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RESEARCH ARTICLE

PREVALENCE AND CAUSES OF RECURRENT PEPTIC ULCER

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Abstract

Background: Peptic ulcer disease (PUD) is a common disease of the gastrointestinal tract characterized by mucosal damage due to the secretion of pepsin and gastric acid. The current study aimed to determine the prevalence and causes of recurrent peptic ulcer.

Methods: The current study adopted an exploratory study design in order to determine the prevalence and causes for recurrent peptic ulcer disease in individuals and predict an outcome. The participants for the current study were individuals belonging to the age group 18-75. This age group is chosen as the major influence of peptic ulcer disease is observed within this group. For the current study, questionnaire was adopted for data collection, which was also categorized as a study tool.

Results: Study included 589 participants. It is noticed that most of participants (n= 530, 90.1%) strongly agree that they visit the doctor periodically to check on their health. Previous item has the highest rank followed by participants follow smoking lifestyle (n= 526, 89.4%). On the other hand, the least rank item on which participants strongly disagreed was participants suffered from soreness or bleeding from their stomach (n= 249, 42.4%). This gives a prevalence of 42.4% of peptic ulcer disease among study participants.

Conclusion: Peptic ulcer illness burdens health care systems, which urge for adequate treatment to limit recurrence and effects. H. pylori, smoking, and aspirin usage are risk factors for 5-year peptic ulcer recurrence. Long-term PUD hazards include smoking and aspirin. Avoiding risk factors reduced the recurrence rate of H. pylori eradication, acid suppression medication, and surgery. This shows how eliminating risk factors may enhance long-term performance. Proper PUD treatment requires multicenter research to prevent recurrence and repercussions.

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Introduction:-

Peptic ulcers are open sores that affect the mucosa of the stomach or the first part of the duodenum, exposing the underlying muscle layer. In gastroenterology, peptic ulcer disease (PUD) is a frequently seen pathology. Approximately 4 million individuals throughout the world are affected with PUD each year, with an incidence rate of 10%-19%. Stomach discomfort is a common sign of peptic ulcers, and it is generally alleviated by eating or using antacids [1]. Between 1.5% and 3% of people have PUD, according to the literature [1]. There is a substantial risk of long-term sickness and death in patients with perforated peptic ulcer (PPU), a serious consequence of PUD [2]. The best pharmacological treatment for gastric and duodenal ulcers is proton pump inhibitors such omeprazole, pantoprazole, and lansoprazole [3].

In addition to long-term usage of NSAIDs such sodium naproxen and ibuprofen, *Helicobacter pylori* (*H. pylori*) is the most prevalent cause of peptic ulcers (Advil, Motrin IB, others). Stomach discomfort, weight loss, nausea, vomiting, and bleeding or perforation are only few of the many symptoms of peptic ulcer disease [4].

Eliminating *H. pylori* is an important part of PUD treatment and greatly reduces the likelihood that the infection will return. Although other factors, such as age, medication use, and the frequency of chronic conditions, can affect the recurrence of PUD, the removal of *H. pylori* is by far the most important. Eradicating the bacteria *H. Pylori* reduces the chance of recurrence of the peptic ulcer disease caused by *H. pylori* in adults. However, results do not seem to be consistent among studies. If no NSAID-related problems arise after *H. pylori* eradication, the recurrence risk of PUD in the next five years is less than 5% [5].

There has been a rise in the prevalence of gastrointestinal side effects such peptic ulcers and bleeding due to the widespread use of NSAIDs and acetylsalicylic acid (ASA). Peptic ulcer problems such upper GI bleeding and perforation may be linked to NSAID usage as well. The financial impact of peptic ulcer disease on healthcare systems is substantial as well. It is estimated that peptic ulcer illness costs the United States economy \$5.65 billion year [6]. This cost takes into account both direct medical costs and lost productivity. The increased risk of peptic ulcers and non-variceal upper gastrointestinal bleeding that is often linked with consumption treatment (NSAIDs) is well established. The research also suggests that the colon may be negatively affected by long-term NSAID usage. A rising senior population is also driving up demand for these drugs. While proton pump inhibitors (PPIs) have been shown to lessen the severity and frequency of upper gastrointestinal (GI) issues caused by nonsteroidal anti-inflammatory drugs (NSAIDs), they have not been shown to protect against the mild GI mucosal damage caused by NSAIDs [7]. After six months, Chan et al. observed that therapy with proton pump inhibitors (PPIs) was more successful than *H. pylori* eradication alone in reducing the risk of persistent bleeding. All NSAID users with a known medical history of PUD problems [8-10] should be prescribed proton pump inhibitors concurrently in clinical settings.

Peptic ulcers are a common condition that may have a negative effect on a person's health at any age, but they are also avoidable with the right level of awareness. Also, duodenal ulcers are more common in men than women, and they tend to appear between the ages of 30 and 50. Women over the age of 60 are disproportionately afflicted by stomach ulcers compared to men, making it imperative that researchers examine lifestyle and other variables in order to implement preventative measures. It is estimated that over 4 million people would be affected by peptic ulcers, which are sores that form inside the stomach and duodenum. Because of this, peptic ulcers affect 10% of the population. Ulcers of this sort may appear at any time in a person's life, regardless of their age. This research aimed to determine the prevalence and risk factors for recurrent peptic ulcer disease.

Methods:-**Study design**

The current study adopted an exploratory study design in order to determine the prevalence and causes for recurrent peptic ulcer disease in individuals and predict an outcome.

Study Approach

The current study adopted an approach that is deductive in nature such that the generalized observations on the prevalence and causes for recurrent peptic ulcer disease that can be specified into certain sections for better correlation and understanding.

Study population

The participants for the current study were individuals belonging to the age group 18-75. This age group is chosen as the major influence of peptic ulcer disease is observed within this group.

Study Sample

The sample size undertaken for the study was 589 in order to better understand the factors responsible and their contribution towards recurrent peptic ulcer disease.

Study Tool

For the current study, questionnaire was adopted for data collection, which was also categorized as a study tool.

Data Collection

The participants were contacted via different social media channels to create awareness about the topic and were shared the link of the forms to gather their responses. The survey comprised of 14 questions which critically aimed to achieve study objectives.

Data Analysis

Descriptive analysis in the form of tables and charts was undertaken for better understanding. Furthermore, for the establishment of a positive correlation, logistic regression were conducted with the help of SPSS software.

Ethical Considerations

Informed consent from the participants after making them understand about the research aims and objectives and the harms associated with the study was undertaken. The data collected was stored in password protected folders in a computer which was accessible only by the author to eliminate the chance of bias and false reporting.

Results:-

Study included 589 participants. They were asked through 14-questions survey on a five-point Likert scale. Participants' responses to scale items are presented in annex 2 table while table 1 shows mean values, standard deviation (SD) and rank of each scale item. It is noticed from the table that most of participants (n= 530, 90.1%) strongly agree that they visit the doctor periodically to check on their health. Previous item has the highest rank followed by participants follow smoking lifestyle (n= 526, 89.4%). On the other hand, the least rank item on which participants strongly disagreed was participants suffered from soreness or bleeding from their stomach (n= 249, 42.4%). Table 1 shows the rest of participants' responses.

Table 1:- Participants responses' mean and SD to survey scale items.

Scale item	Mean	SD	Rank
1. Do you visit the doctor periodically to check on your health?	4.5	1.021	1
2. Have you been diagnosed with underlying chronic conditions related to the liver, stomach, or kidney?	3.44	1.441	10
3. Have you suffered from bleeding or soreness within your stomach?	2.12	1.429	14
4. Do you have a lifestyle of smoking?	4.26	1.138	5
5. Do follow this lifestyle more often?	4.47	0.921	2
6. Is your eating habit containing fried items or junk foods?	4.38	1.02	3
7. Do you suffer from acidity after lunch or any meals?	4.23	1.123	6
8. Do you have huge gaps in between meals?	4.2	1.088	7
9. Do you have issues regarding weight loss that is reduction in weight in a regressive way?	4.29	1.078	4
10. Do you suffer from upper abdomen pain?	4.03	1.199	8
11. Do you have frequent doctor visits on your stomach issues?	2.82	1.461	13
12. How often have you self-medicated yourself on stomach problems?	3.24	1.307	12
13. Do you often consume aspirins as self-medication?	3.75	1.142	9
14. How often have you used antacids and acids?	3.27	1.221	11

Discussion:-

Injuries to the digestive tract that cause mucosal breaks larger than 3-5 mm and with a visible depth reaching the submucosa are considered to be PUD [11, 12]. The lifetime prevalence of PUD is believed to be 5-10% and the yearly incidence to be 0.1-0.3% in the general population of Western nations [12, 13]. PUD most often affects the stomach and proximal duodenum. PUD evaluation and treatment necessitates clinical vigilance because to serious consequences include bleeding, perforation, penetration into surrounding organs, and gastrointestinal blockage, all of which may require immediate endoscopic or surgical treatment [11, 14, 15].

The incidence of PUD grew at first, but later reduced, mirroring that of numerous other gastrointestinal illnesses. After examining 150 years of data on PUD's epidemiology, Jennings et al. concluded that the disease's prevalence and mortality dramatically surged in the nineteenth century, but have since gradually declined thanks to advances in environmental hygiene and medical therapy tactics [16]. About 10% of the adult population in the United States experienced PUD during the first half of the twentieth century [17]. New anti-PUD therapies, such as the elimination of *Helicobacter pylori* (*H. pylori*) and the use of proton-pump inhibitors (PPIs), have led to a dramatic decline in PUD prevalence, PUD-related hospital admissions, and PUD-associated mortality over the past 20-30 years, according to several studies [18-21]. However, the landscape of PUD has evolved in recent years due to the widespread use of NSAIDs, histamine 2 receptor antagonists, and selective serotonin reuptake inhibitors, as well as increasing physiological stress [22, 23]. It is still debatable how exactly these novel risk variables are altering population health.

PUD is commonly characterized as a larger than 3- to 5-mm rupture of the gastric or duodenal mucosa, which is produced by an imbalance in factors that protect the gastric and duodenal mucosa and ones that might cause harm. In this research, we investigated the prevalence patterns of PUD at the global, regional and national levels from 1990 to 2019, together with PPIs prescription usage throughout the course of thirty years. The prevalence of PUD in 2019 was roughly 8.09 million globally, and this research revealed continual growing trend in the number of prevalent. Similar to the findings of previous study studies [24-27], the incidence of PUD showed a modest rise from 2006 to 2019, however the ASR exhibited a declining trend. However, in recent years, this decreasing trend has plateaued, which may be connected to the fact that the predominant ulcer etiology has switched in many countries from *H. pylori* infection to non-steroidal anti-inflammatory medication (NSAIDs) usage [11]. For PUD, which is a chronic condition, it is frequently required to take suitable medications for a long length of time, and its recurring features and potentially dangerous consequences have a considerable influence on the social economy and medical and health expenditures.

PUD may be ascribed to several etiologies, including as *H. pylori* infection, NSAIDs usage, gastric bypass surgery, smoking, selective serotonin reuptake inhibitor use, stress, lifestyle choices and hereditary traits, which have been recognized as the key risk factors [11, 12]. During the research period, notably in the first 20 years, the incidence of and death due to PUD exhibited substantial lowering trends, which were strongly associated to PPIs usage and the widespread administration of anti-*H. pylori* therapy, which began in the late 1980s. In the latter 10 years of the research period, the incidence of and death owing to PUD exhibited relatively constant trends that did not drop with the further promotion of anti-*H. pylori* medication. However, there was a rise in the use of NSAIDs, mainly aspirin and other medicines, and these drugs frequently contribute to major consequences in individuals with PUD. In prior investigations, notably in Australia, a nation with an unexplained history of *H. pylori*, *H. pylori* infection was related with 70% to 90% of PUD patients [28, 29]. Although these values are reduced in some other investigations, *H. pylori* infection is still a major component in the development of PUD [30]. Despite anti-inflammatory action, NSAIDs are usually utilized in antipyrexia and analgesic treatment, which makes NSAIDs the most often prescribed drug [31]. Targeting cyclooxygenases enzymes (COXs), NSAIDs are split into non-selective NSAIDs and selective COX-2 inhibitors, such as aspirin and celecoxib respectively [32]. However, NSAIDs might produce gastrointestinal side effects including ulcers, bleeding or perforation [31, 33]. Drugs such as aspirin and other NSAIDs contribute for around 10% of PUD cases. The link between NSAIDs and duodenal ulcers is greater than the one between NSAIDs and stomach ulcers. The use of these medications has skyrocketed in the last several decades [34, 35]. In recent years, they've become more common, making up between 5 and 10 percent of all prescription medications sold annually [36]. In general practice, the incidence of NSAIDs usage in patients over 65 years old is as high as 96% [37]. Approximately 7.3% of Norwegian patients over the age of 60 filled at least one prescription for nonsteroidal anti-inflammatory drugs (NSAIDs) within a year [38]. Differ from aspirin, selective COX-2 medications have a lesser connection with PUD than nonselective NSAIDs, which reduce COX-1 activity to limit stomach mucosa healing [39, 40].

Bariatric surgery, including Roux-en-Y gastric bypass (RYGBP) surgery and duodenal switch (DS) surgery, may be an appropriate treatment for people with severe obesity to lose weight and improve their health complications [41]. Due to well-established process and approximately 70 years of surgical expertise, RYGBP is recognized as gold standard for bariatric surgery [42]. Even though patients would lose weight and have less metabolic symptoms following gastric bypass surgery, many problems, such as marginal ulcer, still can affect their recovery (MU). About 5% of obese patients after gastric bypass surgery have MU formed at or distal to gastroenteral anastomosis [41, 43]. There is some evidence that gastric bypass surgery may be a risk factor for developing PUD [1, 44], since the incidence might reach 27% to 36% in individuals who have GI symptoms following the procedure.

Conclusion:-

The prevalence of peptic ulcer disease exerts a substantial load on health care systems, which argue for proper treatment to minimize recurrence and consequences. This research identified three risk variables for 5-year peptic ulcer recurrence: *H. pylori*, smoking, and aspirin use. Smoking and aspirin are routinely risk risks for long-term PUD. The recurrence rate of *H. pylori* eradication, acid suppression medication, and surgical treatment was lowest when risk factors were simply avoided. This highlights the importance of identifying risk factors and avoiding them for improved long-term results. A prospective multicenter research is required for the proper therapy of PUD to avoid recurrence and consequences.

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Appendix 1: Data Collection Tool

1. Do you visit the doctor periodically to check on your health?

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree
5. Strongly disagree

2. Have you been diagnosed with underlying chronic conditions related to the liver, stomach, or kidney?

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree
5. Strongly disagree

3. Have you suffered from bleeding or soreness within your stomach?

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree
5. Strongly disagree

4. Do you have a lifestyle of smoking?

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree
5. Strongly disagree

5. Do follow this lifestyle more often?

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree
5. Strongly disagree

6. Is your eating habit containing fried items or junk foods?

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree
5. Strongly disagree

7. Do you suffer from acidity after lunch or any meals?

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree

5. Strongly disagree
8. Do you have huge gaps in between meals?
1. Strongly Agree
 2. Agree
 3. Neutral
 4. Disagree
 5. Strongly disagree
9. Do you have issues regarding weight loss that is reduction in weight in a regressive way?
1. Strongly Agree
 2. Agree
 3. Neutral
 4. Disagree
 5. Strongly disagree
10. Do you suffer from upper abdomen pain?
1. Strongly Agree
 2. Agree
 3. Neutral
 4. Disagree
 5. Strongly disagree
11. Do you have frequent doctor visits on your stomach issues?
1. Strongly Agree
 2. Agree
 3. Neutral
 4. Disagree
 5. Strongly disagree
12. How often have you self-medicated yourself on stomach problems?
1. Strongly Agree
 2. Agree
 3. Neutral
 4. Disagree
 5. Strongly disagree
13. Do you often consume aspirins as self-medication?
1. Strongly Agree
 2. Agree
 3. Neutral
 4. Disagree
 5. Strongly disagree
14. How often have you used antacids and acids?
1. Strongly Agree
 2. Agree
 3. Neutral
 4. Disagree
 5. Strongly disagree

Appendix 2:- Participants responses to scale items.

Participants responses' to survey scale items					
Scale item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. Do you visit the doctor periodically to check on your	24	18	35	92	420

health?	4.1%	3.1%	5.9%	15.6%	71.3%
2. Have you been diagnosed with underlying chronic conditions related to the liver, stomach, or kidney?	93 15.8%	71 12.1%	97 16.5%	140 23.8%	188 31.9%
3. Have you suffered from bleeding or soreness within your stomach?	300 50.9%	114 19.4%	52 8.8%	50 8.5%	73 12.4%
4. Do you have a lifestyle of smoking?	35 5.9%	21 3.6%	51 8.7%	131 22.2%	351 59.6%
5. Do follow this lifestyle more often?	16 2.7%	12 2%	39 6.6%	119 20.2%	403 68.4%
6. Is your eating habit containing fried items or junk foods?	23 3.9%	16 2.7%	51 8.7%	125 21.2%	374 63.5%
7. Do you suffer from acidity after lunch or any meals?	28 4.8%	25 4.2%	75 12.7%	115 19.5%	346 58.7%
8. Do you have huge gaps in between meals?	28 4.8%	20 3.4%	73 12.4%	153 26%	315 53.5%
9. Do you have issues regarding weight loss that is reduction in weight in a regressive way?	28 4.8%	21 3.6%	50 8.5%	143 24.3%	347 58.9%
10. Do you suffer from upper abdomen pain?	37 6.3%	35 5.9%	87 14.8%	144 24.4%	286 48.6%
11. Do you have frequent doctor visits on your stomach issues?	175 29.7%	72 12.2%	121 20.5%	127 21.6%	94 16%
12. How often have you self-medicated yourself on stomach problems?	88 14.9%	87 13.2%	137 23.3%	179 30.4%	107 18.2%
13. Do you often consume aspirins as self-medication?	40 6.8%	25 4.2%	161 27.3%	180 30.6%	183 31.1%
14. How often have you used antacids and acids?	71 12.1%	72 12.2%	168 28.5%	183 31.1%	95 16.1%