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Original Article

Application value and feasibility analysis of humanistic health management for cancer screening in physical examination

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Abstract: Objective: To investigate the application value and feasibility of humanistic health management in cancer screening in physical examination. Methods: A total of 100 carcinoma patients were randomly grouped into the control group and the experimental group, with 50 cases in each group. The patients in the control group received a general physical examination, while those in the experimental group received humanistic health care management model, health education, environmental management, private nursing and emergency management. The two groups were compared in missing item rate, health knowledge score, physical examination quality, basic literacy of nursing staff, adverse events and physical examination satisfaction. Results: There was 1 case of missing items in the ENT (ear nose throat branch) in the experimental group, with a missing item rate of 2.00%, and 7 cases of missing items in the control group, with a missing item rate of 14.00% (χ^2=9.000, P=0.003). The score of mastering health knowledge in the experimental group was higher than that in the control group (t=15.663, P<0.001). Compared with the control group, the experimental group experienced shorter time of physical examination and obtained higher reliability and efficiency of physical examination (all P<0.05) and higher scores of professional ethics, interpersonal communication, coordination ability, humanistic quality and civility of nursing staff (all P<0.05). In addition, the incidence of adverse events in the control group was 32.00% (16/50), which was higher than that in the experimental group (18.00%, 9/50; χ^2=3.920, P=0.048). There was no difference in satisfaction between the two groups (P>0.05). Conclusion: Humanistic health management can improve the efficiency of medical examination, the mastery of health knowledge and reduce the rate of missed examinations and adverse accidents, thus improving the overall satisfaction of patients.

Keywords: Humanistic health management, tumor screening physical examination, quality of physical examination, satisfaction with physical examination

Introduction

Tumors refer to new organisms formed by local tissue hyperplasia under the action of carcinogens, which mostly show space-occupying massive protrusions. Tumors can be divided into benign tumors and malignant tumors, with quite different clinical manifestations and prognoses [1]. At present, tumors have become a common global public health problem. Due to the aggravation of environmental pollution, bad biological habits and social pressure, the incidence of cancer is increasing. Epidemiological investigation shows that the number of cancer patients in China is about 4 million, and the cancer-related deaths exceeds 2 million. Therefore, the prevention and treatment of cancer is very crucial. However most patients have progressed into the middle or late stages of disease at the time of diagnosis, and thus miss the optimal treatment timing, so early detection and diagnosis are very important [2]. Physical examination occurs in the vast majority of individuals with no clinical symptoms, and as a result diseases that are difficult to detect are found [3]. Physical examination can help find not only chronic diseases, but also tumors in precancerous stages and curable tumors, so physical examination has become an effective method to monitor asymptomatic tumors [4]. At

present, despite the continuous growth of the scale and benefit of physical examination centers in hospitals in China, most physical examination centers are still in the simple physical examination mode, and the health management system needs further improvement [5]. Humanistic health management requires physical examination staff to embody humanity, health and care through specific forms of culture and education, which is professional and has good characteristics of humanitarian care [6]. The humanistic quality and health concept knowledge of the staff in the physical examination center can directly feedback on the hospital's health management level and humanistic care level [7]. In this paper, the data of health care individuals from June 2019 to July 2020 in our hospital were analyzed to observe the influence of humanistic health management on the quality and satisfaction of physical examination.

Materials and methods

General information

A total of 100 (June 2019-July 2020) individuals, who were aged 18-86 and went to the physical examination center of our hospital for cancer physical examination, were collected. The inclusion criteria: (1) individuals who volunteered to take part in physical examination; (2) individuals without clinical symptoms; (3) individuals who have complete information and complete physical examination items. The exclusion criteria: (1) those complicated with serious diseases of important organs; (2) those with mental disorders or cognitive ambiguity; (3) those who were not suitable to be in clinical research. The physical examination items completed by all physical examinees included blood biochemistry, routine blood and urine examination, tumor markers, cardiac ultrasound, gynecological examinations, general medicine and surgery exams, and examinations in ophthalmology and otorhinolaryngology. All individuals were divided into either the control group or the experimental group using the random number table method, with 50 cases in each group. The control group was examined routinely, and the experimental group was examined using the humanistic health management model. This study met the ethical requirements of our hospital, and all participants signed the informed consent forms. The general information is listed in **Table 1**.

Methods

In the control group, the basic physical examination model and the physical examination form were adopted. The management personnel of the physical examination center publicized the physical examination health knowledge, emphasized the importance of physical examination, and informed the physical examination process with guidance and precautions. The physical examinees completed the physical examination in turn according to the guidance sheet. Afterwards, the physical examination center integrated the physical examination results and informed the physical examinees of the final report.

The experimental group was given care under the humanistic health management mode. The details were as follows: (1) a humanistic health management team was established by internship nurses, physical examination nurses and head nurses, with the head nurse as the team leader. Before the intervention, the nursing staff learned the knowledge and operation skills related to physical examination, and the professional quality and communication skills of physical examination staff were enhanced. (2) Data analysis was performed. According to the management characteristics of previous physical examination centers, the needs of physical examinees and the typical urgent problems to be solved were learned, mainly including physical examination process, physical examination attitude and physical examination environment. In the light of the past problems, the humanistic health management team developed a physical examination plan by consulting the relevant literature; they also consulted the physical examiners for group discussion and worked out the physical examination plan. (3) Physical examination process management: There were many physical examinees in the physical examination center, and the physical examination process was long. Therefore, the physical examination staff were required to optimize the physical examination process and route the physical examinees, they marked the physical examination items and made eye-catching signs, they queued the physical examinations according to the order, implemented humanistic management, and managed the elderly physical examinees one by one, so as to increase their physical examination satisfaction. (4) To enhance the health education, physical examination guides were required to be

Table 1. General information

Group	Test group (n=50)	Control group (n=50)	χ^2/t	P
Gender			0.361	0.835
Male (cases)	24	27		
Female (cases)	26	23		
Average age (years)	54.9±25.1	55.3±24.1	0.081	0.935
BMI (kg/m^2)	23.66±0.30	23.59±0.41	0.974	0.332
Education			0.651	0.885
Primary school (cases)	10	12		
Junior high school (cases)	24	23		
High school and college (cases)	10	11		
University and above (cases)	6	4		
Basic disease			0.184	0.912
Coronary heart disease (cases)	15	12		
Hypertension (cases)	28	27		
Diabetes (cases)	20	17		
Accompanying family members			3.437	0.179
Yes (cases)	35	42		
No (cases)	15	8		
Reason of examination			0.421	0.810
Work required (cases)	33	36		
Personal (cases)	17	14		

equipped with strong communication skills and high professional quality, and were also required to explain the questions raised by physical examiners, which was conducive to improving the satisfaction of physical examination, during which they paid attention to avoid arousing the disgust of physical examinees. (5) Environmental management: the physical examination center was equipped with a lounge area, which provided tea, reading material such as newspapers and magazines, so as to help the physical examinees feel relaxed. By broadcasting the physical examination process and precautions on TV, the physical examination compliance of the physical examinees was effectively improved. (6) Privacy care: the personal information of medical examiners and examinees was protected, and female medical examiners were assigned to check in some female medical examinees, so as to improve medical examination efficiency and compliance. (7) Emergency management: for physical examinees who were shy of needles, blood or have hypoglycemia, the nursing staff took emergency measures in real time and sent them to the lounge. (8) Result report: the physical examination nurse checked the existence of any missing physical examination items, and classified and sorted out the physical examination results. (9) Analysis and evaluation: the physical examination doctor analyzed the physical examination form, established personal electronic health records, and saved them in the physical examination database to ensure privacy. (10) The physical examination results were given to examinees, and suggestions were given to examinees according to the actual situation of physical examination, so as to achieve early detection and early treatment.

Main outcome measures

Comparison of missing items in physical examination and mastery level of health knowledge between the two groups: The missed items of physical examination of the two groups were recorded, and the mastery of routine items and health behaviors of the two groups were scored, with a total score of 100 points, and a higher score indicates better mastery. The self-made cancer disease knowledge scale was used to evaluate the basic knowledge of cancer diseases, complications, treatment methods, diet guidance and other items. Each item was categorized as a correct answer, wrong answer or unclear answer, with 1 score for correct answer and no score for wrong answer or unclear answer. The effective rate of investigation was 100%.

Comparison of physical examination quality between the two groups: Personal health records were established for those who came for physical examination, online and WeChat query modes were applied to inquire about physical examination reports and analyze test results, from which individuals can understand their health information and the dynamic changes. Physical examination quality indicators included physical examination time (from the

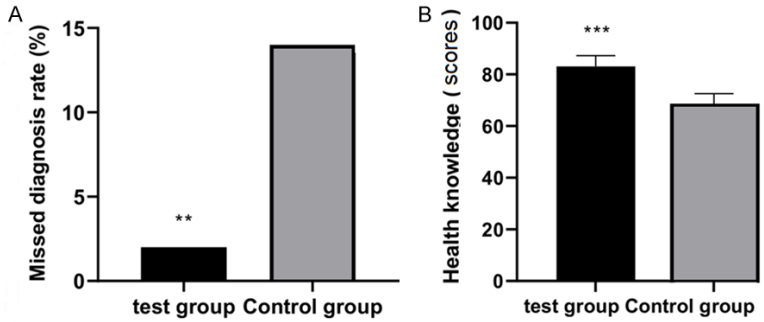

Figure 1. Comparison of the missed rate and health knowledge mastery score of the two groups. Compared with the control group, **P<0.01, ***P<0.001. A: The rate of missing items in the physical examination; B: The level of health knowledge.

beginning to the end of physical examination), physical examination efficiency (ratio of physical examination time to manpower) and reliability (degree of reliability of physical examination results). The two groups of physical examinees were evaluated and scored, with 10 points in total for each group. A higher score indicates a better physical examination quality.

Comparison of basic literacy of nursing staff between the two groups: Physical examiners scored the basic qualities of nursing staff, including professional ethics, nursing, interpersonal communication, coordination, humanities, etiquette and other items. A 5-mark system was applied, with a higher score for better basic literacy.

Secondary outcome measures

Comparison of incidence of adverse accidents: The incidences of infection, fall, suicide, medical disputes and complaints were compared between the two groups.

Comparison of satisfaction: A self-made physical examination satisfaction questionnaire was used, which included four grades: highly satisfied, fairly satisfied, moderately satisfied and dissatisfied.

Satisfaction = (satisfied + fairly satisfied)/total number * 100.00%.

Statistical methods

SPSS 22.0 was applied to analyze the results of this study. Counting data were represented by (n, %) and measuring data were represented by ($\bar{x}$±sd). Independent samples t test was applied for analysis, and the difference was statistically significant with P<0.05.

Results

Comparison of missing items rate and health mastery level between the two groups

There was 1 case of missing items in ENT in the experimental group, with a missing item rate of 2.00%, 4 cases of it in internal medicine and 3 cases of it in surgery in the control group, with a missing item rate of 14.00%. The missing item rate in the experimental group was significantly lower than that in the control group (χ^2=9.000, P=0.003), and the score of mastering health knowledge in the experimental group was higher than that in the control group (t=15.663, P<0.001; **Figure 1**).

Comparison of physical examination quality between the two groups

Compared with the control group, the experimental group experienced a shorter time of physical examination and obtained higher reliability and efficiency of physical examination (all P<0.05; **Table 2** and **Figure 2**).

Comparison of basic literacy of nursing staff between the two groups

Compared with the control group, the scores of professional ethics, interpersonal communication, coordination ability, humanistic quality and civility of nursing staff in the experimental group increased (all P<0.05), but there was no significant difference in nursing ability scores between the two groups (t=0.506, P=0.614; **Table 3**).

Comparison of adverse accidents between the two groups

The incidence of adverse accidents in the control group was 16 cases (32.00%), which was higher than that in the experimental group (9 cases (18.00%); χ^2=3.920, P=0.048). Compared with the control group, there were less physical examinees in the experimental group who suffered from falling, suicide, medical disputes and physical examination complaints,

Table 2. Comparison of the physical examination quality of the two groups

Group	Physical examination time (min)	Reliability of medical examination (scores)	Physical examination efficiency (scores)
Test group (n=50)	61.24±36.55	8.54±0.50	8.81±0.88
Control group (n=50)	76.35±40.17	6.60±0.91	6.47±1.26
T	2.046	13.470	11.070
P	0.043	<0.001	<0.001

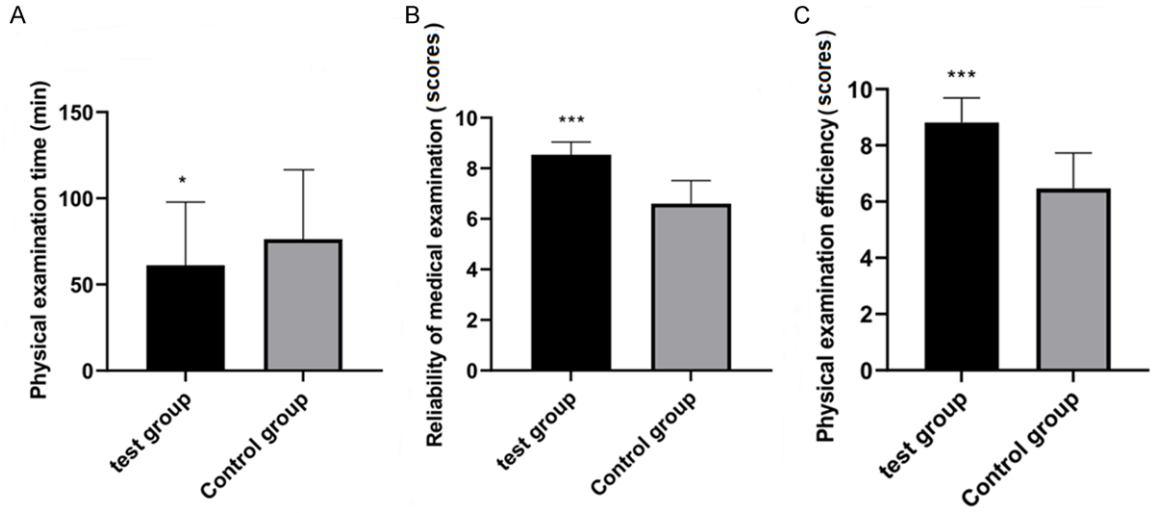

Figure 2. Comparison of the physical examination quality of the two groups. Compared with the control group, *P<0.05, ***P<0.001. A: Physical examination time; B: Reliability of medical examination; C: Physical examination efficiency.

Table 3. Comparison of the basic literacy of the two groups of nursing staff (scores)

Group	Test group (n=50)	Control group (n=50)	t	P
Professional ethics	3.51±0.70	3.02±0.56	3.865	0.001
Nursing ability	3.77±0.78	3.69±0.80	0.506	0.614
Interpersonal communication	3.66±0.60	3.10±0.82	4.123	0.001
Coordination	3.40±0.94	3.04±0.56	2.327	0.022
Humanity	3.74±0.65	3.22±0.70	3.849	0.001
Etiquette image	3.81±0.56	3.11±0.80	5.069	<0.001

but there was no significant difference between the two groups (all P>0.05; **Table 4**).

Comparison of physical examination satisfaction between the two groups

There were 46 cases (92.00%) who were satisfied with physical examination in the experimental group and 43 cases (86.00%) who were satisfied with physical examination in the control group. There was no statistical difference between the two groups (P> 0.05; **Table 5** and **Figure 3**).

Discussion

In the past 30 years, with a high incidence in China, cancer has become the main cause of death in developed areas such as Beijing and Shanghai. According to previous explorations, the early clinical symptoms of cancer are not obvious, so physical examination is very important for effective prevention, early diagnosis, and treatment of it and for increasing the survival rate of cancer patients [8]. In physical examination, blood tumor markers found during examination or imaging ultrasound can diagnose tumors in tumor patients without obvious clinical symptoms as early as possible and this contributes to better clinical treatment. At present, with changes in the modern medical model, people have an increasingly

Table 4. Comparison of adverse accidents among medical examiners (n, %)

Group	Total number of adverse accidents	infection	Fall down	suicide	Medical dispute	Medical complaint
Test group (n=50)	9 (18.00)	0 (0.00)	1 (2.00)	2 (4.00)	4 (8.00)	2 (4.00)
Control group (n=50)	16 (32.00)	0 (0.00)	3 (6.00)	3 (6.00)	6 (12.00)	4 (8.00)
T	3.920	0.000	2.000	0.400	0.800	1.333
P	0.048	1.000	0.157	0.527	0.371	0.245

Table 5. Comparison of satisfaction with physical examination of the two groups (n, %)

Group	Satisfaction	Quite satisfied	General	Not satisfied	Medical examination satisfaction (%)
Test group (n=50)	26 (52.00)	20 (40.00)	3 (6.00)	1 (2.00)	46 (92.00)
Control group(n=50)	23 (46.00)	20 (40.00)	4 (8.00)	3 (6.00)	43 (86.00)
T		1.327			0.202
P		0.723			0.653

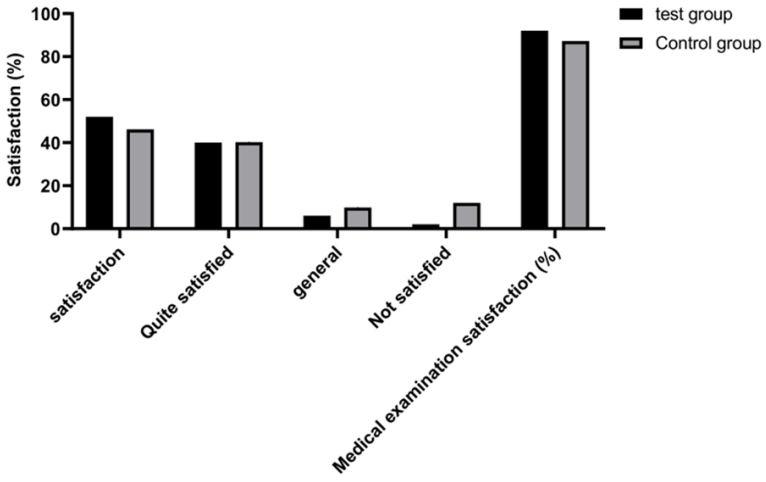

Figure 3. Comparison of satisfaction of medical examinees.

higher awareness of physical examination and higher requirements for the physical examination process, as well as the efficiency and quality [9]. Humanistic health management is a better choice in the process of physical examination, which is people-oriented, starts from the perspective of physical examiners, and is conducive to improving the quality of physical examination [10]. In this paper, humanistic health management was applied to physical examination management, and the effect was remarkable.

Tumor screening is an important way to find early tumor diseases. The physical examination of tumor patients includes various items, and the physical examination process is complex and takes a long time. Some patients are prone to psychological rejection due to irritability, which affects the quality of physical examination and is likely to cause missing physical examination items [11]. Humanistic health management can optimize the physical examination process by simplifying the unnecessary procedures, informing the optimized physical examination process according to the physical examination items, and thus save time in the physical examination process and improve the work efficiency and work enthusiasm [12]. He Qiyin and other team members confirmed that adopting the health management mode can improve the traditional management mode, reduce the occurrence of confusion and errors of physical examinees through appointment and registration, and reduce the missing items of physical examinees [13]. The missing rate of information in physical examination by adopting humanistic health management physical examination mode was reduced, which showed that humanistic health management physical examination mode can optimize the physical examination process and s, optimize the service process and thus reduce the missing items of physical examination items due to too complicated examination items. In the process of the humanistic health management, a management team was established, and the nursing staff learned the physi-

cal examination knowledge, precautions and other health knowledge training, questions of physical examination were answered by the nurses to improve patients' physical examination and disease attention [14]. Chao Guanqun and others confirmed that nurses in physical examination centers need to constantly improve their nursing knowledge and establish a lifelong learning consciousness, fully study oncology, nursing and other disciplines, to inform medical examinees of tumor diseases, give treatment suggestions, and guide patients to better treatment, which is conducive to increasing patients' mastery of the diseases [7]. Medical examinees had a good grasp of health knowledge under the humanistic health management mode, which showed that humanistic health management mode can significantly increase the health knowledge level of medical examinees, fully embody the modern nursing concept, improve self-protection awareness and achieve early prevention and treatment.

The first-time physical examination individuals have a low understanding of the physical examination process, and many physical examination items may lead to confusion and finally lower the physical examination efficiency [15]. The humanistic health management physical examination mode can improve the self-positioning and work efficiency of nursing staff and save the physical examination time and thus increase the physical examination efficiency [16]. Humanistic health management applies the high-quality humanistic and healthy physical examination management mode to the physical examination process, with an optimized nursing process and nursing scheme, and thus increases the management effect of medical examination and the credibility of physical examination. In this research, the physical examination quality of the experimental group was higher than that of the control group, which showed that physical examination based on the humanistic health management model can improve the physical examination quality. At present, people's requirements for the quality of physical examination are increasing, so the humanistic health management physical examination mode can contribute to not only a higher basic professional ability of nursing staff, but also to higher comprehensive abilities such as assessment and analysis, and constantly expand the orientation role, so that they are able to complete their own work in a multidimensional and efficient way while increasing their sense of responsibility. Zhou Huidi and others have suggested that health management can improve the professional quality of nursing staff in physical examination, benefit their own development and promote the progression of physical examination centers [17], which was similar to the research results of Ma Xiao [18]. Patients with cancer in physical examinations are under great psychological pressure and have serious worries about their physical examination results, which may lead to bad emotions such as panic and anxiety. Patients who have already suffered from cancer diseases may have suicidal thoughts due to fear of illness, body pain and economic pressure [19]. Due to the large number of physical examination personnel and complicated process, there are adverse physical examination events in the physical examination process. The humanistic health management physical examination mode can avoid adverse events as much as possible, reduce nosocomial infection and falls, and reduce physical examination complaints by evaluating the possible risk process. Compared with the control group, there were fewer adverse events in the experimental group, which demonstrated the ability of humanistic health management to improve the professional quality of nursing staff, reduce risks and increase social benefits, so it is worth popularizing.

With the transformation of the modern medical model, the core of nursing management pays more attention to patient satisfaction. Through professional nursing skills, knowledge and enthusiastic service attitudes, humanistic health management physical examination can establish a professional nursing image, improve interchange relationships, and increase the compliance of physical examination [20]. Humanistic health management physical examination can increase the satisfaction from the physical examination by improving the comfort of the physical examination environment and optimizing the physical examination process [21]. Jess Zhang and others indicated that the health management physical examination scheme can reduce physical examination disputes, with the physical examination as the center, create a good physical examination environment, and increase the satisfaction of the physical

examination [22]. Compared with the control group, the satisfaction of the experimental group increased, but there was no statistical difference between the two groups due to the small sample size.

There are some limitations in this tudy. For instance, the number of subjects we collected is relatively small, which may impact the results. Therefore, more experimental data and subjects should be added in future research to provide a more accurate clinical basis for cancer physical examination and nursing.

To sum up, humanistic health management can improve the efficiency of medical examination, the mastery of health knowledge and reduce the rate of missed examination and adverse accidents, thus improving the overall satisfaction of medical examination.

Disclosure of conflict of interest

None.

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