretive themes were identified through review of available transcripts. Illustrative quotations are presented in the Results.
Data saturation	Thematic saturation was not formally assessed or established.
Integration with quantitative findings	Qualitative findings were integrated narratively with the independent patient and healthcare provider survey findings.

Supplementary File A—Patient Survey Instrument

"Living with Acid Reflux"—Patient Survey

Note: This appendix provides the research-relevant patient survey items administered via Google Forms between June and October 2025. The survey also included consumer-preference and optional marketing opt-in items related to packaging, product interest, or future contact. These items were not used to evaluate clinical outcomes and are not reported as treatment-effect or efficacy data in the manuscript. One optional marketing opt-in item referencing KBS Research's reflux product has been redacted from the research record; no data from that item are reported in the manuscript.

Q1. How often do you experience acid reflux, heartburn, or GERD symptoms?

☐ Daily
☐ A few times a week
☐ Occasionally
☐ Rarely
☐ Never

Q2. What do you usually take when symptoms flare up? Select all that apply.

☐ Tums, Gaviscon, or other antacids
☐ Pepcid or other H2 blockers
☐ Prescription PPIs, e.g., Nexium, Omeprazole
☐ Natural supplements
☐ Nothing

Q3. How well do over-the-counter products like Tums or Gaviscon work

for you?

☐ They work well for me

☐ They help, but only for a short time

☐ They don't really help

☐ I've never used them

Q4. What's your biggest frustration when dealing with reflux? How has reflux affected your quality of life?

[Free-text response]

Q5. Would you consider trying a natural product backed by clinical research?

☐ Yes

☐ No

☐ Maybe

Q6. When it comes to trying something new, what matters most to you? Select all that apply.

☐ Clinical research

☐ Natural ingredients

☐ No side effects

☐ Doctor recommended

☐ Affordable

☐ Easy to take

Q7. What age demographic do you fall under?

☐ 20 - 30

☐ 31 - 40

☐ 41 - 50

☐ 51 - 60

☐ 61 - 70

☐ 70+

Q8. What is your gender?

☐ Female

☐ Male

☐ Prefer not to say

Q9. Do you have concerns taking a PPI, if taking one?

☐ Yes

☐ No

Q9a. If you answered Yes above—what are your main concerns?

[Free-text response]

Q10. When you see a new product on the shelf or online, what most influences your decision to pick it up or learn more? Select all that apply.

[Consumer-preference item; not analyzed as a clinical outcome]

Q11. If you had to choose just one style of packaging, which do you prefer overall?

[Consumer-preference item; not analyzed as a clinical outcome]

Supplementary File B—Healthcare Provider Survey Instrument

"Quick Survey for Practitioners: Treating Acid Reflux"—Provider Survey

Q1. What is your professional role? Short answer, e.g., MD, ND, RD, RN, Health Coach, etc.

[Free-text response]

Q2. How often do you see patients or clients with acid reflux, GERD, or similar digestive complaints?

☐ Daily

☐ Weekly

☐ Occasionally

☐ Rarely

Q3. What symptoms do your reflux patients most commonly report?

[Free-text response]

Q4. What are your usual first-line treatments or recommendations for reflux?

[Free-text response]

Q5. What's your biggest frustration or challenge when helping people manage reflux long term?

[Free-text response]

Q6. Are there any treatment gaps you've noticed—things you wish existed but currently don't?

[Free-text response]

Q7. How concerned are you about the long-term safety profile of PPIs for your patients?

☐ Very concerned—I try to limit their use

☐ Somewhat concerned—I use them with caution

☐ Not very concerned

☐ Not at all concerned

Q8. Do you ever recommend natural or integrative approaches, e.g., supplements, for reflux?

☐ Yes

☐ No

Q8a. If Yes, which ones do you recommend?

[Free-text response]

Q9. What would you need to feel confident recommending a new supplement for reflux? Select all that apply.

☐ Clinical studies

☐ Patient success stories

☐ Practitioner reviews

☐ Ingredient transparency

☐ Easy patient education materials

Q10. When considering a new reflux product, which of the following safety factors are most important to you? Select all that apply.

☐ Clinically studied ingredients

☐ No known interactions with medications
☐ Safe for long-term daily use
☐ No rebound effect
☐ No impact on nutrient absorption
☐ Clear dosing instructions
☐ Clean label/no fillers or allergens

Q11. Would you be interested in receiving updates, clinical data, or early access to samples?

☐ Yes
☐ No

Supplementary File C—Semi-Structured Interview Guide

The following topics informed the semi-structured interview component comprising six participant accounts, designated P1-P6.

Opening, approximately 5 minutes

- Introduction and overview of the interview purpose
- Confirmation of verbal informed consent for recording and use of de-identified data
- Confirmation that the participant may decline to answer any question or end the interview at any time

Section 1—Symptom history, approximately 5 - 8 minutes

- Can you tell me a little about your experience with acid reflux or GERD—when did your symptoms start, and how have they changed over time?
- What does a typical reflux day look like for you?
- Have you been formally diagnosed with GERD by a clinician, and if so, what testing was involved?

Section 2—Treatment trajectory, approximately 8 - 10 minutes

- What treatments have you tried over the years, and how did each one work for you?
- If you have used proton pump inhibitors, what has that experience been like for you?
- Have you ever tried to come off a PPI, and what happened?
- What concerns, if any, do you have about long-term reflux medication use?

Section 3—Impact on daily life, approximately 8 - 10 minutes

- How has reflux affected your daily life—meals, sleep, work, social activities, travel?
- Are there foods, drinks, or activities you have given up because of reflux? How does that feel?
- How does reflux affect your mood or emotional wellbeing?

Section 4—Treatment satisfaction and decision-making, approximately 8 - 10 minutes

- What would "successful" reflux management look like for you?
- What factors would make you willing to try a new approach—for example, a doctor's recommendation, clinical research, or someone else's experience?

- Is there anything else about your reflux experience that you'd like to share?

Closing, approximately 2 - 3 minutes

- Thank the participant
- Provide contact information for any follow-up questions
- Invite the participant to contact the study team if they wish to clarify or withdraw any statement, where applicable