The Study on the Correlation Between Recurrent Apthous Ulcer (RAU) and Digestive Tract Diseases in Postgraduate Entrance Examination Population

Xuchen Gao

Qiqihar Medical University, Qiqihar, Heilongjiang, 161000, China

1226431385@qq.com

Abstract. This study aimed to explore the association between and digestive tract diseases recurrent apthous ulcer (RAU) among college students, with a focus on evaluating the incidence of digestive tract diseases and psychological symptoms in individuals experiencing recurrent apthous ulcer (RAU). The research provides valuable insights for clinical treatment strategies. Among the 106 individuals in the study group with recurrent oral ulcers, 53 were preparing for postgraduate examinations. In contrast, among the 93 participants in the control group without recurrent apthous ulcer (RAU), only 23 were preparing for postgraduate examinations. This disparity was statistically significant (50.0% vs. 24.7%, $P < 0.05$). Furthermore, 23 participants in the study group (21.7%) exhibited digestive tract-related diseases, whereas only 3 individuals in the control group (3.2%) had similar conditions, demonstrating a significant statistical difference ($P < 0.05$). Additionally, the average psychological assessment score in the study group was 16.96 points, slightly higher than the control group's score of 16.22 points, although this difference was not statistically significant ($p > 0.05$). This study established a substantial relationship was identified between recurrent apthous ulcer (RAU) and digestive tract diseases in individuals preparing for exams. Psychological factors, while present, may not be the primary cause of recurrent oral ulcers in this population.

Keywords: Psychological Evaluation, recurrent apthous ulcer (RAU), Digestive Tract Diseases, Postgraduate Entrance Examination Population

1 Introduction

Recurrent aphthous ulcer (RAU) is a common oral mucosal disease characterized by recurrent, self-limited, and painful ulcers [1]. The global prevalence of RAU among college students is about 23.30% (23.23% for men and 23.39% for women) [2]. RAU can seriously impair the quality of life and work efficiency of patients, and cause a lot of pain and distress to them. The etiology of RAU is unclear, but may be related to genetic, immunological, microbial, nutritional, psychological, and pharmacological factors. RAU can seriously impair the quality of life and work efficiency of patients, and cause a lot of pain and distress to them.

F. Zeng et al. (eds.), *Proceedings of the 2024 7th International Conference on Humanities Education and Social Sciences (ICHESS 2024)*, Advances in Social Science, Education and Humanities Research 887,
https://doi.org/10.2991/978-2-38476-323-8_33

Gastrointestinal diseases (GD) refer to various diseases involving the digestive organs, such as ulcerative colitis, Crohn's disease, gastric ulcer, gastric cancer, colon cancer, and so on. The incidence of GD is also high worldwide, affecting about 500 million people every year. The etiology of GD is complex and multifactorial, involving genetic, immunological, microbial, environmental, dietary, and pharmacological factors. GD can also cause severe damage to the health and quality of life of patients, and even be life-threatening [3].

The possible correlation between RAU and GD has been a topic of interest in the medical community for decades. Some studies have reported higher incidence of GD in patients with RAU and vice versa, suggesting a common pathogenic mechanism or mutual influencing factors [4-6]. However, other studies have failed to find such a correlation, indicating that RAU and GD are independent diseases with no causal relationship [7-9]. Therefore, the correlation between RAU and GD remains controversial and needs further investigation and confirmation.

The people who take this examination are a special group, who face tremendous learning pressure and competitive pressure, which may affect their physical and mental health. Recurrent aphthous ulcer (RAU) and gastrointestinal diseases (GD) are two common diseases that have high prevalence and complex etiology, involving genetic, immunological, microbial, nutritional, psychological, and pharmacological factors. RAU and GD can impair the quality of life and work efficiency of patients, and cause a lot of pain and distress to them. The possible correlation between RAU and GD has been a topic of interest in the medical community for decades, but the results are inconsistent and controversial. The incidence and correlation of RAU and GD in the postgraduate entrance examination population have not been systematically reported. The purpose of this study is to analyze the incidence and psychological symptoms of GD in college students with RAU, to explore the correlation between RAU and GD in the postgraduate entrance examination population, and to provide new ideas and basis for the prevention and treatment of RAU and GD.

2 Materials and Methods

In this study, data were collected by online questionnaire survey. According to PHQ-9 symptom Checklist 90 (SCL-90) and Digestive system Diseases questionnaire, we designed the questionnaire and were responsible for evaluating the collected data. Before conducting the survey, all participants will be clearly informed of the purpose of the survey and relevant matters needing attention, and ensure that they begin to fill out the questionnaire after full understanding and agreement. collect information including name, sex, age, grade, university, major, type of digestive system disease, etc. The PHQ-9 emotional symptom scale was used to evaluate the psychological status of the participants, and to ensure that all the respondents completed the questionnaire independently according to the unified guidelines, and collected and statistical data immediately after completing the questionnaire.

Excel is used for data analysis, measurement data are expressed by mean ±standard deviation (mean ±SD), and counting data are expressed by frequency (n) and percentage (%). T-test was used to compare the measurement data between the two groups, and chi-square test was used to compare the counting data. $P < 0.05$ indicates that the difference is statistically significant.

3 Results

3.1 Comparison of General Information

There was no significant difference in sex, age and major between the study group and the control group ($P > 0.05$), as shown in Figure 1 and Table 1.

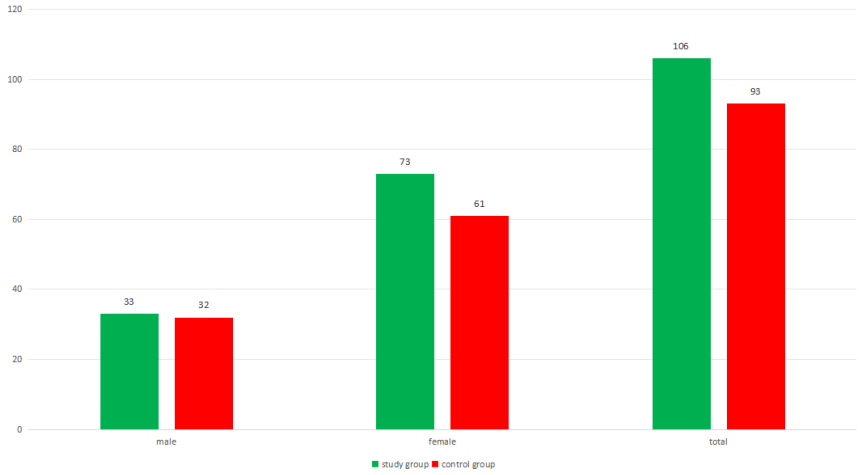

Fig. 1. Distribution of two groups of male and female

Table 1. comparison of general data between the study group and the control group

Study group (n = 106)	Control group (n = 93)		P value
Average age (age)	21.74	22.79	0.81
Average grade (grade)	3.04	3.18	0.98
P < 0.05 indicates that it is statistically significant.			

3.2 Comparison of Oral Ulcers Between the Two Groups

In the study group of 106patients with RAU, 53 prepared for graduate students, while in the control group of 93 without RAU, only 23 prepared for graduate students; the difference between the two groups was statistically significant (50.0% vs 24.7% P < 0.0.5). See Table 2 for details.

Table 2. comparison of oral ulcer between the study group and the control group

	Study group (n = 106)	Control group (n = 93)	P value
Graduate students preparing for the examination (person)	53	23	0.07

P < 0.05 indicates that it is statistically significant.

3.3 Comparison of Correlation Between the Two Groups and GD

Further analysis showed that 23 people in the study group suffered from digestive tract-related diseases (21.7%), while only 3 people in the control group (3.2%), with significant statistical difference (P < 0.05). In addition, the average score of psychological evaluation in the study group (16.96) was higher than that in the control group (16.22), and the difference was not statistically significant (P > 0.05). See Table 3 for details.

Table 3. comparison of digestive tract related diseases between the study group and the control group

	Study group (n = 106)	Control group (n = 93)	P value
Suffering from digestive tract-related diseases (person)	23	3	＜0.01

P < 0.05 indicates that it is statistically significant.

4 Discussion

Oral ulcer is a common oral mucosal disease. According to statistics, the incidence of oral ulcer in the population is about 20%. There is no definite clinical view on its pathogenesis, but it is generally believed that the occurrence of oral ulcer is related to a variety of factors, of which GD and psychological factors are two important related factors.

This study mainly analyzed the correlation between RAU and digestive system diseases. through the survey of college students, the number of people with RAU increased significantly among the graduate students preparing for the exam. from which we can analyze that because of the general mental stress, lack of sleep, irregular diet and other factors, this kind of people are more likely to suffer from digestive system diseases, according to the survey data. The number of students with oral ulcers with digestive system diseases is significantly higher than those without RAU, so it can be analyzed that there is a correlation between the occurrence of RAU and digestive system diseases. Through data analysis, this study did not find the correlation between psychological factors and RAU, but in the study of "Clinical study on the Pathogenesis of Oral ulcer caused by Psychological factors in Senior High School students", it is shown that the cause of oral ulcer caused by psychological factors in senior high school students is related to stress. Among the psychological factors that cause oral ulcer in senior high school students, learning pressure ranks first in both boys and girls.[7]

The survey shows that 53 people in the postgraduate entrance examination suffer from RAU, including 13 with superficial gastritis, 10 with acute appendicitis, 8 with chronic appendicitis, and the most with these three types of diseases. The occurrence of these three types of diseases is related to irregular diet, and the people preparing for the postgraduate entrance examination are more likely to eat irregularly than other students, so there is a significant correlation between RAU and GD.

In addition, the application of artificial intelligence (AI) and big data analysis in the context of postgraduate entrance examination candidates has garnered significant attention, particularly concerning oral ulcers and gastrointestinal diseases. Research findings indicate that AI can assist in analyzing the association between recurrent aphthous ulcers (RAU) and gastrointestinal diseases, providing valuable insights for clinical decision-making. Furthermore, AI enhances physicians' confidence in diagnosing such conditions. Additionally, recent studies reveal that big data analysis highlights the importance of monitoring nonsteroidal anti-inflammatory drug (NSAID) usage among postgraduate candidates due to its correlation with the occurrence and recurrence of peptic ulcers. Personalized medication strategies based on big data analysis can contribute to improving the health status of postgraduate candidates, as illustrated in Figure 2.

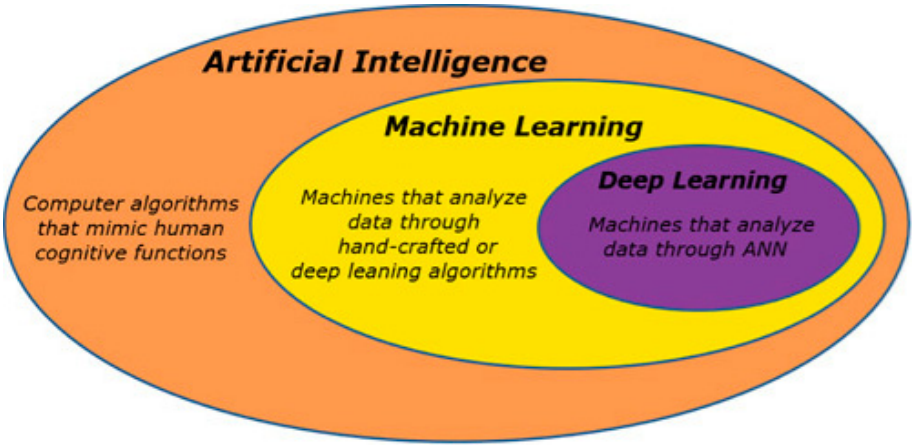

Fig. 2. The potential of artificial intelligence and big data in clinical practice

5 Conclusion

To sum up, among the factors inducing oral ulcer in the postgraduate entrance examination, digestive system disease is a significant factor, and other causes can not be ruled out. Patients with oral ulcer in junior grade are most affected by digestive system disease, followed by sophomore year and senior year. In view of the above problems, it is suggested that schools and parents should pay attention to the daily diet of college students. In addition to giving them necessary drug treatment, they should also make them well-nourished [10], reasonable work and rest psychological counseling [11], so as to

improve the digestive system health of college students and contribute to the recovery of RAU. [12] At the same time, the results of this study provide an effective basis for the study of preventive strategies and interventions for RAU and GD.

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