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Impact of Public Health Events on College Students'Health Prevention Behavior and Dietary Changes Based on Text Mining

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Abstract: Public health events have influenced college students'health prevention behavior and dietary.By utilizing text mining techniques, the analysis focused on college students' changes in dietary lifestyle, highlighting the importance of enhancing the quality of their dietary habits.Additionally, this study proposed development directions for adolescence dietary education within college curricula.The findings of this research provide valuable references for improving dietary health education in colleges, bearing significant implications.

Keywords: College students; Dietary; Health prevention; Text mining

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1. Introduction

In recent years, public health crisis events such as the repeated epidemic of coronavirus, the cross-species transmission of Monkeypox virus, and the rampant influenza virus have caused people's concern and anxiety about public health (Liu, 2020). After experiencing the public health crisis, people strongly realized that what they can do is to improve their lifestyle, such as adjusting their schedule, eating reasonably, exercising moderately, and changing their healthcare behavior to protect themselves or improve diet quality, and even engaging in irrational behavior such as hoarding food, drugs, medical equipment, etc. (Wang, 2021). In addition, due to social, economic, policy, and other factors and limitations, many people have to shift from their normal work and living environment to long-term home-based work and closed activities, which is very easy to form bad habits, leading to a series of physical and mental problems (Wang, 2020).

The occurrences of sudden changes in the lifestyles, even leading to irrational behaviors, may be attributed to people's exposure to a mixed information environment, voluntarily or involuntarily, through various communication channels amidst the overshadowing gloom of a public health crisis(Chen&Zhao, 2020). This exposure triggers a fear of disease, prompting individuals to engage in a series of risk-avoidance behaviors(King et al., 2021). Such behavioral changes may have had both positive and negative impacts on residents' health and everyday life. Research on the impact of public health events on diet, lifestyle, physical activity and mental health is being actively carried out in China(Wang et al., 2020), the United States(Chenarides et al, 2020), Australia(Van Rheenen et al, 2020) and other countries.

Taking a study in Poland as an example, during the epidemic, it was difficult for people to avoid sitting or resting at home, and physical activity and energy consumption were relatively reduced, which has had a negative impact on health(Naja&Hamadeh, 2020; Zhang et al 2020). Some scholars also reported the research results of the positive impact of the epidemic on diet and life. Wang et al. (2020) found that 23% of respondents had a healthier diet, while 30% consumed more vegetables, fruits, and dairy products.

Within this context, studying people health awareness, dietary behavior changes, and related strategies plays a crucial role in promoting the physical health of the population, preventing public health incidents, and maintaining social stability in the future. Therefore, this study aims to uncover the dietary-related keywords and semantic connections among them before and after public health incidents among college students, which analyzes the changes in their attention to and understanding of health and diet, and proposes new directions for dietary and nutrition education in the context of public health incidents.

2. Methods

To achieve this objective,text mining techniques were employed(Yuan et al.,2006).Data was collected by inputting keywords such as "college student diet", "college diet", "college health preservation", "college healthcare" into Sina Weibo. The time ranged from January, 2020, to June, 2023.

Word frequency analysis was conducted using Python and the frequency of occurrence for relevant words was calculated to generate topic-related word frequency information and word cloud visualization.

3. Result and Discussion

Through text mining,2188 messages were extracted. From the visual display of vocabulary related to college students' diet (Figure 1), where the larger the font, the higher the frequency of occurrence.



Figure 1. Word cloud of vocabulary related to college students' diet.

Firstly,among the top 60 keywords related to college students' diet and life in recent years, the keyword with the highest frequency was "health preservation", which was 582 times. The keywords ranked second to fourth were "mental health", "lifestyle", and "Traditional Chinese Medicine", which were 386 times to 283 times. Keywords with a frequency of 223 occurrences to 200 occurrences were ranked 5th to 9th with "food", "activity", "learning", "exercise", and "body", which indicates that college students attach importance to the health and wellness functions of their diet.

Secondly, frequency of words appearing such like "nutrition", "weight loss", "sleep", "health products" is relatively high, which indicates the importance of nutrition and health in the dietary life of college students, incorporating immune-boosting foods into their meal plans and more regular lifestyle.

Thirdly,words like"education", "plan", "suggestion", "popularization", "help", "teacher", "expert" were also extracted in study data, which indicates that college students seek various ways to obtain dietary guidance and related health knowledge. The availability of online resources and virtual platforms has played a vital role in guiding college students towards healthier eating habits (Moorhead et al, 2003).

According to "Health Research of Chinese College Student of 2020" (Doctor Dingxiang and China Youth Daily,2020), before 2020, the biggest dietary problem among college students was uneven nutrition. "Eating too little vegetables and fruits", and "not having enough variety of food" considered as nutritional imbalances accounted for an important proportion. Others as "irregular meal times", "too greasy diet", "overeating", "eating too much midnight snack", "takeout frequently", "drinking too much", "frequent visits to greasy spoon" were reported most common dietary experiences of college students. However, we can see the public health events in recent years have led to an increased concern for personal health, prompting college students to reconsider their food choices. There has been a notable rise in the consumption of fruits, vegetables, and whole grains among college students, with a decline in the consumption of processed foods (Aljohani, 2021).

Based on the findings, this study suggests incorporating comprehensive dietary education within college curricula. This can be achieved by integrating nutrition courses, providing access to relevant online resources, promoting cooking skills, and emphasizing the importance of a balanced diet. Additionally, fostering partnerships between educational institutions and nutrition experts or professionals can contribute to providing more effective dietary education programs.

4. Conclusion

The present study emphasizes the criticality of addressing and improving college students' dietary lifestyle. By understanding the changes in dietary habits and their impacts on students' overall health, educational institutions can shape development directions for effective and targeted dietary education programs. This research serves as a valuable reference for improving dietary health education in colleges, contributing to the advancement of students' well-being.

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