DOI: https://doi.org/10.30841/2786-720X.1.2025.324236
УДК: 616.3:378

Dyspepsia in medical university students and general practitioners

I. G. Paliy[1], S. V. Zaika[1], I. V. Chernova[1], A. G. Kapitun[1], M. O. Shemeta[2]
[1]National Pirogov Memorial Medical University
[2]Municipal non-profit enterprise «Vinnytsia City Clinical Hospital» Mother and Child Center»

Dyspepsia is a common complex of symptoms encountered in internal medicine and includes a group of symptoms related to the gastroduodenal region of the gastrointestinal tract.
The objective: **the purpose of the research is to study the prevalence of dyspepsia symptoms among the 1-6 years students of National Pirogov Memorial Medical University, Vinnytsya, who had dyspepsia symptoms but did not ask for medical help and to establish risk factors for dyspepsia development among the students in comparison with general practitioners.**
Materials and methods**. Using the Microsoft Forms platform we surveyed 300 respondents aged 18–65, among them 168 (56%) were domestic students of the 1st–6th year of study, 64 (21,3%) were foreign students of the 5th–6th year of study, and 68 (22.7%) referred to the doctors of general practice.**
We used a modified FSSG (Frequency Scale for Symptoms of GERD) questionnaire to assess the presence or absence of complaints in respondents. Supplemented questions were about the age, gender, body weight, and height of the respondents, the course of study and academic success (applied to the students), and the presence of chronic diseases of the gastrointestinal tract, taking pharmaceutical drugs, smoking, and alcohol consumption, indicating the number of doses per week. There was an additional question about the native country in the questionnaire for foreign students. The arithmetic mean and standard error of the arithmetic mean were calculated. The statistical probability of the difference between two samples was calculated using the Student's t-test. We used the χ^2 method to assess the influence of various factors on the occurrence of dyspepsia and GERD symptoms, and the correlation analysis was performed using the non-parametric Spearman method.
Results**. It was found that in the group of domestic students, compared to foreign ones, there were significantly more ($p < 0.05$) of those who noted the presence of dyspepsia symptoms (21.4% versus 10.9%), and significantly fewer ($p < 0.01$) almost healthy (60.7% vs. 79.7%). Meanwhile, no significant differences were found between the groups of domestic students and the doctors of general practice, and between the groups of foreign students and the doctors ($p > 0.05$). In all three groups, we established a relationship between the presence of symptoms of dyspepsia and GERD and the presence of gastrointestinal diseases in the anamnesis of the respondents. Thus, the coefficient of Spearman's ranks for domestic students was 0.36, doctors group -0.43, and foreign students group – 0.6 ($p < 0.01$).In the groups of domestic students and foreign ones, a correlation was established ($p < 0.01$) between taking medication and the appearance of symptoms of dyspepsia and GERD. In particular, the Spearman rank coefficient for the group of domestic students was 0.2, and for the foreign students group – 0.42. At the same time, such a relationship was absent in the surveyed group of family medicine doctors ($p>0.05$). The coefficient of Spearman's ranks for the doctors group was 0.43.**
Conclusions**. Respondents with symptoms of dyspepsia, GERD and their combination were found in all studied groups. The history of gastrointestinal diseases proved to be an independent provoking factor for the development of dyspepsia and GERD symptoms in all groups. Alcohol consumption was found to be a causing factor for the onset of dyspepsia and GERD symptoms among doctors and foreign students, and taking any medication is a provoking factor for the development of symptoms of dyspepsia and GERD among Ukrainian and foreign students.**
Keywords: *dyspepsia, gastroesophageal reflux disease, students, risk factors, questionnaires.*

Диспепсія у студентів медичного університету та лікарів загальної практики

І. Г. Палій, С. В. Заїка, І. В. Чернова, А. Г. Капітун, М. О. Шемета

Диспепсія – один із найрозповсюдженіших симптомокомплексів, який зустрічається у внутрішній медицині, та включає комплекс симптомів, характерних для гастродуоденальної ділянки травного тракту.
Мета дослідження: вивчення поширеності симптомів диспепсії серед студентів 1–6 курсів Вінницького національного медичного університету ім. М. І. Пирогова, які не зверталися за медичною допомогою з приводу диспепсії, та встановлення факторів ризику її розвитку серед студентів порівняно з практикуючими лікарями загальної практики–сімейної медицини.
Матеріали та методи. За допомогою платформи Microsoft Forms проведено опитування 300 респондентів у віці 18–65 років, з яких 168 (56%) – вітчизняні студенти 1–6 курсів навчання, 64 (21,3%) – іноземні студенти 5–6 курсів навчання та 68 (22,7%) – лікарі загальної практики–сімейної медицини.
Для оцінювання наявності чи відсутності скарг у респондентів був використаний модифікований опитувальник FSSG (Frequency Scale for Symptoms of GERD). Додаткові питання стосувались віку, статі, маси тіла та зросту респондентів, курсу навчання та успішності навчання (для студентів), наявності хронічних захворювань травного тракту, вживання фармакопрепаратів, тютюнопаління та вживання алкоголю з відзначенням кількості доз вжитого алкоголю на тиждень. В анкеті для іноземних студентів було введено додаткове запитання щодо країни походження. Розраховували середнє ариф-

метичне та стандартну помилку середнього арифметичного. Статистичну ймовірність різниці між двома вибірками розраховували за допомогою t-критерію Стьюдента. Для оцінки впливу різних факторів на виникнення симптомів диспепсії та ГЕРХ ми використовували метод χ^2, а кореляційний аналіз проводили за допомогою непараметричного методу Спірмена.
Результати. Встановлено, що в групі вітчизняних студентів порівняно з іноземними студентами виявилось достовірно більше ($p < 0,05$) таких, хто відзначив у себе наявність симптомів диспепсії (21,4% проти 10,9%), та достовірно менше ($p < 0,01$) практично здорових (60,7% проти 79,7%). Водночас між групами вітчизняних студентів та лікарями загальної практики–сімейної медицини, так і між групами іноземних студентів та лікарями загальної практики–сімейної медицини достовірних відмінностей не встановлено ($p > 0,05$). В усіх трьох групах був встановлений взаємозв'язок між наявністю симптомів диспепсії і гастроезофагеальної рефлюксної хвороби (ГЕРХ) та наявністю в опитаних в анамнезі захворювань травного тракту. Так, коефіцієнт рангів Спірмена для групи вітчизняних студентів становив 0,36, для групи лікарів загальної практики–сімейної медицини – 0,43, для групи іноземних студентів – 0,6 ($p < 0,01$). У групах вітчизняних студентів та іноземних студентів встановлено кореляційний зв'язок ($p < 0,01$) між прийманням медикаментів і появою симптомів диспепсії та ГЕРХ. Зокрема, коефіцієнт рангів Спірмена для групи вітчизняних студентів становив 0,2, для групи іноземних студентів – 0,42. Водночас в опитаній групі лікарів загальної практики–сімейної медицини такий зв'язок був відсутній ($p > 0,05$). Коефіцієнт рангів Спірмена для групи лікарів загальної практики–сімейної медицини становив 0,43.
Висновки. В усіх досліджуваних групах виявлено респондентів із симптомами диспепсії, ГЕРХ та їх поєднанням. Захворювання травного тракту в анамнезі виявилися самостійним провокуючим фактором розвитку диспепсії та симптомів ГЕРХ у всіх групах. Встановлено, що провокуючим фактором виникнення симптомів диспепсії та ГЕРХ серед лікарів та іноземних студентів є вживання алкоголю, а провокуючим фактором розвитку симптомів диспепсії та ГЕРХ серед українських та іноземних студентів є прийом будь-яких ліків.
Ключові слова: *диспепсія, гастроезофагеальна рефлюксна хвороба, студенти, фактори ризику, опитувальники.*

Dyspepsia is one of the most common symptom complexes encountered in the practice of internal medicine physicians. It is a symptom complex related to the gastroduodenal region of the gastrointestinal tract (GIT), which includes heaviness, discomfort or pain in the epigastrium, early satiety, a feeling of postprandial fullness, bloating, epigastric burning, belching.

Dyspepsia is not a specific symptom and can occur both in functional and organic pathology of the gastrointestinal tract. Until the cause of dyspeptic complaints is established, the terms "unexamined", "unstudied" or "undetermined" dyspepsia, which are included in Rome Consensus III [1], should be used. Undiagnosed dyspepsia affects up to 16% of healthy individuals in the general population, and its prevalence ranges from 20% to 40% [2].

In 2016, new updated symptom-based criteria for diagnosing functional gastrointestinal disorders, Rome IV criteria, were released [3]. In a recent global study, that used those updated criteria, the prevalence of dyspepsia was 7%, with the lowest reported prevalence of 2.4% in Japan and the highest reported prevalence of 12.3% in Egypt [4].

Functional dyspepsia (FD) is a condition of impaired digestion associated with the problem of interaction between the stomach and the brain. Disturbed innervation of the stomach and duodenum provokes increased sensitivity to stimuli [2]. The generation of symptoms is a part of complex interactions between the gastrointestinal tract and the brain, triggered by such factors as diet, stress, and psychosocial comorbidities.

Although functional dyspepsia is not a life-threatening condition and is not associated with increased mortality, it influences the patient's health status requiring rather high expenditures for treatment.

A recent survey of European and North American residents found that 20% of individuals with dyspepsia symptoms consulted primary care physicians or hospitals; more than 50% of patients with dyspepsia took medication most of the time, and approximately 30% of patients reported the development of severe symptoms leading to difficulties in performing usual everyday activities. Similar results were obtained by researchers, emphasizing significantly lower quality of life in individuals with functional dyspepsia compared to the general population [5]. Patients with dyspepsia had evidence of receiving medical sick leave certificates 2.6 times as often as those with no such pathology, thus leading to an increased total number of issued sickness certificates [6].

In a Swedish population-based survey, participants with anxiety proved to be eight times more likely to develop functional dyspepsia than those with no anxiety signs [7].

Anxiety and depression are often associated with FD, although a cause-effect relationship has not been proven [7]. Stress and chronic stress can stimulate the hypothalamic-pituitary-adrenal system and increase the level of corticotrophin-releasing hormone, which activates local inflammatory processes, thus potentially affecting gastrointestinal function, including epithelial permeability, immune function, and microbiome status [8].

According to Ronkainen et al. and Zheng et al., anxiety is associated with duodenal eosinophilia in FD. In response to stress, eosinophils release P substance and corticotrophin-releasing hormone activates mast cells and increases epithelial permeability. In turn, those peripheral changes could alter the transmission of afferent signals to the brain, increasing gut-brain bidirectional crosstalk and probably neuroplasticity [9].

During the COVID-19 pandemic, an increased prevalence of functional gastrointestinal disorders was observed, probably due to chronic stress and the detrimental effects of the virus. Today stress has become a permanent life companion for Ukrainians in conditions of full-scale Russian aggression against our country, widespread this pathology is expected along with many other disorders.

Students are one of the social groups having a high level of gastroenterological morbidity. Medical University students are at high risk of developing such disorders. Living far from their families (in hostels or renting a flat), taking responsibility for one's own life, independent organization of work and leisure, the need to learn large amounts of educational material and various other information, lack of good quality sleep and unhealthy diet, - all those factors significantly influence their general health status.

In particular, dyspepsia leads to various gastrointestinal tract disorders, which largely determine the overall health potential of students, adversely affect the quality of life, and lead to decreased work capacity.

Thus, the study of the prevalence of dyspepsia symptoms among the students of Vinnytsia National Pirogov Memorial University, who did not seek medical aid, seems to be of interest to health experts, as well as determining the risk factors for their development among students in comparison with family medicine physicians.

The objective: the purpose of the research is to study the prevalence of dyspepsia symptoms among the 1-6 years students of National Pirogov Memorial Medical University, Vinnytsya, who had dyspepsia symptoms but did not ask for medical help and to establish risk factors for dyspepsia development among the students in comparison with general practitioners.

MATERIALS AND METHODS

The symptoms of dyspepsia and GERD among students of Vinnytsia Medical University and family medicine physicians were assessed. For this purpose, a questionnaire survey of 300 respondents aged 18–65 was conducted, among them 168 (56%) – Ukrainian students (1–6 years of study), 64 (21.3%) – foreign students (5–6 years of study), and 68 (22,7%) – family medicine physicians (FMP). There were 192 females (64%), and 108 males (36%). The survey was conducted using the Microsoft Forms program.

We used the Frequency Scale for Symptoms of GERD (FSSG) questionnaire, developed by Japanese experts in 2004 [1], to assess the presence or absence of complaints and their frequency. All the participants were asked to respond to the FSSG scale questionnaire.

The FSSG questionnaire consists of 12 questions to identify the symptoms of upper gastrointestinal motility disorders. One part of the question refers to the clinical manifestations of dyspepsia, the other one – to the symptoms of GERD. Answering each of the 12 questions about symptom frequency, the respondents had to choose the following options: Never (0), Occasionally (1), Sometimes (2), Often (3), or Always (4). Before completing the questionnaire, respondents were asked to assess the presence of dyspepsia complaints during the last 3 months, while their total duration had to be at least 6 months [10, 11].

Symptoms were evaluated by calculating the sum of scores. For instance, to identify symptoms of dyspepsia, the sum of scores for questions 2, 3, 5, 8, and 11 was calculated; to detect GERD symptoms, the sum of scores for questions 1, 4, 6, 7, 9, 10, 12 was calculated.

According to the instructions to interpret the results of the questionnaire, an FSSG score of 8 or higher was considered to indicate probable GERD [12].

Depending on the identified syndromes, the participants were divided into the following groups: healthy individuals; those with the signs of dyspepsia or GERD; and those with the signs of dyspepsia and GERD.

To determine possible causes of dyspepsia and GERD symptoms, the following information was requested in the questionnaire: age, sex, body weight, height (body mass index (BMI) was calculated using height and body weight measurements), history of chronic gastrointestinal diseases, use of medicines, smoking, and alcohol consumption. It should be noted that the questionnaire for foreign students included an additional question about the country of origin – where the student came from. 58 out of 64 foreign students were citizens of the Republic of India, comprising 90.6% of respondents.

Statistical analysis

Student's t-test was used to determine the statistical significance of the difference between two group means. A P-value less than 0.05 was considered statistically significant. The chi-square test was used to assess the influence of various factors on the onset of dyspepsia and GERD symptoms, and the correlation analysis was performed using the non-parametric Spearman method. The results were processed on a computer with licensed software Windows 10 Pro (device ID 68DF4479-419C-448A-AE5C-8E02B19510A3; product code 00330-50007-01876-AA0EM), Microsoft Office 2007 Word, Excel (product code 89388- 714-8535007-65623) and computer program MedCalc®Software bvba.

RESULTS AND DISCUSSION

The results of the survey of 168 Ukrainian students of VNMU demonstrated 36 (21.4%) of them to have dyspeptic complaints, 6 (3.6%) noted symptoms being indicative of GERD, and 24 (14.3%) had complaints suggesting both dyspepsia and GERD. 102 (60.7%) of study subjects in this group reported no complaints and considered themselves healthy.

Among 69 physicians of family medicine included in the survey, dyspeptic symptoms were found in 11 (15.9%), GERD symptoms – in 4 (5.8%), and symptoms suggestive of both dyspepsia and GERD – in 8 (11.6%). 46 (66.7%) of examined physicians considered themselves healthy.

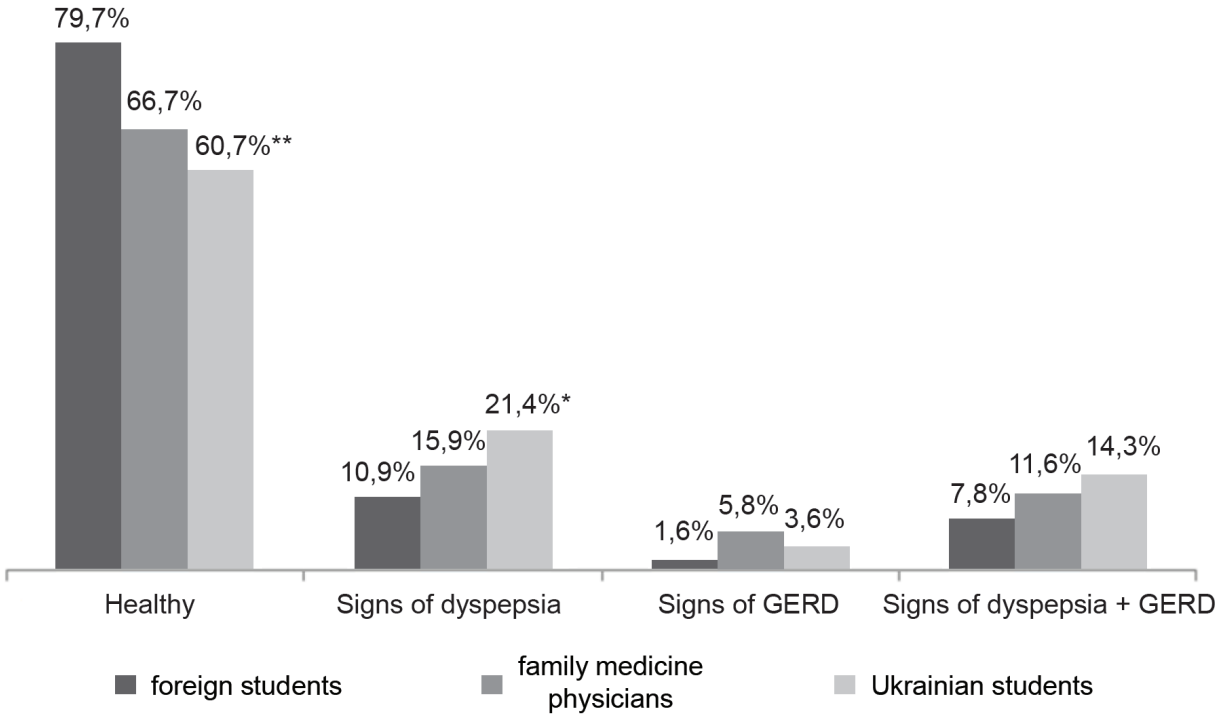
The prevalence of dyspepsia and GERD symptoms was assessed among 64 foreign students. 7 of them (10.9%) reported the symptoms of dyspepsia, 1 student (1.6%) noted the symptoms suggestive of GERD, and 5 (7.8%) foreign students had symptoms of both dyspepsia and GERD. 50 subjects in this study group (79.7%) reported themselves to be healthy.

The prevalence of dyspepsia and GERD symptoms among Ukrainian students, physicians of family medicine, and foreign students were compared, and several differences were found (Figure).

A comparison of two student groups demonstrated a significantly higher percentage ($p < 0.05$) of those who reported the presence of symptoms of dyspepsia among Ukrainian students (21.4%) as compared to foreigners (10.9%). Besides, the number of apparently healthy individuals was significantly lower (60.7% versus 79.7%), ($p < 0.01$). As to the prevalence of GERD symptoms and the combination of dyspepsia and GERD symptoms, there was no significant difference between those two groups ($p > 0.05$).

No significant differences were found in the prevalence of dyspepsia symptoms, GERD symptoms, and combination of GERD and dyspepsia symptoms both between the groups of Ukrainian students and family medicine physicians and between the groups of foreign students and physicians ($p > 0.05$) (Fig. 1).

FAMILY MEDICINE. EUROPEAN PRACTICES / СІМЕЙНА МЕДИЦИНА. ЄВРОПЕЙСЬКІ ПРАКТИКИ •
ISSN 2786-7218 (Online) | ISSN 2786-720X (Print)
№1 (111)/2025



Prevalence of dyspepsia and GERD symptoms among Ukrainian students, family medicine physicians and foreign students

The differences established between study groups were used in comparative analysis to assess the influence of risk factors on the development of dyspepsia and GERD symptoms in those groups (Table 1).

Using the chi-square test, BMI and tobacco smoking were not found to influence the onset of study symptoms in all groups ($p > 0.05$) (Table 1). At the same time, alcohol consumption appeared to influence the development of dyspepsia and GERD symptoms in physicians ($\chi^2 - 4.1$) and foreign students ($\chi^2 - 5.7$) ($p < 0.05$). No such influence was detected in the group of Ukrainian students ($\chi^2 - 0.13$), ($p > 0.05$).

A history of gastrointestinal diseases (Table 1) proved to have a direct influence on the development of dyspepsia and GERD symptoms in all study groups ($p < 0.01$). The χ^2 index for Ukrainian students, family medicine physicians, and foreign students was 21.1, 9.41, and 8.3, respectively.

The use of medicines was found to influence the occurrence of symptoms of dyspepsia and GERD in the group of Ukrainian students ($p < 0.05$) and the group of foreign students ($p < 0.01$), χ^2 value being 5.76 and 11.29, respectively (Table 1). At the same time, no such impact was detected ($p > 0.05$) in the group of family medicine physicians (χ^2 value – 0.48).

Correlation relationships between the onset of dyspepsia symptoms and study indices in the groups of respondents were evaluated using non-parametric Spearman method (Table 2). No relationship was found between the onset of dyspepsia and GERD symptoms, and age and BMI in the study groups ($p > 0.05$) (Table 2).

Table 1

Risk factors for the development of dyspepsia and GERD symptoms in study groups

Study index	χ^2		
	Ukrainian students, n = 168	Family medicine physicians, n = 69	Foreign students, n = 64
BMI	1.99	0.74	0.24
Smoking	0.60	0.51	0.21
Alcohol dose a week	0.13	4.1*	5.7*
History of gastrointestinal diseases	21.1**	9.41**	8.3**
Use of medicine	5.76*	0.48	11.29**

Note. * – $p < 0.05$; ** – $p < 0.01$.

Table 2

Correlation relationship between risk factors and onset of dyspepsia and GERD symptoms in study groups

Study index	Spearman's rank coefficient ρ		
	Ukrainian students, n = 168	Family medicine physicians, n = 69	Foreign students, n = 64
Age	0.116	0.015	0.079
BMI	0.012	0.178	0.071
Alcohol dose a week	0.059	0.002	0.308*
History of gastrointestinal diseases	0.36*	0.43*	0.36*
Use of medicine	0.2*	0.124	0.42*

Note. * – $p < 0.01$.

At the same time, there was a correlation ($p < 0.01$) between the doses of alcohol consumed and the development of dyspepsia and GERD symptoms in foreign students ($\rho = 0.308$), while no such relationship was observed in other study groups ($p > 0.05$). The indicator ρ was 0.059 for Ukrainian students, and it was 0.002 for the family medicine physicians (Table 2).

In all three groups, there was a relationship between the onset of dyspepsia and GERD symptoms and history of gastrointestinal diseases. The Spearman's rank coefficient for the Ukrainian students group, family medicine physicians, and foreign students was 0.36, 0.43, and 0.36, respectively ($p < 0.01$).

A correlation relationship ($p < 0.01$) between the use of medicines and the onset of dyspepsia and GERD symptoms was found in Ukrainian and foreign students (Table 2). Spearman correlation coefficient was 0.2 for the group of Ukrainian students and 0.42 for the foreign students. No such correlation was observed in the group of family medicine physicians ($p > 0.05$). The Spearman's rank coefficient in this group was 0.43 (Table 2)

The frequency Scale for Symptoms of GERD questionnaire made it possible to assess the prevalence of dyspeptic complaints among the students in Vinnytsia National Pirogov Memorial University, to establish the influence of various factors on the development of specific symptoms and to identify certain peculiarities.

Among 168 Ukrainian students, 21.4% had dyspeptic complaints, 3.6% noted symptoms that could be indicative of GERD, and 14.3% reported complaints suggesting both dyspepsia and GERD. 60.7% of respondents considered themselves healthy. Among 64 foreign students, symptoms indicating dyspepsia were found in 10.9% of respondents, 1.6% reported symptoms characteristic of GERD, and 7.8% of foreign students had symptoms of both dyspepsia and GERD. 79.7% of respondents considered themselves healthy. Thus, the percentage of people presenting various types of complaints ranged from 39.3% in Ukrainian students to 20.3% in foreign students.

The results obtained in the study were compared with literature data reporting similar surveys. The morbidity rate among students in Latin America and the UAE appeared to be rather high. The incidence of uninvestigated dyspepsia in students of four Latin American medical schools is 46% and that in students of medical colleges in Ajman (UAE) – 43.8% [13, 14].

At the same time, the prevalence of dyspepsia among medical college students in Northern India was 18% [15]. These data are comparable to those obtained in the survey of foreign students of VNMU, the majority of them being citizens of India (90.6%). The prevalence of dyspeptic complaints among this group of respondents was 20.3%.

It should be noted that understanding the factors that contribute to the development of functional dyspepsia is scanty. Heredity, nutritional disorders, smoking, and psychosocial factors proved to be some of them.

Numerous epidemiological studies demonstrate that such factors as smoking, use of NSAIDs, H. Pylori infection are associated with dyspepsia in the general population having a definite moderate effect [16].

The Kyoto Consensus suggests that H. pylori infection may be the cause of dyspepsia. This condition is termed H. pylori-associated dyspepsia. However, the Consensus also states that if symptoms persist after successful eradication therapy, functional dyspepsia should be diagnosed [17].

High body mass index was shown to be an independent predictor of the development of functional dyspepsia in one long-term study [18].

Although in study of Bisschops et al. 79% of patients with functional dyspepsia reported diet-induced symptoms, the role of food in the development of dyspepsia has not been definitively determined [19]. However, high-fat diet is likely to cause more symptoms including early satiety and bloating than high-carbohydrate diet [20].

The results obtained in our study confirm the influence of alcohol on the onset of dyspepsia and GERD symptoms in the group of family medicine physicians (χ^2 – 4.1) and foreign students (χ^2 – 5.7) ($p < 0.05$). At the same time, no such influence was determined in the group of Ukrainian students (χ^2 – 0.13) ($p > 0.05$).

A correlation was found ($p < 0.01$) between the doses of alcohol consumed and the symptoms of dyspepsia and GERD in the group of foreign students ($\rho = 0.308$), while no such relationship was established in other study groups ($p > 0.05$).

Such impact of alcohol consumption on the development of dyspepsia and GERD symptoms in foreign students could be presumably explained by the fact that the respondents were mostly Indian citizens. The variants of three genes encoding alcohol-metabolizing enzymes (aldehyde dehydrogenase gene ALDH2 and alcohol dehydrogenase genes ADH1B and ADH1C) are associated with the level of alcohol dependence. The genotype prevalence of these genes varies in general samples of Asian and European ethnic groups [21]. This is likely to be the factor that could influence those differences.

The history of gastrointestinal diseases proved to have a direct influence on the development of dyspepsia and GERD symptoms in all study groups of respondents ($p < 0.01$). The Spearman's rank coefficient for the group of Ukrainian students, family medicine physicians and foreign students was 0.36, 0.43 and 0.36, respectively ($p < 0.01$).

It should be noted that our study was conducted during the pandemic of coronavirus disease 2019 (COVID-19). The majority of patients are known to have severe respiratory symptoms. However, in some cases, the disease is associated with gastrointestinal symptoms - diarrhea, loss of appetite, nausea, vomiting, and abdominal pain. Those manifestations may be attributable to the following facts [22]:

1. The receptor ACE-2 of coronavirus was found to be highly expressed in epithelial cells of the gastrointestinal tract.

2. SARS-CoV-2 viral RNA was detected in stool samples of infected patients, and 20% of patients had long-term presence of SARS-CoV-2 RNA in fecal samples.

These data suggest that SARS-CoV-2 can actively infect and replicate in the gastrointestinal tract. Moreover, gastrointestinal infection may be the first manifestation preceding respiratory symptoms. According to many foreign researchers, many patients admitted for COVID-19 present with only gastrointestinal symptoms (26–50.5%) [23].

FAMILY MEDICINE. EUROPEAN PRACTICES / СІМЕЙНА МЕДИЦИНА. ЄВРОПЕЙСЬКІ ПРАКТИКИ •
ISSN 2786-7218 (Online) | ISSN 2786-720X (Print)
№1 (111)/2025

In addition, even mild or asymptomatic SARS-CoV-2 viral infection can be followed by long-term adverse consequences including disturbances in the work of the digestive system such as nausea, epigastric heaviness, intestinal irregularities (constipation or diarrhea), loss of appetite and some others [24].

The use of medicines proved to influence the occurrence of symptoms of dyspepsia and GERD in the group of Ukrainian students ($p < 0.05$) and in foreign students ($p < 0.01$), with chi-square distribution χ^2 being 5.76 and 11.29, respectively. At the same time, no such influence was detected ($p > 0.05$) in the group of family medicine physicians (χ^2 – 0.48).

Medicines are often thought about as a possible cause of dyspeptic symptoms. Nausea, anorexia, abdominal pain, and dyspepsia account for one-tenth to one-third of reported adverse reactions to the administration of nonsteroidal anti-inflammatory drugs, antiplatelets, anticoagulants, antibacterials, theophylline, digitalis medicines, iron products, etc. [25].

It is well known that no symptom or clinical sign is pathognomonic for adverse drug effects. Dyspepsia is a common side effect even in placebo-arms of the studies. Because of the high background incidence of dyspepsia, it is difficult to distinguish it from true drug-induced dyspepsia. The mechanisms by which a drug causes dyspepsia are often unknown, although some drugs are known to cause direct mucosal damage. NSAIDs can be an example of such medicines [26].

Frequent uncontrolled use of non-steroidal anti-inflammatory drugs in COVID-19 pandemic could cause the development of gastric dyspepsia symptoms in student population. In fact, their knowledge in clinical pharmacology might be insufficient to prevent complications following self-medication. On the other hand, physicians with practical experience had no such problems.

CONCLUSIONS

Respondents with symptoms of dyspepsia, GERD and their combination were found in all studied groups. The history of gastrointestinal diseases proved to be an independent provoking factor for the development of dyspepsia and GERD symptoms in all groups. Alcohol consumption was found to be a causing factor for the onset of dyspepsia and GERD symptoms among doctors and foreign students, and taking any medication is a provoking factor for the development of symptoms of dyspepsia and GERD among Ukrainian and foreign students.

Information about the authors

Paliy Iryna G. – MD, PhD, DSc, Professor, National Pirogov Memorial Medical University, Vinnytsia. *E-mail: prof.iryna@gmail.com*
ORCID: 0000-0002-9464-4928

Zaika Serhii V. – MD, PhD, Associate Professor, National Pirogov Memorial Medical University, Vinnytsia. *E-mail: serhijdoc@gmail.com*
ORCID: 0000-0002-3954-4537

Chernova Inna V. – MD, PhD, Associate Professor, National Pirogov Memorial Medical University, Vinnytsia. *E-mail: 001ukr@ukr.net*
ORCID: 0009-0009-5690-7385

Kapitun Alla G. – National Pirogov Memorial Medical University, Vinnytsia; tel.: (067) 431-65-75. *E-mail: allayankovetska@gmail.com*
ORCID: 0000-0001-9348-5198

Shemeta Mariia O. – City Clinical Hospital «Vinnytsia City Clinical Hospital «Mother and Child Center», Vinnytsia. *E-mail: mashemeta@gmail.com*
ORCID: 0000-0002-4488-6478

Відомості про авторів

Палій Ірина Гордіївна – д-р мед. наук, проф., Вінницький національний медичний університет ім. М. І. Пирогова, Вінниця. *E-mail: prof.iryna@gmail.com*
ORCID: 0000-0002-9464-4928

Заїка Сергій Володимирович – д-р мед. наук, доц., Вінницький національний медичний університет ім. М. І. Пирогова, Вінниця. *E-mail: serhijdoc@gmail.com*
ORCID: 0000-0002-3954-4537

Чернова Інна В'ячеславівна – канд. мед. наук, доц., Вінницький національний медичний університет ім. М. І. Пирогова, Вінниця. *E-mail: 001ukr@ukr.net*
ORCID: 0009-0009-5690-7385

Капітун Алла Григорівна – Вінницький національний медичний університет ім. М. І. Пирогова, Вінниця; тел.: (067) 431-65-75. *E-mail: allayankovetska@gmail.com*
ORCID: 0000-0001-9348-5198

Шемета Марія Олександрівна – Комунальне некомерційне підприємство «Вінницька міська клінічна лікарня «Центр матері і дитини». *E-mail: mashemeta@gmail.com*
ORCID: 0000-0002-4488-6478

REFERENCES

1. Bytzer P. Dyspepsia as an adverse effect of drugs. Best Pract Res Clin Gastroenterol. 2010;24(2):109-20. doi: 10.1016/j.bpg.2009.11.006.
2. Arnaout AY, Alhejazi TJ, Nerabani Y, Hamdan O, Arnaout K, Arnaout I, et al. The prevalence and risk factors of functional dyspepsia among adults in low- and middle-income countries: An international cross-sectional study. Medicine (Baltimore). 2023;102(40):e35437. doi: 10.1097/MD.000000 0000035437.
3. Caballero-Mateos AM, López-Hidalgo JL, Torres-Parejo Ú, Hernández-González JM, Quintero-Fuentes MD, Caballero-Plasencia AM, et al. Risk factors for functional dyspepsia, erosive and non-erosive gastroesophageal reflux disease: A cross-sectional study. Gastroenterol Hepatol. 2023;46(7):542-52. doi: 10.1016/j.gastrohep.2022.12.005.
4. Ghoshal UC, Ghoshal U, Rahman MM, Mathur A, Rai S, Akhter M, et al. Post-infection functional gastrointestinal disor-

ders following coronavirus disease-19: A case-control study. J Gastroenterol Hepatol. 2022;37(3):489-98. doi: 10.1111/jgh.15717.
5. Beh KH, Chuah KH, Rappek NAM, Mahadeva S. The association of body mass index with functional dyspepsia is independent of psychological morbidity: A cross-sectional study. PLoS One. 2021;16(1):e0245511. doi: 10.1371/journal.pone.0245511.
6. Hreinsson JP, Törnblom H, Tack J, Drossman DA, Whitehead WE, Bangdiwala SI, et al. Factor Analysis of the Rome IV Criteria for Major Disorders of Gut-Brain Interaction (DGBI) Globally and Across Geographical, Sex, and Age Groups. Gastroenterology. 2023;164(7):1211-22. doi: 10.1053/j.gastro.2023.02.033.
7. Amerikanou C, Kleftaki SA, Valsamidou E, Chroni E, Biagki T, Sigala D, et al. Food, Dietary Patterns, or Is Eating Behavior to Blame? Analyzing the Nutritional Aspects of Functional Dyspepsia. Nutrients. 2023;15(6):1544. doi: 10.3390/nu15061544.
8. Drossman DA. The functional gastrointestinal disorders and the Rome III process. Gastroenterology. 2006;130(5):1377-90. doi: 10.1053/j.gastro.2006. 03.008.
9. Ford AC, Marwaha A, Sood R, Moayyedi P. Global prevalence of, and risk factors for, uninvestigated dyspepsia: a meta-analysis. Gut. 2015;64(7):1049-57. doi: 10.1136/gutjnl-2014-307843.
10. Drossman DA, Hasler WL. Rome IV-Functional GI Disorders: Disorders of Gut-Brain Interaction. Gastroenterology. 2016;150(6):1257-61. doi: 10.1053/j.gastro.2016.03.035.
11. Esterita T, Dewi S, Suryatenggara FG, Glenardi G. Association of Functional Dyspepsia with Depression and Anxiety: A Systematic Review. J Gastrointestin Liver Dis. 2021;30(2):259-66. doi: 10.15403/jgld-3325.
12. Bisschops R, Karamanolis G, Arts J, Caenepeel P, Verbeke K, Janssens J, et al. Relationship between symptoms and ingestion of a meal in functional dyspepsia. Gut. 2008;57(11):1495-503. doi: 10.1136/gut.2007.137125.
13. Danjo A, Yamaguchi K, Fujimoto K, Saitoh T, Inamori M, Ando T, et al. Comparison of endoscopic findings with symptom assessment systems (FSSG and QUEST) for gastroesophageal reflux disease in Japanese centres. J Gastroenterol Hepatol. 2009;24(4):633-8. doi: 10.1111/j.1440-1746.2008. 05747.x.
14. Huang Q, Yuan H, Li Q, Li Y, Geng S, Zhu Y, et al. Global trends in research related to functional dyspepsia and anxiety or depression over the past two decades: a bibliometric analysis. Front Neurosci. 2023;17:1218001. doi: 10.3389/fnins.2023.1218001.
15. Aro P, Talley NJ, Johansson SE, Agréus L, Ronkainen J. Anxiety Is Linked to New-Onset Dyspepsia in the Swedish Population: A 10-Year Follow-up Study. Gastroenterology. 2015;148(5):928-37. doi: 10.1053/j.gastro.2015. 01.039.
16. Cooke ZM, Resciniti SM, Wright BJ, Hale MW, Yao CK, Tuck CJ, et al. Association between dietary factors, symptoms, and psychological factors in adults with dyspepsia: A cross-sectional study. Neurogastroenterol Motil. 2023;35(12):e14684. doi: 10.1111/nmo.14684.
17. Hawkings MJ, Vaselli NM, Charalampopoulos D, Brierley L, Elliot AJ, Buchan I, et al. A Systematic Review of the Prevalence of Persistent Gastrointestinal Symptoms and Incidence of New Gastrointestinal Illness after Acute SARS-CoV-2 Infection. Viruses. 2023;15(8):1625. doi: 10.3390/v15081625.
18. Chang L. Review article: epidemiology and quality of life in functional gastrointestinal disorders. Aliment Pharmacol Ther. 2004;20(7):31-9. doi: 10.1111/j.1365-2036.2004.02183.x.
19. Barberio B, Mahadeva S, Black CJ, Savarino EV, Ford AC. Systematic review with meta-analysis: global prevalence of uninvestigated dyspepsia according to the Rome criteria. Aliment Pharmacol Ther. 2020;52(5):762-73. doi: 10.1111/apt.16006.
20. Ford AC, Forman D, Bailey AG, Axon AT, Moayyedi P. Initial poor quality of life and new onset of dyspepsia: results from a longitudinal 10-year follow-up study. Gut. 2007;56(3):321-7. doi: 10.1136/gut.2006.099846.
21. Camilleri M, Dubois D, Coulie B, Jones M, Kahrilas PJ, Rentz AM, et al. Prevalence and socioeconomic impact of upper gastrointestinal disorders in the United States: results of the US Upper Gastrointestinal Study. Clin Gastroenterol Hepatol. 2005;3(6):543-52. doi: 10.1016/s1542-3565(05)00 153-9.
22. Golovanova IA, Belikova IV, Lyakhova NO. Basics of medical statistics: a study guide for graduate students and clinical residents. Poltava: Higher State Educational Institution of Ukraine "Ukrainian Medical Stomatological Academy"; 2017. 113 p.
23. Eng MY, Luczak SE, Wall TL. ALDH2, ADH1B, and ADH1C genotypes in Asians: a literature review. Alcohol Res Health. 2007;30(1):22-7.
24. Jaber N, Oudah M, Kowatli A, Jibril J, Baig I, Mathew E, et al. Dietary and Lifestyle Factors Associated with Dyspepsia among Pre-clinical Medical Students in Ajman, United Arab Emirates. Cent Asian J Glob Health. 2016;5(1):192. doi: 10.5195/cajgh.2016.192.
25. Basandra S, Bajaj D. Epidemiology of Dyspepsia and Irritable Bowel Syndrome (IBS) in Medical Students of Northern India. J Clin Diagn Res. 2014;8(12):JC13-6. doi: 10.7860/JCDR/2014/10710.5318.
26. Duboc H, Latrache S, Nebunu N, Coffin B. The Role of Diet in Functional Dyspepsia Management. Front Psychiatry. 2020;(11):23. doi: 10.3389/fpsyt.2 020.00023.

Стаття надійшла до редакції 28.11.2024. – Дата першого рішення 04.12.2024. – Стаття подана до друку 16.01.2025