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RESEACH ARTICLE

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Knowledge and Practice Regarding Risk Factors for Peptic Ulcer Disease in Saudi Arabia's Adult Population

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ABSTRACT

Objective: To assess the knowledge of the Saudi population on peptic ulcer diseases (PUD) and their risk factors. To evaluate their awareness and practices of the preventive methods used in daily practices.

Methods: This was an online cross-sectional survey that included residents of all five regions of Saudi Arabia regardless of nationality. The survey was distributed in both the Arabic and English languages to approach more individuals from different backgrounds.

Results: There were 784 participants, of which 6.1% non-Saudis and 93.9% were Saudis. 63.5 % of participants selected "H. Pylori" as a risk factor that may lead to PUD. Among other risk factors, 39.2% selected smoking and 37.5% selected NSAIDs. There was a statistically significant correlation (p=0.03) between a question about knowing what H. pylori are and the respondents' level of education, with 77.3% of respondents with a high school diploma answering "No" and 63% of respondents with a postgraduate degree answering "Yes". Only 32.8% of the participants knew about H. Pylori, when hands are not washed after using the restroom or before eating or preparing food, pylori can spread. 56% of respondents were unaware that NSAIDs should be taken with or after a meal. In addition, only 50% of smokers were aware that smoking contributed to the pathogenesis of PUD.

Conclusion: This research revealed that very little is known about H. Pylori and how it spreads, as well as the adverse effects of NSAIDs and the precautions that must be taken to avoid them. This demonstrates the need for public education about these risk factors and the diseases they may cause, as well as the significance of physician-patient discussions to ensure patients have the necessary knowledge prior to starting NSAID therapy.

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INTRODUCTION

Peptic ulcer diseases (PUD) are caused by the rupture in the surface epithelial cells of the stomach or duodenum's muscular mucosa. 10% of the population is affected by duodenal ulcers, which are thought to be more prevalent than stomach ulcers. Although still more prevalent among the elderly, it is becoming less prevalent among younger individuals.[1]

Infection with *Helicobacter Pylori (H. Pylori*), use of Non-steroidal anti-inflammatory drugs (NSAIDs), and smoking are the major risk factors for peptic ulcer disease. Other factors, such as corticosteroids, obesity, and meal skipping, may also be involved.[2-4] The increasing use of NSAIDs is the primary factor in developed nations. Additionally, it relates to the high prevalence of *H. pylori* infection in developing nations, which was detected in 72%of peptic ulcer disease (PUD) patients, even though most infected individuals live symptom-free lives.[1,3]

According to the literature, there is insufficient knowledge and safe practices regarding peptic ulcer risk factors, despite the importance of these risk factors in the development of PUD, the impact of the disease on people's quality of life, and the severity of its side effects.[2-4] Adding to the literature, A survey conducted in Jeddah revealed that 67.9% of participants knew that smoking contributed to

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the development of PUD. Furthermore, 49.2% of individuals were aware that *H. pylori* infection and long-term use of NSAIDs were major contributors to the development of PUD. In addition, when asked if psychological stress and other conditions (such as liver cirrhosis) could cause PUD, 31.1% of participants responded in the negative.[3]

A 2019 Indian study that examined the population's knowledge of peptic ulcer risk factors found that 81% of 100 pre-test samples lacked adequate knowledge, highlighting the need to increase public awareness.[4] Similarly, an Egyptian study found that in 150 adults with a PUD diagnosis, only 9.3% correctly identified the causes of PUD. In contrast, 40% did not know any causes, and 50% knew only partially.[2]

Regarding risk factors practice, between January and March of 2019, a descriptive cross-sectional investigation on peptic ulcer was conducted. The study evaluated the health-related behaviors of 155 people with peptic ulcers and found that the majority consume three meals per day and specific foods as a result of their condition. 80% of the patients were found to consume caffeine-containing foods or beverages. In nearly half of the cases, smoking was also a risk factor. More than half of the cases studied were affected by sleep disturbances due to gastric ulcers.[5]

A 2017 literature review covering six studies on *H. Pylori* came to the conclusion that all of the studies lacked general knowledge. Preventative measures against pylori were investigated. In general, it has been demonstrated that a lower *H. Pylori* infection was associated with safe food handling practices, hand washing after eating or preparing meals, and access to clean water.[6]

In April and May of 2015, 199 individuals participated in a study in Tirana. When asked whether NSAIDs can cause gastrointestinal ulcers, 30.2% responded positively.[7] This is lower than a survey in which 2,438 physiotherapists assessed their knowledge and use of NSAIDs, in which more than 70% identified GI upset, ulcer, and bleeding as risks associated with NSAID use.[8] Furthermore, a survey done in rheumatology clinic, 2018, assessing the knowledge and practice of NSAIDs users revealed that 86 % of the 275 respondents were aware about the fact that NSAIDs can cause heartburn. Regarding their practice, patients rarely discuss prescriptions with their physicians; instead, they typically rely on the dosing instructions printed on the medication's container.[9]

Another cross-sectional Chinese study in 2016 involving 1297 participants compared the knowledge of smokers and nonsmokers revealed that smokers were less aware of the risks associated with smoking than nonsmokers. Only 20% of the participants were aware of the link between smoking and peptic ulcers. When asked about their sources of information, television performed better than the other options.[10] Regarding smoking practice, an Egyptian study, found that 73% of male patients admitted to smoking, leading researchers to conclude that smoking was positively associated with the development of peptic ulcers and the delay in their healing.[2]

We aim at this study to assess the knowledge and practices of the Saudi population related to the risk factors of PUD, comparing them with other similar nations, and identifying the possible reasons behind the similarities/differences found.

MATERIALS AND METHODS

Study Design and Study Area

It was an online cross-sectional survey that was conducted in all regions of Saudi Arabia i.e., Central, Southern, Northern and Eastern. The study followed Strengthening the Reporting of Observational Studies in Epidemiology Statement (STROBE) guidelines(11).

Study Time Period

The study was conducted in November 2021 to June 2022, after obtaining the ethical approval.

Target Population

The target population were adults aged 18 years and more, of both sexes living in Saudi Arabia.

Sample Size and Sampling Technique

As this electronic survey was conducted in all regions of Saudi Arabia, a cluster sampling technique was used to collect the data from 784 participants. The minimum required sample size of 770 was calculated using the level of precision formula by placing the following values n=Z2xpxq/d2xDE, where (z=1.96, p=0.50, q=0.50, d=0.05, design effect=2).

Instrument of Data Collection:

A self-prepared questionnaire was used to collect the data from the participants. The questionnaire was divided into 4 sections. Section A contains questions related to the demographic information, whereas Sections B and C were composed of questions related to knowledge of participants about PUD, its risk factors, and their awareness and practice of the different preventive measures against it, respectively.

Data Analysis

The data was entered and analyzed using SPSS 26.0. Mean + S.D was given for quantitative variables. Frequencies and percentages were given for qualitative variables. Knowledge scores were calculated by counting the correct answers. They were then converted to percentage to see whether the participants have poor, good or excellent knowledge. Pearson-Chi-Square / Fisher Exact test were applied to observe associations between qualitative variables. A p-value of <0.05 was considered as statistically significant.

RESULTS

There were 784 participants in this study. They were composed of 6.1% non-Saudis and 93.9 % Saudis. (Table 1). The majority of respondents were extremely knowledgeable about *H. Pylori* in terms of personal hygiene and hand washing, particularly prior to meal preparation (Figure 1). The majority of respondents were extremely knowledgeable about *H. Pylori* in terms of personal hygiene and hand washing, particularly prior to meal preparation (Figure 1).

63.5 % of participants selected "*H.pylori*" in response to the question regarding the risk factors that may lead to PUD, among other risk factors, 39.2 % selected smoking and 37.5 % selected NSAIDs (Table 2).

Table 1: Sociodemographic data of Participants

Variables	*n = 784*	*Percent (%)*
Age		
Under 20	159	20.3
20-30	458	58.4
31-40	79	10.1
41-50	43	5.5
51-60	34	4.3
Over 60	11	1.4
Gender	129	16.5
Male	655	83.5
Female		
Educational Status		
Uneducated	1	0.1
Primary school degree	3	0.4
Secondary school degree	22	2.8
High school degree	176	22.4
College degree	544	69.4
Post graduate studies	27	3.4
Others	11	1.5
Monthly Income (SAR)		
<5000	248	31.6
5000 - 10000	213	27.2
11000- 25000	217	27.7
>25000	106	13.5

Table 2: Awareness of PUD risk factors among Saudi Arabia Adult Population 2022.

Which of the following could cause peptic ulcer disease?	
H.Pylori Infection	498 (63.5¤%¤)
Everyday life stress	444 (56.6¤%¤)
Smoking	307 (39.2¤%¤)
NSAIDs	294 (37.5¤%¤)
Inheritance	236 (30.1¤%¤)
Fast food	236 (30.1¤%¤)
Frequent meals	125 (15.9¤%¤)
I don't know	114 (14.5¤%¤)

50 % (n=392) of those who responded negatively to the question "Have you ever heard of *H. Pylori* infection?". When dissecting this group, 55 % were male participants and 49 % were females. In addition, 54 % of respondents under the age of 20 and over the age of 60 provided this answer. There was a statistically significant correlation (p=0.03) between this question and respondents' level of education, with 77.3 % of respondents with a high school diploma answering "No" and 63 % of respondents with a postgraduate degree answering "Yes". 57.5 % of participants (n=451) believed that treating *H. Pylori* infection with a combination of antibiotics and antacids is the optimal treatment, whereas the remaining 42.5 % (n=336) either did not know the answer or chose the incorrect option. Only 32.8 % (n=257) of the participants knew about *H. Pylori* when hands are not washed after using the restroom, before eating or preparing food, pylori can spread.(table 3)

Gender and knowledge of *H. Pylori* transmission were statistically significantly correlated (p=0.004), with 49.6 % of males and 36.5 % of females lacking this knowledge, respectively. 56 % (n=440) of respondents were unaware that NSAIDs should be taken with or after a meal. Only 6.8 % of those who had previously used it had discussed its side effects with their physicians. This difference was statistically

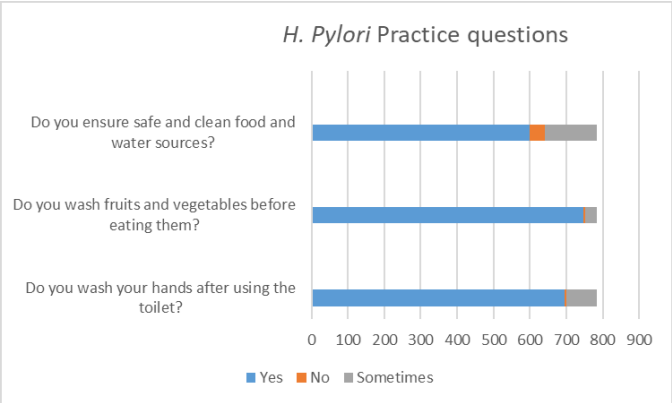

Fig. 1: *H. Pylori* practice among Adult Population of Saudi Arabia.

Table 3: H. Pylori practice among Saudi Arabia Adult Population.

H. Pylori Practice questions	*Yes*	*No*	*Sometimes*
Do you wash your hands after using the toilet?	694 (88.5%)	6 (0.8%)	84 (10.7%)
Do you wash fruits and vegetables before eating them?	746 (95.2%)	5 (0.6%)	33 (4.2%)
Do you ensure safe and clean food and water sources?	600 (76.5%)	40 (5.1%)	144 (18.4%)

significant (p=0.006). 75 % of females read the instructions and warnings on the drug package, compared to only 51.7 % of males. Surprisingly, there was no correlation between this practice and the education level of the respondents. Seven percent of the respondents (n = 53), of which 60 % were men, were smokers, and 26 of the 53 smokers believed that smoking contributed to the onset of PUD. More than half of smokers in this study smoked 16 or more cigarettes per day.

DISCUSSION

In terms of knowledge of *H. Pylori*, 63.5% of all respondents acknowledged *H. Pylori* as a risk factor for PUD; similar findings were observed in a Saudi Arabian study conducted in 2019 with 1,324 participants, where 65% of the participants agreed that *H. Pylori* can cause PUD (12). In addition, a 2020 study conducted in Jeddah revealed that 49.2% of the participants had a firm grasp of the most significant risk factors for PUD, which were *H. Pylori* infection and prolonged use of NSAIDs (3).

When we questioned participants about *H. Pylori*, 32.8% of respondents correctly responded that *H. Pylori* can be transmitted by handling food with unclean hands. Compared to a survey conducted in Saudi Arabia in 2019, only 19 % of respondents were aware that *H. Pylori* is transmitted through its primary vector (12). Transmission of *H. Pylori* is feco-oral. In a 2005 survey conducted in Shanghai, only 23.8 % of respondents indicated that unsafe food preparation and unsafe water sources are relevant to disease transmission (13).

Surprisingly, there was no statistically significant correlation between participants' responses regarding *H. Pylori* practice and their financial status. Almost two-fifths of participants identified NSAIDs as a risk factor for PUD. This is significantly different from a 2011 study of physiotherapists in New Zealand, and a study conducted among Turkish patients in 2005, in which over 70% and 85.4% of participants identified ulcers and other GI side effects caused by NSAID use (8, 14). In contrast

to a 2017 survey conducted in Saudi Arabia, in which less than one-third of respondents identified gastritis as one of the GI side effects of NSAIDS, there was no discernible difference in knowledge levels.[15]

When asked how to take NSAIDs, only 33.2% of participants agreed that they should be taken with food. A 2018 rheumatology clinic study involving non-pregnant individuals of all ages and genders found that 42.4% of participants were aware that the medication should be taken with food (9). Postgraduates and those between the ages of 31 and 40 had the highest percentages of correct responses, with 45.5% and 65.2%, respectively, when it came to recognizing that NSAIDs should be taken with food.

In contrast to a cross-sectional study involving 500 patients conducted in major Saudi Arabian cities between July and November 2016, 43% of the total participants were NSAID users. The percentage of NSAID users in this study (16.9 %) was significantly lower (16). Among the individuals who have previously used NSAIDs, 85 % were female and less than 60 % (57.1 %) were between the ages of 20 and 30. 74% of those who had previously used NSAIDs did so multiple times per year. Curiously, all NSAID users believed that the medication could cause peptic ulcer disease. However, only 28% of the study's participants read the medication's box or containers' warnings and instructions. This comprehension of NSAID users may be attributable to the abundance of current information sources. The percentage of those who read instructions or warnings on packages or bottles of medication is significantly lower than in a 2018 study conducted in a rheumatology clinic, which revealed that 77.7% of NSAID users were interested in reading the instructions for their medications.[9]

Less than half of participants (37.5 %) were aware of PUD through family and friends, while nearly half (45 %) learned about it through social media or television. Few of them were aware of it through personal experience, family history, or academic training. Comparing the practice of the study's participants with their educational background revealed that 163 had a bachelor's degree, while 39, 10, and 6 had high school, postgraduate, and secondary school degrees, respectively.

According to a study by Chongqing, China in 2014, less than 20% of smokers were aware that, among other things, smoking can cause PUD (10). However, our percentage is considerably higher. The results revealed that 39.2% of respondents identified smoking as a risk factor for peptic ulcer disease. And nearly half of the smokers (n=26) knew that smoking could cause PUD. In a survey conducted in Jeddah in 2020, 67.9 % of respondents knew that smoking might be associated with PUD(3).

CONCLUSIONS

Almost one-third of the participants were aware of the *H. Pylori* transmission route. Most of them washed their hands after using the restroom, and 95.2% washed their fruits and vegetables before consumption. Half of the cigarette smokers smoked at least 16 cigarettes daily. Only 50% of smokers were aware that tobacco use could cause PUD. Even fewer participants were aware that NSAIDs should be taken with food. Few participants had previously discussed with their physicians the adverse effects of NSAIDs.

This study revealed that very little is known about *H. Pylori* and how it spreads, as well as the adverse effects of NSAIDs and the necessary precautions to avoid them. Additionally, only half of the smokers knew that smoking contributed to the pathogenesis of PUD. This highlights the need for public education about these risk factors and the diseases they may cause and the importance of physician-patient discussions to ensure patients have the necessary knowledge before beginning NSAID therapy.

ABBREVIATIONS

PUD	peptic ulcer disease
H. Pylori	Helicobacter Pylori
NSAIDs	Non-steroidal anti-inflammatory drugs
STROBE	Strengthening the Reporting of Observational Studies in Epidemiology Statement
S.D	Standard Deviation

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