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ARTICLE

SURVEY AND STUDY ON THE CURRENT STATUS AND INFLUENCING FACTORS OF NUTRITION KNOWLEDGE, ATTITUDES, AND PRACTICES (KAP) AMONG MEDICAL STAFF AT A GRADE-III A HOSPITAL IN LANZHOU

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ABSTRACT

Objective: This study aims to evaluate the current status of Nutrition Knowledge, Attitudes, and Practices (KAP) among medical staff and to identify key factors influencing KAP scores to develop effective nutritional behavior intervention measures and educational strategies. Methods: Using convenience sampling, a non-probability sampling method, 375 medical staff members from a Grade-III A hospital in Lanzhou were selected as research subjects. Data were collected through a questionnaire survey and analyzed using descriptive statistics (mean ± standard deviation); independent sample t-tests were used to compare means between two groups, univariate ANOVA was used for comparisons among groups, and Spearman's rank correlation was used to analyze correlations. Results: A total of 375 questionnaires were distributed, with a response and validity rate of 100%. In terms of Nutrition Knowledge, Attitudes, and Practices (K-A-P), the highest scores were observed for nutritional attitudes, and there was a significant positive correlation among the K-A-P components. The main factors influencing knowledge scores (K) included educational level, profession, and age, with doctors scoring significantly higher than nurses and medical technicians (P<0.01). Conclusion: The study results indicate that the nutrition KAP levels of medical staff need improvement, especially in terms of attitudes and practices, despite their relatively high level of nutrition knowledge. Educational level, profession, and age significantly influence the acquisition and dissemination of nutrition knowledge. These findings suggest that these factors should be considered when designing future nutrition education and behavior intervention strategies.

KEYWORDS

Medical staff; Nutrition Knowledge, Attitudes, and Practices (KAP); Influencing factors

1. Introduction

Medical staff are not only a crucial component of national health initiatives but also key to the functioning of the healthcare system. Their nutritional status directly affects personal health and work efficiency, which in turn impacts the quality and service of healthcare overall (Hu et al., 2012; Liu et al., 2013). Nutrition Knowledge, Attitudes, and Practices (KAP) serve as direct indicators of an individual's grasp and application of nutritional knowledge. Therefore, enhancing the nutritional literacy of medical staff is crucial not only for their own health but also indirectly affects the nutritional management of patients. This study aims to provide data support and suggestions for targeted nutritional education and policy-making by analyzing the nutrition KAP among hospital medical staff.

2. Subjects and Methods

2.1 Subjects

In this study, 375 medical staff members from a Grade-III A hospital in Lanzhou were selected as research subjects, aged between 25 and 59 years, with an average age of 36.2±7.8 years (Song et al., 2023; Yu and Zhang, 2023). The subjects were divided into two age groups according to the five age group method: a younger group (20-39 years) and a middle-aged group (40-59 years). The study was approved by the Ethics Committee of the Affiliated Hospital of Northwest Minzu University, and all participants signed an informed consent form before the survey, ensuring the ethical compliance of the research.

2.2 Methods

2.2.1 Survey questionnaire

The Nutrition Knowledge, Attitudes, and Practices (KAP) questionnaire was developed by the research team after extensive literature review and consideration of the actual conditions of medical workers. The questionnaire consists of four sections: general information, nutrition knowledge (K), nutrition attitudes (A), and nutrition practices (P), totaling 45 questions with a maximum score of 60. The nutrition

knowledge section contains 20 questions, totaling 20 points; the nutrition attitudes section includes 10 questions, totaling 15 points; and the nutrition practices section comprises 15 questions, totaling 25 points, with 60% considered a passing score. The questionnaire was administered face-to-face to protect participant privacy, and all data were collected anonymously.

2.2.2 Physical measurements

Physical measurements were performed by trained professionals using domestic vertical height measuring instruments and electronic weighing scales, with all results rounded to one decimal place. Body mass index (BMI) was calculated using measured height and weight data, and the "Chinese Guidelines for the Medical Nutrition Treatment of Overweight/ Obesity (2021)" were used as the criteria for determining overweight and obesity.

2.2.3 Quality Control

To verify the validity and reliability of the questionnaire, a preliminary survey was conducted with 30 medical staff. The retest reliability analysis over 10 days achieved a Kappa value of 0.73, indicating good reliability and meeting the study requirements. The questionnaire was modified after several discussions and evaluations by multiple experts through the expert consultation method to ensure content validity.

2.3 Statistical analysis

Research data were built and entered using Epidata 3.0 software and Excel spreadsheets, with entry done by two individuals cross-checking to ensure accuracy. Statistical analyses were performed using SPSS 27.0 software. Categorical data were expressed as frequencies and percentages, with chi-square tests used for rate comparisons. Quantitative data were expressed as mean and standard deviation ($\bar{x}$ ±s), with independent sample t-tests used for comparing means between two groups and one-way ANOVA for comparisons among multiple groups. Additionally, multivariate linear regression analysis was used to examine the relationships among nutrition knowledge, attitudes, and practices, with results considered statistically significant at $P<0.05$.

3. Results

3.1 Demographic and socioeconomic characteristics of the subjects

In this study, 375 medical staff members were selected as research subjects, and 375 questionnaires were successfully retrieved, achieving a response rate of 100%, with all questionnaires deemed valid. Regarding gender composition, there were 87 male participants (23.2%) and 288 female participants (76.8%), as detailed in Table 1.

3.2 Basic nutrition KAP status

As shown in Table 2, the scores for nutrition knowledge (K), attitudes (A), and practices (P) among medical staff were as follows: knowledge score was 14.43±1.82 with a pass rate of 68.67%; attitude score was 11.49±1.79 with a pass rate of 80.39%; practice score was 17.73±2.32 with a pass rate of 73.25%. Notably, the highest pass rate was in nutritional attitudes, while the lowest was in nutritional knowledge.

3.3 Relationship between various factors and nutrition KAP

Table 1: Basic information of research object

Basic information	N (%)
Gender	
male	87(23.20)
female	288(76.80)
Age	
Youth group	288(76.80)
Mature group	87(23.20)
Type of jobs	
Physician	195(52.0)
Nurse	123(32.80)
Pharmacist	57(15.20)
Education	
Associate degree or diploma	36(9.60)
Bachelor' s degree	273(72.80)
Master' s degree or higher	66(17.60)
Wage	
＜6000 yuan	57(15.20)
6000-9999 yuan	222(59.20)
≥10000 yuan	96(25.6)

Table 2: Distribution of nutrition KAP scores and pass rate

Category	Total score	Score ($\bar{x}$ ±s)	Acceptability (%)
K	20	14.43±1.82	68.67
A	15	11.49±1.79	80.39
P	25	17.73±2.32	73.25
KAP score	60	43.65±3.84	85.49

Single-factor ANOVA and correlation analyses were conducted on the medical staff's age, gender, profession, and educational level. The results indicated that educational level and age had the most significant impact on nutrition knowledge (K), with significant statistical differences in KAP total scores across different professions and educational levels (P<0.05). However, there were no significant statistical differences in attitude (A) and practice (P) scores in relation to age, profession, and educational level (P>0.05).

According to the Guidelines (2021), the subjects were categorized into non-overweight, overweight, and obese groups based on their body mass index (BMI), comprising 68%, 20%, and 12% of the sample, respectively. Single-factor variance analysis showed significant differences in nutrition knowledge, practices, and KAP total scores among different BMI groups (P<0.05), with the non-overweight group scoring the highest, followed by the overweight group, and the obese group scoring the lowest.

3.4 Correlation analysis of nutrition K-A-P among medical staff

Pearson correlation analysis was used to examine the relationships among nutrition knowledge, attitudes, and practices, and multivariate linear regression analysis was conducted with significant demographic characteristics as independent variables. The correlation coefficients between K-A-P were 0.326 (K-A), 0.215 (A-P), and 0.229 (K-P) (P<0.05), indicating a positive correlation among nutrition knowledge, attitudes, and practices. This result suggests that higher levels of nutrition knowledge among medical staff lead to correspondingly higher scores in nutrition attitudes and practices.

3.5 Other findings

Regarding the use of nutritional supplements, 38.4% of participants used them frequently, 45.7% occasionally, and 15.9% never. When choosing food, 42.8% prioritized taste, followed by nutritional content (32.5%), price (15.8%), and convenience and hygiene (8.9%). The most common source for acquiring nutrition knowledge was the internet (e.g., WeChat, TikTok, and other social media), accounting for 60.9%, followed by specialized lectures (18.8%), broadcast television (9.7%), and nutrition books (10.6%). Only 20.8% could correctly answer questions about the dietary structure and recommended intake levels from the Chinese Dietary Guidelines (2022).

In terms of daily dietary intake, the rates of adequate energy and fruit and vegetable intake were both above 50%, while the proportion of insufficient milk intake was comparable to the sufficiency rate. Notably, the excess rates for fats and salts were both over 50%, as shown in Figure 1.

4. Discussion

4.1 Nutritional status of medical staff and patient nutritional therapy

According to a large-scale study, the incidence of malnutrition among cancer patients is as high as 80.4%, yet only 31% of these patients receive

Table 3: KAP scores in respondents with different demographic characteristics

Variable	K score($\bar{x}$ ±s)	A score($\bar{x}$ ±s)	P score($\bar{x}$ ±s)	KAP score($\bar{x}$ ±s)
Age				
Youth group(n=288)	14.38±1.814	13.57±1.816	17.81±2.139	45.76±3.703
Mature group (n=87)	12.47±1.879	11.72±1.730	18.26±2.848	42.45±4.313
F	0.402	0.652	0.549	0.054
P	＜0.05	＞0.05	＞0.05	＞0.05
Type of jobs				
Physician(n=195)	15.42±1.835	11.03±1.837	17.06±2.290	42.03±3.828
Nurse(n=123)	14.76±1.410	12.12±1.520	18.41±2.213	45.29±2.750
Pharmacist(n=57)	13.94±1.911	11.68±1.827	18.53±2.010	45.63±3.562
F	6.317	5.099	6.086	14.770
P	＜0.05	＞0.05	＞0.05	＜0.001
Education				
Associate degree or diploma(n=36)	13.50±1.74	11.23±1.63	18.50±1.57	45.83±2.21
Bachelor' s degree(n=273)	14.53±1.85	11.49±1.86	17.70±2.27	43.73±3.84
Master' s degree or higher(n=66)	15.42±0.90	11.92±1.62	17.41±2.79	42.14±3.98
F	5.054	0.571	0.879	3.843
P	＜0.05	＞0.05	＞0.05	＜0.05
Body Mass Index				
Non-overweight (n=255)	14.39±1.903	11.48±1.777	17.67±2.146	43.54±3.975
Overweight(n=75)	13.40±1.848	11.68±1.952	15.32±2.688	40.40±4.203
Obesity(n=45)	11.73±1.335	11.20±1.699	14.73±2.463	37.66±1.988
F	0.230	0.333	1.853	0.610
P	＜0.05	＞0.05	＜0.05	＜0.05

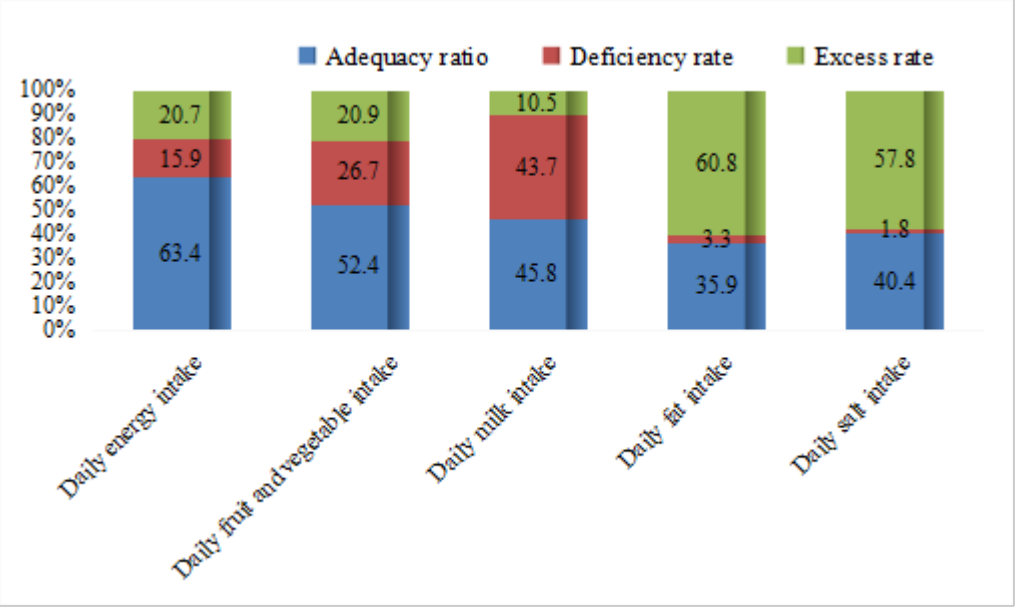

Figure 1: Percentage of participants consuming each food group

nutritional therapy. Even among patients with severe malnutrition, only 45% receive appropriate nutritional intervention (Cui et al., 2020). This data highlights the critical role of medical staff in patient nutrition management, as they are a primary source of nutritional knowledge for patients. Therefore, it is crucial for medical staff to enhance their nutritional knowledge to better support the nutritional needs of patients.

4.2 Differences in nutrition knowledge, attitudes, and behaviors and their influencing factors

Although the study shows that the qualification rates for nutrition knowledge, attitudes, and behaviors (KAP) among hospital staff are relatively high, the overall scores are low, indicating substantial room for improvement. Notably, although doctors scored higher in nutrition knowledge, their scores for nutrition attitudes and practices were the lowest. This discrepancy could be related to the high stress and fast pace of doctors' work environments. Frequent night shifts and a high-pressure work environment may lead to irregular life patterns, which in turn could negatively affect their nutritional attitudes and practices (O'Connor et al., 2023; Zhou and Zhang, 2020).

4.3 The importance and strategies of nutrition education

The study also shows that educational level and age are significant factors affecting the acquisition of nutritional knowledge by medical staff. Common dietary issues, such as excessive energy intake and insufficient intake of fruits, vegetables, and milk, suggest a pattern of nutritional imbalance that could lead to long-term health problems. Additionally, the excessive intake of fats and salts and a lack of awareness about nutritional supplements highlight an urgent need for targeted nutrition education for medical staff (Xu et al., 2023; Zhang et al., 2021; Zhang et al., 2023).

To improve this situation, it is recommended to enhance the nutritional knowledge of medical staff through various channels, including nutritional outreach, nutrition conferences, and continuing education programs in nutrition. Employing multimedia teaching, creating guidebooks, and utilizing the latest nutrition guidelines can effectively enhance the nutritional literacy of medical staff, enabling them to better apply nutrition knowledge in practice and provide scientific nutrition education and support to patients (Li, 2023).

4.4 The association between body mass index and nutrition KAP

In this study, significant differences in nutrition KAP scores were observed among different BMI categories, indicating that individuals with higher scores in nutrition knowledge and practices tend to maintain a normal BMI, whereas those with lower scores are more prone to being overweight or obese. This underscores the importance of good nutritional practices in maintaining a healthy weight and suggests that medical staff should pay close attention to their personal nutrition management to prevent obesity and related diseases (Liu et al., 2020).

Conflict of Interest

There are no conflicts of interest among all authors.

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