Libyan Journal of Medical Research

www.ljmr.ly/ eISSN:2413-6096

Original Article

Assessing the impact of long-term omeprazole therapy: Across-sectional analysis of adverse effects"

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Received: 03/12/2024 | Accepted: 11/01/2025 | Published: 22/01/25| DOI: https://doi.org/10.26719/ .19.1.02

ABSTRACT

Purpose: Omeprazole is one of the most commonly prescribed of protein pump inhibitors (PPIs) drugs which used widely to manage many gastric acid-related conditions such as gastro esophageal disease, gastritis, esophagitis, Barrett's esophagus, Zollinger-Ellison syndrome, peptic ulcer disease, nonsteroidal anti-inflammatory drug-associated ulcers, and Helicobacter pylori eradication, globally .**Aim of study**: to evaluate the adverse effects associated with the long-term use of proton pump inhibitors drug(omeprazole).

Methodology : a descriptive study for 304 participants were conducted to fill a questionnaire to evaluate the adverse effect of long term use of omeprazole, data were analyzed statistically by SPSSV21.

Results: positive correlation between UTI infection and long term use of omeprazole . 66%of people who used omeprazole have deficiency in vitamin D, other side effects are showed in long term use of omeprazole as gastritis , confusion,.

Conclusion: because the improper use of omeprazole as a save drug more studies need to evaluate the risk of long term use of omeprazole.

Key words: omeprazole, long term use, adverse effect**.**

How to cite this article: Elfarrah .N, Naffati. Ab, Ali .HT, Abudalal.AS, Thwer.HA, Absheenah.A **Assessing the impact of long-term omeprazole therapy: Across-sectional analysis of adverse effects"**
Libya: 2025:19.1-2

INTRODUCTION:

Omeprazole is the most prescribed drugs worldwide, specifically for gastrointestinal conditions. It is used to treat gastro esophageal reflux disease (GERD), stomach ulcers, and Zollinger-Ellison syndrome .[1] It is also used to stop upper gastrointestinal bleeding in people at high risk. In terms of effectiveness, omeprazole works similarly to other proton pump inhibitors (PPIs).[2] It can be taken orally or intravenously. Omeprazole irreversibly blocks the enzyme system on parietal cells that is needed for the secretion of gastric acid. It is a specific H+/K+ATPase inhibitor. This is the enzyme needed for the final step in the secretion of gastric acid. Omeprazole was approved for medical use in 1988 after being granted a patent in 1978 .[3]The World Health Organization lists it as an essential medicine. [4] The drug is available in generic form With more than 54 million prescriptions, it was the eighth most prescribed drug in the United States in 2021. it is among the most overused drug world- wide, in approximately 50% of cases, they are used inappropriately in both hospital and outpatient settings.[4]Concerns about inappropriate indications for omeprazole and other proton pump inhibitor drugs are increasing, especially in the older population, where overprescribing was associated with increased morbidity and mortality. [5]

A number of observational studies have found a positive association between long-term use of PPIs and the development of gastric cancer.[6] Long-term PPI users were more than twice as likely to develop stomach cancer. According to a meta-analysis of twelve studies, including one randomized controlled trial, four case-control studies, and seven cohort studies, long-term PPI use was positively correlated with an increased risk of fundic gland polyps and gastric cancer.[7]

Long-term use of PPIs is very common in older populations. A recent population-based study in Sweden found that 38% of participants had no clear indication for use. A number of criteria, including the Beers 2023 criteria, the European Union List of Potentially Inappropriate Medicines and the Screening Tool of Older Persons' Prescriptions Version 3 criteria, indicate that the use of PPIs for a longer period of time than recommended in the elderly Adults are particularly concerned.[7] According to these guidelines, older adults should not take PPIs for longer than eight weeks. Additionally, inappropriate PPI prescriptions can result in polypharmacy, medication nonadherence, drug interactions, prescribing cascades, emergency department visits, and hospitalizations. Therefore, it is recommended to reduce the dosage or discontinue the medication earlier. Long-term use of PPIs is common in older people, and a recent population-based study in Sweden found that 38% of people had no clear indication for use. A number of criteria, including the Beers 2023 criteria, the European Union List of Potentially Inappropriate Medicines and the Screening Tool of Older Persons' Prescriptions Version 3 criteria, indicate that the use of PPIs for a longer period of time than recommended in the elderly Adults are particularly concerned. According to these guidelines, older adults should not take PPIs for longer than eight weeks. Additionally, incorrect PPI prescriptions can lead to polypharmacy and medication nonadherence. [8]

Objective of study:

The aim of this study was to evaluate the inappropriate use of omeprazole and adverse effects following long-term drug use in Libyan adults.

MATERIAL AND METHOD:

Selection of sample:

This study used a sample of 300 participants. The data was collected in the medical department of many hospitals in western Libya to conduct this research during the period from March 2024 to June 2024.

Questionnaire:

Each participant completed a pre-designed, pre-tested, structured and anonymous questionnaire as part of a face-to-face interview. Gender, age, educational level, occupation and chronic disease, symptoms of some possible side effects of omeprazole, and the results of recent blood tests for hemoglobin, iron, kidney function, serum calcium, magnesium and vitamin D were among the demographic details included in the questionnaire sheet.

Statistical Analysis:

The tables and graphs display the data. The qualitative data were described using percentages and frequencies. Cross-tabulations and correlations were used to test for significant differences between the collected parameters at a confidence interval of 95 percent and a significance level of 0.05. SPSS for Windows version 18 was used to process the data (SPSS Inc. Chicago, Illinois.

RESULTS:

Analysis of data to compare between the two groups of the study patients on long-term use of omeprazole and short term use groups revealed several variations in many symptoms

of adverse events indices, despite no significant variation in age, gender percentage as clarified in Table (1), the sample includes 304 participants, 41 % are male and 58%are female. The participants are predominantly between 21 and 40 years old (48 %). This is followed by the 41 to 60 age group (26.3%), and the majority of participants had a secondary school diploma (48.4 %). All participants in our study used omeprazole, and 56 % of total participants are long term used of omeprazole.

According to the results presented in Table (2), the concentration of 40mg twice a daily interval was the most widely used among the group of long term used participants in our research.

Statistical analyses of general symptoms and last blood analysis of participants have found about 61% of the participants used omeprazole suffered from fatigue38% were used omeprazole for long time as clarified in paragraph[1]. In addition, 48 % of participants used omeprazole for a long period of time and suffered from muscle cramps, and 49% of participants suffered from gastritis after long term use of omeprazole. it has been found that 48% of long-term use patients suffer from urinary tract infections as clarified in figure 3. According to previous last blood analysis of participants 20 % suffered from low blood iron levels and 38.81 % suffered from low vitamin D levels as shown in figure 2.

Table1: *General characteristics of the studied groups.*

		Long term use of omeprazole		
		yes	No .	correlation Significant (P value)
Gender	Male	70	55	o.9
	Female	101	78	
Age group	Less than 20	8	28	
	21-40	83	65	0.0001
	41-60	48	32	
	More than 60	32	4	
Education level	Primary	8	8	0.1
	Secondary	95	52	
	High school	52	61	
	Non educated	16	12	
Chronic disease	Yes	60	111	0.000
	no	20	113	

Table2: *characteristic of omeprazole administration*

		Long term use of omeprazole		
		Yes	No	p value
Used dose	20mg	15	86	0.000
	40mg	156	47	
Dose interval	Onetime	91	102	0.000
	two times	80	27	
Drug used according to prescription	yes	132	66	0.000
	no	39	63	

Table3: *Adverse events of long term use of omeprazole*

		Long term use of omeprazole		
		Yes	No	p value
Fatigue	Yes	116	70	
	No	55	63	0.007
Nausea	Yes	60	50	
	No	107	83	0.7
confusion	Yes	63	55	
	No	108	78	0.4
Muscle spasm	Yes	99	47	
	No	72	86	0.000
Gastritis	Yes	112	39	
	No	59	91	0.000
weightloss	Yes	40	36	
	No	131	97	0.461
UTI	Yes	105	42	
	No	66	91	0.000
depression	Yes	16	44	
	No	155	89	0.000
HG	normal	125	59	
	abnormal	15	42	0.000
Iron	normal	84	42	
	abnormal	56	63	0.000
Renal function	normal	93	69	
	abnormal	11	4	0.617
Calcium	normal	124	16	
	abnormal	43	39	0.000
Vitamine D	normal	47	22	
	abnormal	108	91	0.112
Magnisiumm	normal	100	55	
	abnormal	12	19	0.007

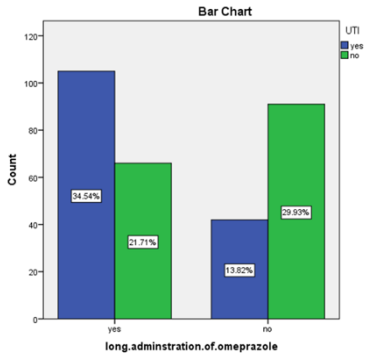

Figure1: long.adminstration.of.omeprazole *

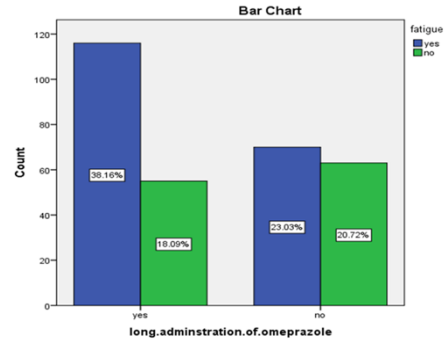

Figure2: long. adminstration.of.omeprazole * vitamin D level

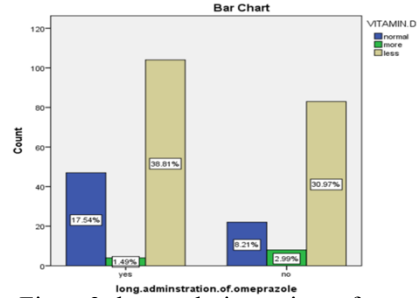

Figure3: long. adminstration. of. omeprazo

DISCUION:

Urinary tract infections are one of the risk factors for impaired kidney function, and the main findings of our study were the positive correlation between urinary tract infections and long-term users of omeprazole. Since 1992, PPIs case reports have linked to acute interstitial nephritis (AIN) and acute kidney injury (AKI) . In 2016, two studies received widespread attention because they linked PPIs to an increased risk of chronic kidney disease (CKD), which cannot be explained by the risk of AKI alone. (9,10) The first of these by Lazarus et al. The Studies conducted examined a larger cohort of 249,751 patients whose data were collected retrospectively and 10,482 patients who were actively followed. [(10)] In the smaller cohort, PPIs were associated with a 50% increase in CKD risk after accounting for variable effects, and in the larger cohort studies with a 17% increase risk. Our results showed that 118 out of 300 participants had symptoms of dementia and reduced ability to concentrate. [(11)] We suspected a connection between these symptoms and prolonged use of omeprazole. Based on these findings, two recent clinical studies examined the possibility of an association between dementia and PPI exposure [(12)]. According to previous study that followed 227 non German adults aged 75 or older, regular use of neuropsychiatric PPIs was associated with a 38% higher risk of dementia, with comparable increases in the risk of Alzheimer's and non-Alzheimer's -Dementia. [(13)] Another important finding concerned diagnosis and diseases: 22% of older adults taking PPIs had no diseases related to the digestive system, suggesting that Elfarrah .N, omeprazole use may not be associated with a potential need problem. Because there is no potential benefit from misusing PPIs, even a small risk becomes significant. There is evidence that excessive or inappropriate use of PPIs can have a number of negative effects. According to previous research, long-term use of PPIs and those without gastrointestinal disorders may increase the risk of death. [(14)]

High consumption of PPIs may be related to poor social status, the perception that they are associated with few adverse effects. One of the possible reasons for overuse of PPIs is failure to reassess the need to continue taking the medication. 41 Additionally, one study found that some physicians recommend PPIs to all their patients. 42 However, older adults also often self-medicate from time to time. [(15)]

Involving pharmacists in interdisciplinary prescribing teams was found to be beneficial in reducing potentially inappropriate PPI use in older adults. In addition, patients receiving long-term PPIs should be followed up regularly to assess the ongoing need for treatment. [(16)]

CONCLUSIO:

Long-term use of PPIs in older adults is common and does not fit any particular patient profile. Therefore, comprehensive educational measures should be designed regardless of the patient's pathological condition or treatment. When PPIs are prescribed correctly, their benefits are likely to outweigh their risks. When PPIs are prescribed improperly, small risks become important because there is no potential benefit. There is currently insufficient evidence to recommend specific strategies to mitigate the negative effects of PPIs

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