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Potentially Inappropriate Omeprazole Prescribing and Patient Adherence in a Spanish Community Pharmacy: An Observational Study

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Abstract

Omeprazole is frequently indicated for disorders related to hyperacidity, such as gastroesophageal reflux disease and *Helicobacter pylori* infections. Spain has the highest omeprazole consumption rate among Organization for Economic Co-operation and Development (OECD) nations, measured in defined daily doses per 1000 inhabitants per day (DHD), suggesting possible patterns of overutilization and improper administration. Community pharmacists play a critical role in partnering with medical professionals to mitigate safety hazards and optimize therapeutic results. Characterize the demographic and clinical profiles of omeprazole consumers to guide the development of pharmaceutical care (PC) initiatives tailored to distinct patient needs and enhance safety. An observational, cross-sectional design (CEIm Code FCF-OME-2023-01) was used to evaluate 100 omeprazole consumers at a Barcelona community pharmacy between November 2023 and May 2024. Information was gathered through structured clinical interviews utilizing a specialized Data Collection Questionnaire. Within the omeprazole cohort, 49% were male, 51% were female, and 56% were 65 years of age or older. Extended use of the medication was identified in a large majority (71%), and 30% met the criteria for polymedication (concomitant use of five or more drugs). Remarkably, 52% of individuals presented without a documented history of gastric pathology. Furthermore, episodic consumption was reported by 22% of participants following short-term, as-needed therapeutic protocols, whereas 78% followed a continuous daily administration routine. Within the latter group, inadequate treatment adherence was observed in 29.5% of cases. An evaluation of medication-related problems (MRPs) among the 78 individuals on long-term daily omeprazole therapy demonstrated that the most frequent issues included “unnecessary medication”, “lack of adherence”, “wrong administration”, “drug interactions”, and “lack of knowledge regarding medication use”. According to the STOPP criteria, 45% of the study population qualified for discontinuation or dose reduction of medication. The elevated prevalence of MRPs observed among individuals taking omeprazole underscores the necessity for intensified pharmaceutical care (PC). Active interventions by pharmacists—encompassing deprescribing initiatives, dose adjustments, and direct communication with prescribers—have the potential to minimize adverse drug events and foster more secure patterns of omeprazole use.

Keywords: Omeprazole, Pharmaceutical care, Medication safety, Treatment adherence, Potentially inappropriate prescribing (PIP), Pharmaceutical intervention

Introduction

The ATC code A02B encompasses therapeutic agents that regulate gastric acid secretion by parietal cells. Medications targeting acid reflux and peptic ulcers represent the most widespread therapies in this category, with proton pump inhibitors (PPIs, A02BC) being particularly dominant. Within the PPI class, omeprazole (A02BC01) is the primary active pharmacological agent [1, 2].

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The therapeutic profile of omeprazole centers on the management and prevention of conditions such as gastroesophageal reflux disease, benign gastric or duodenal ulcers, reflux-induced esophagitis, Zollinger–Ellison syndrome, and Helicobacter pylori eradication [3]. This medication also represents an ideal candidate for professional pharmaceutical care dispensing services, provided medical prescriptions, professional pharmacist counseling, and longitudinal pharmacotherapeutic surveillance guide its utilization.

Epidemiological metrics across OECD nations reveal a persistent growth in the defined daily dose (DDD) per 1000 inhabitants per day for PPIs. Remarkably, from 2015 to 2021, Spain recorded the highest usage rates among OECD members, reaching a peak of 134.9 DDD in 2021. This contrasts sharply with nations like the Netherlands and the United Kingdom, while countries such as Slovakia and Austria exhibited much lower 2021 utilization rates at 50.8 and 29.8 DDD, respectively [4].

By 2021, the mean consumption volume of PPIs in Spain, expressed in defined daily doses per 1000 inhabitants (DHD), reached 88.9, surpassing the European average by 51.7% [4]. Longitudinal tracking from the Medicines Use Observatory of the Agencia Española de Medicamentos y Productos Sanitarios (AEMPS) published on 19 October 2023 corroborates a substantial acceleration in the use of omeprazole and related PPIs throughout Spain, beginning in the 2010s and surging further following the COVID-19 pandemic [2].

Prescribing patterns at the national level demonstrate an uninterrupted upward path, escalating to 134.79 DHD in the final quarter of 2021 before maintaining a steady plateau around 134.51 DHD through 2022. Omeprazole (ATC group A02BC) exhibits an identical expansionary trajectory, revealing consumption dynamics that are difficult to justify based on clinical indications alone. According to data compiled by the AEMPS, omeprazole accounted for 76.14% of the aggregate Spanish market share for PPIs in 2022 [2].

In response to the growing use of PPIs, multiple countries have introduced monitoring protocols and clinical guidelines for deprescribing omeprazole. Notable initiatives include policies enacted by France in 2022 [5], deprescribing algorithms developed in Canada in 2017 [6], clinical guidance published by the American Gastroenterological Association (AGA) in the United States in 2022 [7], and national recommendations issued in Australia in 2019 [8].

Administering omeprazole concurrently with substances like antiretrovirals, digoxin, clopidogrel, warfarin, diazepam, and phenytoin introduces serious drug–drug interactions that can compromise patient safety [3, 9, 10]. Furthermore, safety warnings from the US Food and Drug Administration (FDA) indicate that prolonged PPI use (exceeding 2 years) is associated with an increased risk of acute interstitial nephritis [11] and vitamin B12 deficiency [12, 13].

While extensive clinical history confirms that PPIs offer high therapeutic efficacy due to their robust acid suppression, the massive and often unwarranted public demand, paired with easy access to omeprazole outside hospital environments, prompted the initiation of this research. We intended to establish an empirical baseline to construct and deploy professional pharmaceutical care dispensing programs and structured guidance for omeprazole utilization.

We view medication dispensing as a critical safeguard to ensure safe and logical omeprazole use. Consequently, this investigation highlights the potential of pharmaceutical care (PC) and community pharmacies acting as localized public health and clinical research hubs. By tracking variables such as indication appropriateness, dosing accuracy, patient adherence, interactions, and potential contraindications, we aim to maximize patient safety and limit the clinical risks associated with omeprazole.

Materials and Methods

An observational, descriptive, single-center, cross-sectional protocol was conducted, involving 100 patients who obtained omeprazole at a community-based pharmacy in Barcelona. The data collection window opened on 1 November 2023 and closed on 31 May 2024, embedded within the pharmacy's specialized Pharmaceutical Care Service for medication delivery and counseling.

The institutional review board of the Medicines Research Ethics Committee (CEIm) at the Complejo Hospitalario Universitario de Canarias (HUC) evaluated and approved this study under administrative code FCF-OME-2023-1. Every phase of the investigation strictly followed prevailing ethical and legal statutes protecting patient rights and data privacy.

The data collection process relied on a single clinical consultation lasting approximately 12 minutes, conducted in the pharmacy's private Personalized Care

Zone. Before gathering any information, patients reviewed a Patient Information Sheet and provided their formal informed consent. A structured questionnaire was used to capture data. Upon concluding the session, participants were given an educational handout on correct omeprazole use, along with health tips aligned with broader Pharmaceutical Care objectives.

The diagnostic tool was divided into distinct thematic modules; this paper highlights sociodemographic indicators (sex and age) and pharmacotherapeutic details (total medication burden, duration of omeprazole therapy, prescriber specialty, method of prescription acquisition, reports of epigastric pain, and dosing schedules). In addition, patient compliance was measured using the Morisky–Green test (**Table 1**), and the STOPP criteria were applied to screen for Medication-Related Problems (MRPs).

Table 1. Morisky–Green test [14].

Item	Response options
1. Do you sometimes forget to take your prescribed medication?	YES ○ / NO ○
2. Do you consistently take your medication at the scheduled times?	YES ○ / NO ○
3. When you are feeling well, do you ever discontinue your medication?	YES ○ / NO ○
4. When you feel unwell, do you ever stop taking your medication?	YES ○ / NO ○
Adherent patient classification	YES ○ / NO ○
Non-adherent patient classification	YES ○ / NO ○

It is crucial to recognize that a primary limitation of this research was the inability to directly review participants' full electronic medical histories through the Spanish Community Pharmacy Network. This structural barrier restricted a more thorough evaluation of specific diagnoses, clinical progress, and concurrently managed medical treatments.

To comprehensively characterize the omeprazole user profile and therapeutic behavior while uncovering potential targets for pharmaceutical interventions, a specific set of parameters was selected. The tracked variables comprise the following:

- Sex: Participants were classified as male or female. This partition enables examination of gender-based disparities in omeprazole utilization, supporting the development of tailored pharmaceutical care models.
- Age: The cohort was stratified into five age groups: 18–25 years, 26–40 years, 41–50 years, 51–65 years, and 65+ years. Utilizing these brackets highlights age-specific tendencies in omeprazole consumption, pinpointing demographics that are more vulnerable to prolonged or improper drug administration.
- Number of medications: Investigators documented whether individuals were on monotherapy or polytherapy, with polytherapy defined as concurrent use of 5 or more medications. Tracking this metric is vital to identifying potential drug–drug interactions and complications linked to polypharmacy, which are highly prevalent among elderly and chronic populations.
- Duration of omeprazole use: The timeframes for omeprazole administration were divided into five intervals: less than 6 months, 6 months to 2 years, 2 to 6 years, 6 to 10 years, and more than 10 years. This parameter is critical for identifying extended drug usage, which can be tied to chronic adverse health outcomes, including bone and renal impairments.
- Risk perception: Patients' subjective perceptions of the hazards of omeprazole use were tracked. This evaluation noted whether users viewed the drug as entirely safe or maintained an awareness of potential side effects, given that these beliefs heavily dictate treatment compliance and openness to therapeutic modifications.
- Origin of omeprazole: The study distinguished between non-prescription over-the-counter procurement and prescription-based acquisition. Within the prescription subset, authorizations were further categorized by whether they originated from a specialist or a primary care clinician, providing clear insights into prescribing pathways and oversight.
- Prescribing institution: The definitive source of the medical prescription was categorized into public health regional authorities, private medical centers, or public mutual insurance organizations.

- Pre-treatment stomach pain: Investigators recorded whether individuals suffered from gastric pain before starting their omeprazole regimen. This tracking helps clarify patterns of overutilization when a clear clinical indication is missing.
- Dosing regimen: The frequency and dose of administered omeprazole were analyzed to determine whether the therapeutic regimen aligned with validated medical guidelines.
- Defined daily dose (DDD): According to World Health Organization (WHO) benchmarks, the standard DDD for omeprazole is 20 mg/day. This research monitored whether users exceeded this baseline, highlighting potential overdosage patterns and their corresponding physiological risks.
- Therapeutic adherence: Also known as medication compliance, this metric measures the precision with which a patient adheres to a prescribed therapeutic strategy as directed by their medical provider. Compliance remains central to validating treatment efficacy, halting the progression of illness, and reducing the threat of adverse events. Conversely, deficient compliance can lead to clinical failure, secondary complications, and increased medical expenses. The validated Morisky–Green test [14] was applied to quantify compliance among the 78 patients confirmed to be on daily, long-term omeprazole therapy; this tool was deemed inapplicable for the remaining 22 patients who reported episodic, on-demand, short-term use. Patients were classified as compliant if their responses to the four diagnostic questions were exactly NO, YES, NO, NO, NO (**Table 1**).

Following questionnaire completion, community pharmacists scrutinized the aggregated data to identify medication-related problems (MRPs) and unfavorable therapeutic outcomes. This identification process was executed in strict accordance with the 2024 Practice Guide for Pharmaceutical Care Services, published by the Pharmaceutical Care Forum of the General Council of Official Associations of Pharmacists of Spain (*Consejo General de Colegios Oficiales de Farmacéuticos de España*) [15].

Subsequently, the cohort was cross-referenced against the STOPP (Screening Tool of Older Persons Potentially) criteria to assess whether continuing omeprazole was clinically justified. The STOPP benchmarks applied were those established by Gallagher *et al.* [16]. As the name indicates, the STOPP framework is engineered to facilitate the cessation of specific medication regimens based on verified clinical evidence. Developed using a Delphi consensus approach, these criteria are structured by physiological systems for populations aged 65 years and older. The specific STOPP standards applicable to omeprazole therapies involve:

- The administration of proton pump inhibitors (PPIs) at full therapeutic dosing for a duration exceeding 8 weeks for uncomplicated peptic ulcer disease or erosive peptic esophagitis.
- Any medications indicated or prescribed in the absence of an evidence-based clinical rationale.

Pharmaceutical intervention (PI) integrates multiple definitive workflows meant to optimize drug utilization. These actions include delivering individualized medication profiles, providing health education, tracking pharmacotherapeutic interventions, and referring patients when negative drug reactions or MRPs are identified. Furthermore, clinicians can propose deprescribing strategies or adjustments to alternative therapies in alignment with the primary prescriber. Logging adverse drug reactions with local pharmacovigilance services is another core requirement of this framework, in line with active legal mandates. Formal records detailing physician interactions—whether documented in writing—are systematically maintained, along with notes verifying whether the patient accepted the PI and whether the clinician implemented the recommended changes.

For data processing, descriptive statistics and graphical plots were generated using R (version 4.4.0; www.r-project.org, accessed on 10 January 2025). Categorical variables were depicted via pie and bar charts, whereas continuous data fields were parsed using histograms. Additionally, proportions and indicators of central tendency were calculated to properly describe the baseline distribution of feedback obtained across the qualitative parameters.

Results and Discussion

The findings demonstrate an equitable distribution of sex among the participants, comprising 51% female and 49% male. The cohort's age distribution across five distinct classifications is structured as follows: 18–25 years (1%), 26–40 years (5%), 41–50 years (13%), 51–65 years

(25%), and greater than 65 years (56%). Significantly, 81% of the sampled population is aged 51 or older, indicating a higher prevalence of omeprazole use in this age bracket. This outcome substantiates the hypothesis that elderly individuals constitute a suitable target group for pharmaceutical intervention.

Regarding pharmacotherapeutic management (**Figure 1**), the data reveal that 30% of patients experience polymedication—characterized by the concurrent use of five or more medications—whereas 54% receive a regimen consisting of two to four drugs. Omeprazole is utilized as a monotherapy by merely 16% of the participants. Such widespread polymedication introduces substantial risks of adverse drug events stemming from prospective drug-drug interactions. Additionally, concurrent administration of multiple pharmaceutical agents can impede treatment adherence, as patients may find it challenging to monitor complex dosing schedules and timing, thereby increasing the risk of errors and severe adverse effects [17].

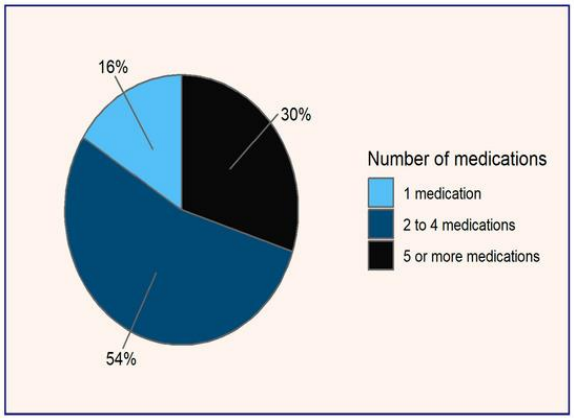


Figure 1. Number of different medications (including omeprazole) in the pharmacotherapeutic plans of patients prescribed omeprazole.

Moreover, the evaluation demonstrated that 71% of the patient population received chronic omeprazole therapy, indicating a treatment duration of more than 2 years. This extended administration is subdivided accordingly: 36% of individuals had used omeprazole for more than 10 years, 15% for 6 to 10 years, and 20% for more than 2 years (**Figure 2**). Remarkably, within this subset of long-term users, an alarming 94% of respondents indicated a complete lack of awareness regarding the potential risks linked to prolonged omeprazole consumption.

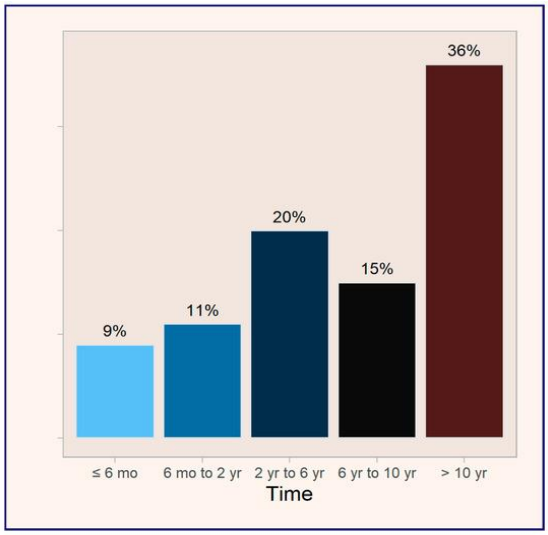


Figure 2. Duration of treatment for patients prescribed omeprazole.

These outcomes underscore the widespread use of extended omeprazole regimens in the studied population, underscoring an urgent need for improved patient education about the potential long-term consequences of proton pump inhibitors. This deficit in risk perception among the majority of chronic users highlights the necessity of routine pharmacotherapeutic assessments and the deployment of targeted pharmaceutical interventions to minimize the adverse events linked to prolonged therapy.

A striking finding from this research is that 52% of subjects reported no gastric pain before commencing omeprazole therapy (**Figure 3**). This finding provokes critical inquiries concerning the clinical validity of omeprazole prescriptions in this cohort, implying a possible pattern of over-prescription when definitive symptomatic indications are lacking. Consequently, it stresses the imperative of rigorous evaluation of clinical indications and highlights the need to review proton pump inhibitor use in asymptomatic individuals without verified gastrointestinal disorders.

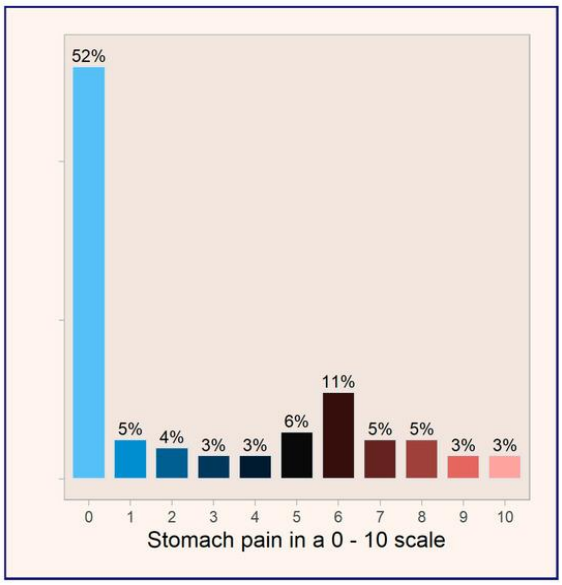


Figure 3. Level of stomach pain before treatment with omeprazole.

The World Health Organization (WHO) establishes the Defined Daily Dose (DDD) for omeprazole at 20 mg, based on its maximal therapeutic and safety parameters for the general population. This baseline is designed to maintain an optimal equilibrium between therapeutic efficacy and safety risks. Nevertheless, the empirical data show that 13% of the monitored patients surpass this benchmark, taking a daily dosage of 40 mg, which represents a twofold increase over the recommended DDD.

Of the 100 individuals assessed, 22% (n = 22) used omeprazole intermittently as a short-term, on-demand therapy under their clinician's direction, whereas 78% (n = 78) used omeprazole continuously daily. Because compliance with therapeutic regimens is vital to achieving clinical efficacy and mitigating medication management risks, the Morisky–Green assessment tool was used to determine compliance rates among the 78 daily chronic users. Within this specific subset, the adherence rate was 70.51%, whereas non-adherence accounted for 29.5% (**Figure 4**).

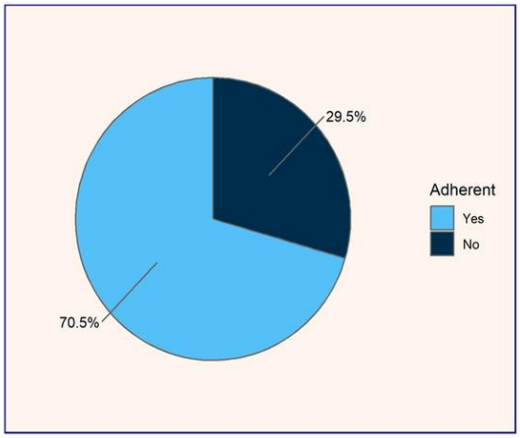


Figure 4. Degree of therapeutic adherence based on the Morisky–Green test among 78 chronic daily users of omeprazole.

An evaluation of medication-related problems (MRPs) (**Figure 5**) within the cohort of 78 chronic daily consumers indicated that "unnecessary medication" emerged as the most frequent complication, representing 33% of the total recorded MRPs. The remaining prominent classifications included "lack of adherence", "wrong administration", "drug interactions", and "lack of knowledge regarding medication use". Combined, these five specific MRP dimensions accounted for 85% of the aggregate issues identified, highlighting their substantial impact on the cumulative MRP burden observed in this investigation.

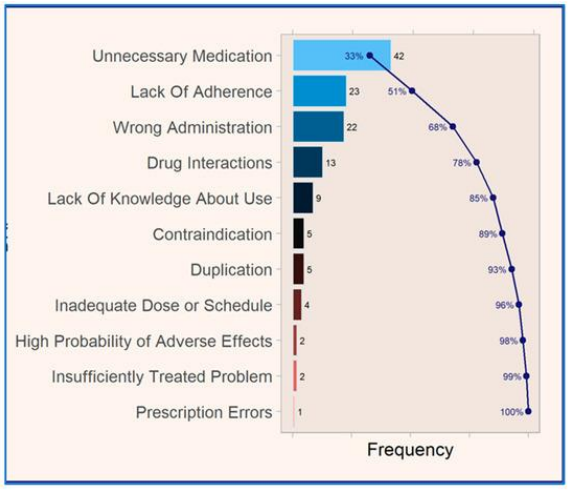


Figure 5. Relative frequency of different types of medication-related problems (MRPs) among omeprazole users.

Based on the application of the STOPP criteria, 8% of subjects receive therapeutic dosages of proton pump inhibitors (PPIs) for ulcerative disorders or erosive peptic esophagitis lasting for more than 8 weeks, suggesting a need for dosage de-escalation or deprescribing. Additionally, with respect to the secondary benchmark of the STOPP framework, 37% of the cohort receive omeprazole in the absence of an evidence-based clinical indication. Remarkably, among individuals aged 65 years or older, 57% meet criteria for dose modification or discontinuation of omeprazole therapy, as further elaborated below.

According to the data compiled in this project, 13% of the monitored subjects were prescribed quantities exceeding the 20 mg/day Defined Daily Dose (DDD) mandated by the World Health Organization for omeprazole, highlighting potential vulnerabilities to patient safety and toxic logic. In established pharmacological literature, tracking the variance between the Prescribed Daily Dose (PDD) and the standard DDD serves as a reliable metric for quantifying clinical ambiguity [17].

Because 30% of the individuals utilizing omeprazole qualify as polymedicated—undergoing concurrent regimens of five or more distinct pharmaceutical agents—it is imperative to formulate specialized clinical pharmacy strategies for this cohort, as they face an elevated risk of encountering adverse drug-drug interactions. Consequently, maximizing the safety of their therapeutic regimens is of paramount importance, a priority previously articulated by Silveira *et al.* [17].

Extended management with omeprazole remains a widespread clinical trend, a phenomenon explicitly addressed by the primary STOPP criterion. This guideline notes that extending proton pump inhibitor therapy beyond the recommended 8-week limit for gastroesophageal reflux disease, reflux esophagitis, or peptic ulcers substantially increases the risk of secondary complications and adverse drug interactions [18].

Despite these clear clinical risks, 92% of the surveyed cohort failed to recognize any correlation between long-term omeprazole consumption and systemic health hazards, indicating a pronounced deficit in public health awareness regarding prolonged exposure. Academic investigations into extended drug use and patient comprehension deficits reveal that the clinical uncertainty surrounding long-term benzodiazepine consumption closely mirrors the general lack of understanding patients exhibit regarding their own medication plans [19].

The revelation that 71% of the sample population had consumed omeprazole continuously for an interval exceeding 2 years places these individuals at a heightened risk for chronic secondary complications. Documented risks include iron deficiency, osteoporotic fractures, renal impairment, osteoarthritis, delayed sexual development, and megaloblastic anemia, along with a prospective association with oncological developments [11, 13, 20-26].

A prior study by Mir [27] establishes that patient compliance rates fluctuate in direct proportion to how well individuals comprehend their personal pharmacotherapeutic regimens. In this assessment, a lack of compliance was documented in 29.5% of the chronic daily omeprazole cohort, indicating suboptimal adherence to the prescribed timeline—a trend frequently exacerbated by the absence of noticeable gastrointestinal discomfort, leaving patients asymptomatic.

These behavioral variations underscore distinct differences in how individuals perceive the clinical necessity of their treatment. For patients engaged in long-term daily schedules, the elevated compliance rate of 70.5% may be driven by an underlying awareness of the chronic nature of their condition and the perceived utility of continuous intervention. Furthermore, routine medical monitoring is likely a core driver for these chronic populations, as recurring clinical appointments provide structured professional guidance that reinforces adherence. While maintaining a 70.5% compliance rate for omeprazole could be interpreted positively, the 29.5% non-adherence rate among chronic daily users remains a notable concern. This specific demographic requires targeted clinical education and enhanced therapeutic commitment to mitigate the risk of treatment failure.

Distinguishing between passive compliance and active adherence is essential for fostering positive health outcomes. Mir [27] advocates an adherence-centered framework that reinforces patient autonomy and fosters meaningful behavioral change. In contrast, conventional compliance merely dictates a regimen without reshaping patient behavior, relying solely on passive compliance with medical instructions.

The finding that 57% of subjects older than 65 years satisfied the STOPP criteria [16] points to a widespread trend of over-prescription in geriatric care. This indicates a pressing need to evaluate the explicit diagnostic rationales behind omeprazole therapy, especially since

37% of these cases lacked verifiable evidence-based justification. Research published by Gutiérrez-Igual *et al.* [20] mirrors these findings, reporting a high incidence of medication-related problems (MRPs), with 97.3% of individuals exhibiting at least one issue, and 46.9% of all drug interactions involving omeprazole. Patients over the age of 54, particularly female patients taking a combination of more than 13 distinct medications, face the highest risk of experiencing MRPs. Though the most prevalent interactions are typically minor, isolating these specific risk variables facilitates more efficient monitoring and an optimized distribution of healthcare resources [19].

Formulating multidisciplinary interventions that bridge communication between physicians and pharmacists is critical for eliminating redundant prescriptions. In their evidence-based clinical practice guidelines for reducing proton pump inhibitor use in Canada, Farrell *et al.* [6] confirm that tapering PPI use is an effective and safe approach to minimizing polypharmacy. These researchers supply structured, evidence-based frameworks designed to guide dose de-escalation or complete discontinuation.

On a domestic level, data published by Carranza [21] emphasize that 60% of patients surpass the advised therapeutic timeframe for omeprazole, and 4.5% of the elderly demographic ingest high doses for durations exceeding a year, thereby increasing their susceptibility to adverse events. Furthermore, over half of the surveyed patients could not recall the intended timeline of their prescription. Similarly, Frígola [28] found that omeprazole distribution patterns in community pharmacies along the Girona coast show that a large majority of users exceed their recommended treatment windows, thereby inflating the incidence of adverse secondary effects.

Active pharmaceutical oversight is indispensable for ensuring the safe and efficient utilization of therapeutic agents. Internationally, investigations like the one by Schepisi *et al.* [23] demonstrate that omeprazole use frequently lacks sound therapeutic justification. Farrell *et al.* [6] offer actionable benchmarks for determining the timing and methodology for down-titrating or completely halting PPI usage, confirming that deprescribing remains a highly recommended clinical practice. Additionally, Curtain *et al.* [24] outline a specialized workflow for deprescribing omeprazole in England via automated notifications in community pharmacies. At the same time, Alshammari [25] highlights irrational distribution patterns of this molecule in Saudi Arabia.

Given that 52% of participants reported no gastric discomfort before starting their omeprazole regimen, it can be inferred that a large proportion of this use may be clinically unjustified. Standard gastrointestinal conditions—including pyrosis, gastric or peptic ulcers, gastroesophageal reflux disease, Zollinger–Ellison syndrome, and *H. pylori* infections—are typically characterized by acute abdominal or thoracic pain [26-30]. This absence of preliminary symptoms strongly suggests unnecessary use of a proton pump inhibitor (PPI), underscoring the need for a formal review of therapeutic necessity and potential clinical reassessment. Indeed, Ruiz de Velasco Artaza *et al.* [31] demonstrated that after distributing direct correspondence to patients on omeprazole, clinicians successfully optimized therapy in 52.6% of cases, completely halting therapy in 20%, and reducing the active dose in 32.6%.

Finally, this empirical analysis aligns closely with the Pareto principle, or the 80/20 rule, as 20% of the documented MRP categories are responsible for 80% of the total identified MRP instances, confirming the internal consistency of the data and the overall reliability of the research sample [32].

Although the sample size in this investigation was sufficient to achieve statistical significance, its capacity to represent broader populations may be limited, thereby reducing the generalizability of the outcomes. Because a cross-sectional design was employed, the capacity to track temporal shifts in omeprazole utilization patterns or in evolving clinical methodologies was limited. Furthermore, a lack of direct access to institutional medical records meant that the appraisal of Medication-Related Problems (MRPs) and the clinical validity of therapies depended entirely on data reported by patients, introducing potential vulnerabilities to reporting and recall biases. Lastly, this inquiry focused exclusively on omeprazole, precluding comparative evaluations with alternative proton pump inhibitors (PPIs) and restricting the scope of analysis, while offering avenues for subsequent investigations.

A key attribute of this research is its reliance on real-world clinical data, which bolsters both its practical utility and external validity. By mapping distinct patterns of compliance, clinical administration, and prescribing practices, this work offers pragmatic insights to refine pharmacy operations and safeguard patient welfare. Methodological rigor and standardization were

maintained by using established evaluation instruments, specifically the AF-FC Forum criteria, to categorize MRPs. Moreover, the study directly addresses critical clinical challenges, including deprescribing practices and the hazards associated with long-term omeprazole use, thereby providing meaningful empirical data to support educational strategies and refine healthcare policies.

Conclusion

The widespread overutilization of omeprazole presents serious clinical challenges regarding the hazards linked to its potentially unwarranted prescription. The therapeutic oversight provided by community pharmacists is vital for safeguarding the health of chronic and polymedicated patient cohorts. Their distinct responsibilities—comprising thorough medication reviews, identification of drug-drug interactions, and patient-centered health education—remain fundamental to averting adverse drug events and optimizing therapeutic regimens, reinforcing their status as indispensable healthcare practitioners.

Integrating the STOPP criteria and standardized diagnostic instruments, alongside a detailed characterization of the typical omeprazole user within primary care service frameworks, equips community pharmacists to accurately diagnose patient needs. This structured strategy enables the delivery of customized pharmaceutical care interventions tailored to individual patient needs.

Ultimately, identifying the systemic overprescribing of proton pump inhibitors and tracking medication-related problems within the community pharmacy environment fosters interprofessional collaboration among medical practitioners. This cooperative framework supports structured patient referrals to clinicians for therapeutic de-escalation and deprescribing, which serves as an optimal pharmaceutical intervention to reduce the incidence of adverse clinical outcomes associated with omeprazole use.

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Ethics Statement: None

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