

## PRESCRIBING TRENDS OF ANTI-ULCERANT DRUGS BY GENERIC NAMES IN DHAKA CITY OF BANGLADESH

Muhammad Rashedul Islam\*<sup>1</sup>, Shadid Uz Zaman<sup>2</sup>, Md. Elias-Al-Mamun<sup>1</sup>

Mohammad Aziz Ullah<sup>3</sup>

<sup>1</sup>Department of Pharmaceutical Technology, University of Dhaka, Dhaka, Bangladesh.

<sup>2</sup>Department of Pharmacy, University of Dhaka, Dhaka, Bangladesh.

<sup>3</sup>Sanofi Bangladesh Limited, Bangladesh.

Article Received on  
26 Oct. 2016,

Revised on 16 Nov. 2016,  
Accepted on 06 Dec. 2016

DOI: 10.20959/wjpr20171-7570

### \*Corresponding Author

**Dr. Muhammad Rashedul  
Islam**

Department of  
Pharmaceutical Technology,  
University of Dhaka, Dhaka,  
Bangladesh.

### ABSTRACT

This study aimed to identify the prescribing preference of anti-ulcerant drugs among the physicians and dentists of Dhaka City, Bangladesh by generic names. A questionnaire-based field survey was conducted on the physicians and dentists of Dhaka City by personal interview and the responses were noted. The questionnaire included variables like overall preference of anti-ulcerant drug, preference for pediatric, geriatric and pregnant patients, cause for preference, and age group of patients who were prescribed anti-ulcerant drugs. The survey had a response rate of 82.9%. Overall, Esomeprazole was the most preferred molecule (32.3% of total responses) but for pregnant women pantoprazole was most preferred (40.3%). The study found that most physicians don't prefer

anti-ulcerant drugs for pediatric patients, and do not have particular preference for geriatric patients. Efficacy and Safety were the most concerning factors when choosing a specific anti-ulcerant drug. Patients of 30-50 years of age were most commonly prescribed anti-ulcerant drugs. It was concluded from the study that the physicians and dentists of Dhaka City, Bangladesh are leaned towards safe and efficacious Proton Pump Inhibitor drugs.

**KEYWORDS:** Anti-ulcerant drugs, Proton Pump Inhibitors (PPIs), Histamine 2 receptor antagonists (H2RAs), pregnant patients, patient's age.

### INTRODUCTION

Gastrointestinal disorders like Peptic ulcer disease, Gastroesophageal reflux disorder (GERD) and Dyspepsia are common but significant causes of morbidity and mortality in population

all over the world.<sup>[1]</sup> A large number of people in Bangladesh also suffer from these diseases. A study found that prevalence of duodenal ulcer and gastric ulcer in Bangladesh is 11.9% and 3.5% respectively.<sup>[2]</sup> Prevalence of GERD was estimated to be 5.5% and that of Dyspepsia has been reported in the range of 8% to 41%.<sup>[3-4]</sup>

It is now known that these diseases are related to gastric acid secretion and suppression of gastric acid is an effective approach to treat these diseases.<sup>[5]</sup> Different classes of drugs have been developed, mainly in the late twentieth century to suppress gastric acid. These drugs are called 'Anti-ulcerant drugs' or 'Acid suppressive drugs'. Antacids, Histamine 2 receptor antagonists (H2RAs) and Proton pump inhibitors (PPIs) are the main anti-ulcerant drugs prescribed commonly by the physicians worldwide. Anti-ulcerant drugs are also important to physicians as adjunct to non-steroidal anti-inflammatory drugs (NSAIDs) therapy to prevent acid-related disorders.<sup>[6]</sup> So, orthopedists, cardiologists and dentists frequently prescribe anti-ulcerant drugs.

As the result of a well-developed pharmaceutical sector in Bangladesh, most of the latest approved anti-ulcerant drugs are available in the country. This includes H2RAs like ranitidine and famotidine and PPIs like omeprazole, esomeprazole, pantoprazole, rabeprazole, lansoprazole and dexlansoprazole. So, the physicians and dentists of the country have a variety of drugs to choose from. But their preference will depend upon factors like the patient's age and gender and practical experience with different drugs.

A study evaluating the prescribing trends of anti-ulcerant drugs will therefore provide useful information as to which drugs are providing best support to the physicians in the treatment of acid-related disorders. It will also provide knowledge into the quality of prescribing practice by the physicians and dentists of Bangladesh.

## MATERIALS AND METHODS

**Study design:** A field based survey was conducted by questionnaire method using a semi-structured questionnaire. The participant physicians and dentists were selected by purposive sampling method.<sup>[7]</sup> Medicine specialists including gastroenterologists, cardiologists, orthopedists, obstetricians and gynecologists, neurologists and dentists of top hospitals of Dhaka City were selectively sought out. A total of seventy (70) physicians and dentists were visited between February 20, 2016 and April 08, 2016. Then, data was collected from them through direct interview. Prior to data collection, written or verbal consent was obtained from

each participant and permission from respective hospital administration was obtained. The names and other information of the participants were kept confidential throughout the study.

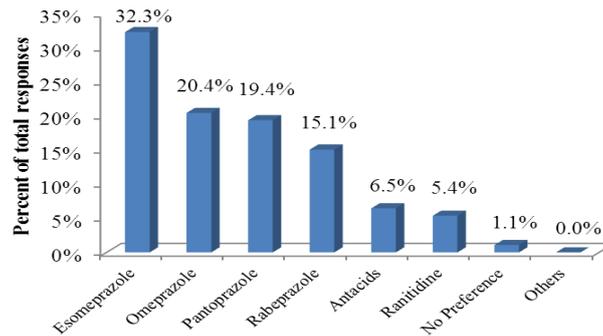
**Questionnaire:** A semi-structured questionnaire consisting of two sections was designed for the study. The first section contained variables like the participant's name, place of practice, field of specialty and level of experience. The second section consisted of a total of 7 questions related to anti-ulcerant drug molecule preference, preference for pediatric, geriatric and pregnant patients, factor(s) contributing to the preference and age group of patients commonly prescribed anti-ulcerant drugs. Multiple responses were allowed for each question other than the first question.

**DATA ANALYSIS:** Collected data was analyzed with Microsoft Office Excel 2007. Since multiple responses were allowed per question, the total number of responses exceeded the total number of responders (participants) for most questions. Unless specifically stated, the result is reported in terms of total number of responses.

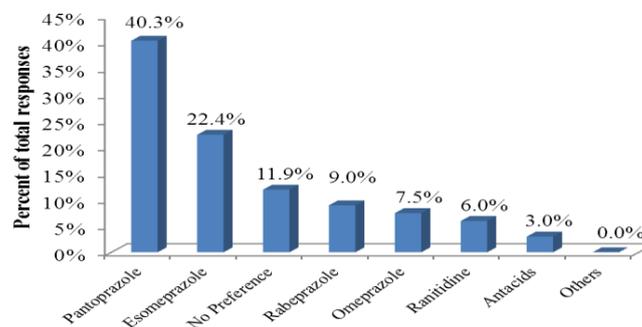
## RESULTS

Among the 70 physicians and dentists visited, 58 participated in the survey giving a response rate of 82.9%. Among the responders 29.3% were cardiologists, 22.4% were obstetrician and gynecologists, 17.2% were medicine specialists and gastroenterologists, 6.9% were orthopedists, 15.5% were dentists and 8.6% were of other fields of specialty.

Esomeprazole (32.3% of total response) was found to be most preferred anti-ulcerant drug molecule shown in figure 1. It is followed by omeprazole (20.4% of total response), pantoprazole (19.4%), rabeprazole (15.1%), antacids (6.5%) and ranitidine (5.4%). However, according to figure 2 for pregnant patients, pantoprazole was most preferred (40.3%), followed by esomeprazole (22.4%), rabeprazole (9.0%), omeprazole (7.5%), ranitidine (6.0%) and antacids (3.0%). 14.3% physicians and dentists (12.0% of total responses) stated that they don't prefer anti-ulcerant drugs for pregnant patients.

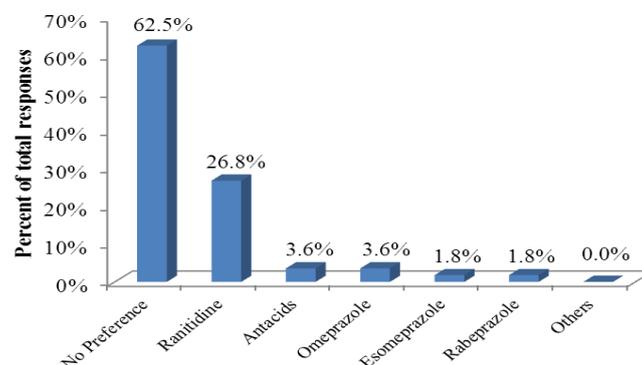


**Figure 1: Overall preference of anti-ulcerant drugs by physicians and dentists of Dhaka City (in term of total responses).**

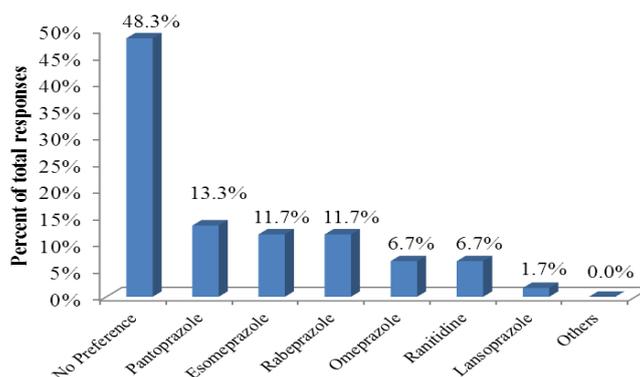


**Figure 2: Preference of anti-ulcerant drugs for pregnant patients (in term of total responses).**

From the figure 3, we found that Ranitidine (26.8% of total responses) was most preferred molecule for pediatric patients, followed by omeprazole (3.6%), antacids (3.6%), esomeprazole (1.8%) and rabeprazole (1.8%). However, it was found that most physicians.



**Figure 3: Preference of anti-ulcerant drugs for pediatric patients (in term of total responses).**



**Figure 4: Preference of anti-ulcerant drugs for geriatric patients (in term of total responses).**

prefer not to prescribe anti-ulcerant drugs to pediatric patients (62.5% of total responses for that question). According to figure 4, for geriatric patients, pantoprazole (13.3% of total responses) followed by rabeprazole and esomeprazole (11.7% each), omeprazole and ranitidine (6.7% each) and lansoprazole (1.7%) were mentioned by the responders. However, 50.9% of responders (48.3% of total responses for that question) cited that they do not have any particular preferred molecule for geriatric patients.

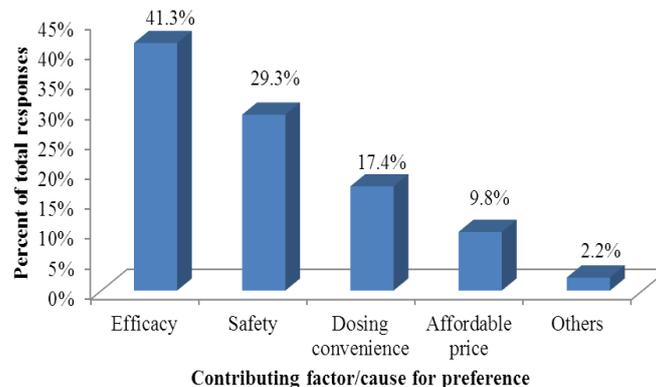
Efficacy (41.3% of total responses) of the drug molecule was found to be the most important contributing factor in selection of anti-ulcerant drugs in figure 5. This is followed by safety (29.3% of total responses), dosing convenience (17.4%) and cost (9.8%).

86.2% of physicians (68.5% of total responses) stated that they prescribe anti-ulcerant drugs most commonly to patients of 30-50 years of age which is shown in figure 6. This is followed by 15-30 years age group (19.2% of total responses) and >50 years age group (11.0%).

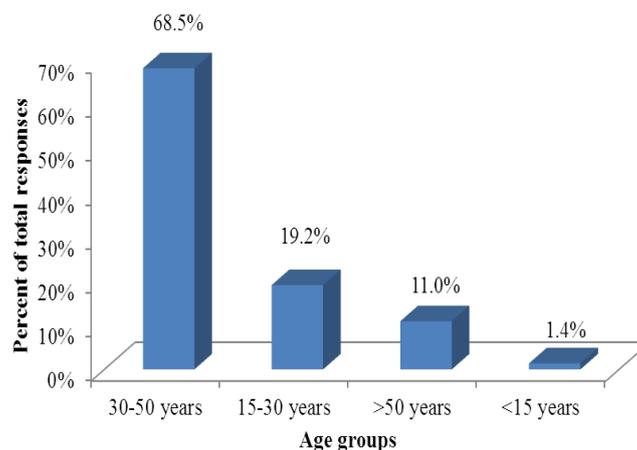
## DISCUSSION

This was a questionnaire-based survey type study directed towards the physicians and dentists of Dhaka City, Bangladesh. While this was a small study, by utilizing purposive sampling method it was possible to include experienced physicians and dentists of the top hospitals of Dhaka City who were more likely to prescribe anti-ulcerant drugs. Therefore, the result obtained from this study is very significant to demonstrate the prescribing trends and practices of anti-ulcerant drugs in this city. Furthermore, the 82.9% response rate of the survey shows the standard of the survey.

In this study we observed that omeprazole is the most preferred anti-ulcerant drug by the physicians and dentists of Dhaka City. Esomeprazole is the S-isomer of omeprazole and it is sometimes referred to as a second-generation proton pump inhibitor. Studies have described esomeprazole as being superior to omeprazole in terms of efficacy.<sup>[7-8]</sup> This may explain its surge in Bangladesh. One study in Bangladesh in 2012 found Omeprazole to be the most preferred molecule.<sup>[10]</sup> So, over the course of 4 years esomeprazole has become more popular. We also found that pantoprazole to be the most preferred agent for pregnant patients. In contrast, the 2012 study reported esomeprazole as the most popular drug for pregnant patients. Pantoprazole is United States Food and Drug Administration (USFDA) pregnancy category B drug introduced first in 1994.<sup>[11-12]</sup> This may explain its popularity among physicians and dentists for pregnant patients. Esomeprazole was found to be the second most.



**Figure 5: Factors that contributes to preference of anti-ulcerant drugs by physicians and dentists of Dhaka City (in term of total responses).**



**Figure 6: Prescribing tendency of anti-ulcerant drugs to different age groups of patients (in term of total responses).**

popular drug. Until recently it has been stated to be a category B drug by many sources, which may explain why physicians and dentists are using it in pregnant patients.<sup>[12-14]</sup> Rabeprazole was also a category B drug until recently, accounting for its use.<sup>[15-16]</sup>

Ranitidine was found to be the most preferred molecule for pediatric patients. This finding is similar to that of the 2012 study, indicating that the physicians and dentists of Bangladesh still consider ranitidine to be most suitable for this group of patients. It is also observed that many physicians and dentists try to avoid anti-ulcerant drugs in pediatric patients.

According to the data, most physicians and dentists do not have any specific prescribing preference of anti-ulcerant drugs for geriatric patients. However proton pump inhibitors like pantoprazole, esomeprazole and rabeprazole appeared to be more preferred than H<sub>2</sub> receptor antagonists. This is in agreement with the 2012 study. The Study found that the physicians and dentists give emphasis on the efficacy and safety of the drug. Dosing convenience was also found to be a significant factor when prescribing a particular anti-ulcerant drug. However price appeared to be less significant. This study shows that anti-ulcerant drugs are most commonly prescribed to 30-50 years aged patients. Similar result was obtained in a study conducted in India.<sup>[17]</sup> Our study found that obstetricians and gynecologists and dentists mainly prescribe to 15-30 years aged patients while patients above 50 years of age are prescribed anti-ulcerants mainly by orthopedists and cardiologists.

The main limitation of the study is that it includes a small number of participants. A second limitation is that it focused more on cardiologists and obstetricians and gynecologists than medicine specialists and gastroenterologists. However, this limitation can also be considered to be a distinct characteristic of the study.

## CONCLUSION

This study suggests that the physicians and dentists of Dhaka City, Bangladesh are adopting the latest available anti-ulcerant drug molecules into their practice. They are taking special care when prescribing these drugs to pregnant patients. Efficacy and safety of the drugs are given more emphasis but cost is not being given much consideration. Overall, for the most part physicians and dentists are exercising sound clinical reasoning but some modifications in the prescribing habits may provide more rational use of these drugs in Bangladesh.

**ACKNOWLEDGEMENT**

We convey our thanks to Sanofi Bangladesh Limited for providing us assistance in designing the survey. We also thank the hospitals which allowed us to conduct the survey in their premise.

**REFERENCE**

1. Shin JM, Vagin O, Munson K, Kidd M, Modlin IM, Sachs G. Molecular mechanisms in therapy of acid-related diseases. *Cellular and molecular life sciences*. 2008; 65(2): 264-81.
2. Hassan, M, Ali SMK, Khan AKA. Peptic ulcer in Bangladesh. *Gut*, 1985; 26(10): 11-17.
3. Shaha M, Perveen I, Alamgir M, Masud M, Rahman M. Prevalence and risk factors for gastro-esophageal reflux disease in the North-Eastern part of Bangladesh. *Bangladesh Medical Research Council Bulletin*, 2013; 38(3): 108-113.
4. Hasan M. Dyspepsia in primary care practice in Bangladesh. *Bangladesh Medical Journal*, 2014; 42(2): 63-69.
5. Garnett WR. History of acid suppression: focus on the hospital setting. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy*, 2003; 23(10): 56-60.
6. Agrawal NM. Epidemiology and prevention of non-steroidal anti-inflammatory drug effects in the gastrointestinal tract. *Rheumatology*. 1995; 34(suppl 1): 5-10.
7. Tongco MDC. Purposive Sampling as a Tool for Informant Selection. *Ethnobotany Research and Applications*. 2007; 5: 147-58.
8. McNicholl AG, Linares PM, Nyssen OP, Calvet X, Gisbert JP. Meta-analysis: esomeprazole or rabeprazole vs. first-generation pump inhibitors in the treatment of *Helicobacter pylori* infection. *Alimentary pharmacology & therapeutics*. 2012; 36(5): 414-25.
9. Dent J. Review article: pharmacology of esomeprazole and comparisons with omeprazole. *Alimentary pharmacology & therapeutics*, 2003; 17(suppl 1): 5-9.
10. Hossain T. Prescription Pattern of Acid Suppressive Medications in Bangladesh. 2012, [Masters Dissertation], East West University, Dhaka, Bangladesh.
11. Garner A, Fadlallah H. Pantoprazole: a new and more specific proton pump inhibitor. *Expert opinion on investigational drugs*. 1997; 6(7): 885-93.
12. Thukral C, Wolf JL. Therapy insight: drugs for gastrointestinal disorders in pregnant women. *Nature Clinical Practice Gastroenterology & Hepatology*. 2006; 3(5): 256-66.

13. Astrazeneca. Nexium [package insert]. Wilmington; 2012 [cited 2016 July 10]. Available from:[http://www.accessdata.fda.gov/drugsatfda\\_docs/label/2012/021153s044,021957s014,022101s011lbl.pdf](http://www.accessdata.fda.gov/drugsatfda_docs/label/2012/021153s044,021957s014,022101s011lbl.pdf).
14. Astrazeneca. Nexium [package insert]. Wilmington; 2014 [cited 2016 July 10]. Available from:[http://www.accessdata.fda.gov/drugsatfda\\_docs/label/2014/021153s049,021957s016,022101s013lbl.pdf](http://www.accessdata.fda.gov/drugsatfda_docs/label/2014/021153s049,021957s016,022101s013lbl.pdf).
15. Eisai Inc. Aciphex [package insert]. Charlotte; 2013 [cited 2016 July 10]. Available from:[http://www.accessdata.fda.gov/drugsatfda\\_docs/label/2013/020973s032lbl.pdf](http://www.accessdata.fda.gov/drugsatfda_docs/label/2013/020973s032lbl.pdf).
16. Eisai Inc. Aciphex [package insert]. Charlotte; 2014 [cited 2016 July 10] Available from:[http://www.accessdata.fda.gov/drugsatfda\\_docs/label/2014/020973s035204736s005lbl.pdf](http://www.accessdata.fda.gov/drugsatfda_docs/label/2014/020973s035204736s005lbl.pdf).
17. Jha KK, Divya P, Swetha V, Reddy V, KM B, Doddayya H. Prescribing pattern of acid suppressant drugs in current clinical practice. *Journal of Scientific and Innovative Research*, 2016; 5(2): 32-5.