

CONTINUING MEDICAL EDUCATION FOR MEDICAL STAFF OF TERTIARY PUBLIC HOSPITALS RESEARCH ON FACTORS AFFECTING MEDICAL SERVICES

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Abstract

Background: The purpose of this paper is to investigate the factors influencing the impact of continuing medical education (CME) on healthcare services through the mediation of job satisfaction, risk management and team education in a medical university hospital in China. **Objective:** The aim was to investigate the impact of CME on healthcare services after its implementation in these hospitals, and the intermediary mechanisms of employee job satisfaction (PBLI, remuneration, professional identity), risk education (medical errors, risk awareness) and team education. **Methodology:** A mixed study between quantitative and qualitative research was used to collect samples and data using questionnaires and interviews with 600 healthcare workers from the First, Second, Third, Fourth, and Sixth Affiliated Hospitals of Harbin Medical University who participated in CME as the main respondents (including doctors, nurses, pharmacists and technologists), and the samples and data were analyzed through descriptive statistical analysis, reliability analysis, validity analysis, correlation analysis, and five data analysis methods of structural equation modeling. **Finding:** The results show that the positive effect of CME on job satisfaction, risk education and team education is significant, CME not only directly positively affects medical services, but also indirectly enhances medical services through job satisfaction, risk education and team education, CME and job satisfaction have the most significant effect on medical services, and risk education and team education have a relatively small effect, but they are still an important part of enhancing the important part of medical services. **Conclusion/contribution:** This study suggests improving the hospital's continuing medical education management system, establishing personalized CME curriculum design, diversified teaching methods, establishing a perfect evaluation system, incentive mechanism, and transmitting the hospital's values and cultural conceptual aspects through CME to reduce the turnover rate of the medical staff, improve the level of healthcare services, and win a good reputation for the hospital and the trust of patients.

Keywords: Continuing Medical Education; Job Satisfaction; Risk Education; Team Education; Medical Services.

1. INTRODUCTION

Continuing Medical Education (CME) is a type of lifelong education that focuses on learning new theories, knowledge, techniques, and methods after graduating from a medical education program.

In the development of CME, China still lacks a set of effective and perfect management systems, which seriously restricts the development of CME. Although the system of CME in China's domestic hospitals has been established and gradually improved, there is still a huge gap between it and the needs of the reform and development of health undertakings as well as people's ever-increasing demands for health services. This is mainly manifested in the following aspects: unbalanced development, insufficient resources and inefficient utilization, insufficient supervision and management, and quality to be improved. In order to promote the development of CME, it is

necessary to provide reasonable institutional guarantees, and the State should provide nationwide institutional public goods.

This study aims to explore the impact of CME on healthcare services by collecting and analyzing data related to the five affiliated hospitals after the implementation of CME in the first, second, third, fourth and sixth affiliated hospitals of Harbin Medical University, including doctors, nurses, pharmacists, and technologists, with the past one year (October 2022-September 2023) as the time frame of the study. By investigating the analysis and research of employees' gains in CME, we aim to innovatively sort out, generalize, and summarize the impact of innovatively on healthcare services in these five hospitals, so as to provide theoretical basis and practical guidance for improving healthcare services.

Research Question

- 1) What are the positive effects of the CME approach on job satisfaction, risk education and team education and the drivers behind them?
- 2) What is the impact of job satisfaction, risk education and team education on hospital care and the drivers behind them?
- 3) What is the positive effect of CME activities on job satisfaction, risk education and team education, and how do all three factors work together to improve hospital care?

Research Objectives

- 1) To reveal the positive effects of CME activities on job satisfaction, risk education and team education and the driving factors behind them.
- 2) To analyze the impact of job satisfaction, risk education and team education on hospital healthcare services and the drivers behind them.
- 3) To examine the positive effects of CME activities on job satisfaction, risk education and team education and how all three factors work together to enhance hospital healthcare.

2. LITERATURE REVIEW

CME started in the 1950s in China from the continuing education of medical personnel after the founding of the People's Republic of China, and the concept of CME was introduced in the late 1970s and early 1980s. 1991 saw the promulgation of China's first regulatory document on continuing medical education, and 1995 saw the promulgation of the "Provisional Provisions on CME for National Professional and Technical Personnel" by the Ministry of Personnel (MOP), and June 1996 saw the "Establishment of the Committee on CME of the Ministry of Health". In June 1996, the Committee for Continuing Medical Education of the Ministry of Health was established, and in 2000, the Ministry of Health promulgated the Regulations on CME (Trial Implementation).

After nearly 30 years of exploration and practice, medical lifelong education in China has been widely established, with the formation of national and local medical lifelong education committees, which have perfected the approval of programs, the awarding of credits, program management, base construction, evaluation, and file management. CME in China has a well-established organization, rules and regulations, and takes various forms, covering all fields of medicine. CME activities have been carried out nationwide at many levels and in many forms, and have played an irreplaceable role in the progress of medical science, the continuous improvement of the technical level and service capacity of health professionals, and the scientific development of health undertakings.

The diagnosis and treatment level and quality of China's medical personnel are not yet able to meet the needs of social modernization and people's health protection (D. Wu et al., 2021). With the further reform of medical education and medical services, new and higher requirements are put forward for the quality of medical personnel. CME is an important part of medical education, as well as the main way and important means of human resource development. How to correctly position the management of CME, i.e., the position of CME management in the development and construction of hospitals, is related to the overall development of the hospital industry in the future.

CME refers to educational activities for physicians that are designed to maintain, develop, or enhance the knowledge, skills, and professional performance and relationships used by physicians in the delivery of services to patients, the public, or the profession. The goal of CME is to improve healthcare outcomes and patient care by increasing professional (and increasingly inter professional) competence and performance. The endpoints of the survey are physicians and other healthcare professionals, processes, and outcomes. (Kitto, 2013)

As the total body of medical knowledge grows exponentially, there are many areas (e.g., scientific knowledge, technological advances, innovations in clinical practice, and new delivery models) that are critical to physicians, nurses, pharmacists, and technologists regardless of their professional or academic affiliation. Therefore, medical staff participation in CME is a form of continuing professional development. CME is important for medical staff because it helps medical staff maintain up-to-date medical knowledge and skills, improves the quality of care, protects patient safety, and enhances the competitiveness of medical staff's careers. (Kitto, 2015)

We need to be clear about the importance of CME within the healthcare industry. CME is rapidly evolving into competency-based continuing professional development that encompasses rapid changes in medical knowledge and healthcare practitioners, as well as changes in patients and society, healthcare systems, regulatory agencies, and the political environment (Filipe H.P. et al., 2017). According to the 2022 data report published by the Accreditation Council for Continuing Medical Education (ACCME), the number of educational activities accredited by ACCME increased by 13%, from approximately 204,000 in 2021 to 230,000 in 2022, representing the work of 1,620 accredited institutions. However, despite the rapid development and growth of CME, there is still very little research on medical staff CME methodology, i.e., the types of CME activities in which medical staff participate (encompassing both demographic characteristics and professional attributes of the medical staff), and the healthcare services in which they engage.

This study will provide insights into the impact of CME activities on job satisfaction, risk education and team education, and reveal the driving factors behind them. This will help to improve and optimize the design and implementation of the CME approach, and to increase its attractiveness and practical effects on medical staff. By analyzing the impact of job satisfaction, risk education and team education on hospital medical services and the driving factors behind them, this study will enrich the theoretical system in the field of medical service quality. The results of the study will help guide hospital administrators to focus on these three factors so as to improve the quality of medical services.

3. METHODOLOGY

The research paradigm of this study is divided into four parts: a survey of CME (seven-point rating scale), a survey of job satisfaction, risk education and team education (seven-point rating scale), a survey of medical services (seven-point rating scale), and basic information collection. In terms of the type of research, this paper chose correlational studies to describe the relationship between the independent and dependent variables and identified the mediating variable factors of job satisfaction, risk management and team education.

This study is a mixed research between quantitative and qualitative research. In terms of quantitative research, this study collected data on independent, mediating and dependent variables by means of questionnaires, and analyzed the data through five data analysis methods: descriptive statistical analysis, reliability analysis, validity analysis, correlation analysis and structural equation modeling. For the qualitative study, the researcher used in-depth interview method to collect data from 20 individuals. The researcher went into five hospitals to conduct in-depth interviews through purposive sampling to analyze the research model of this paper and to verify the relationship between CME and healthcare services with the results of the people and samples interviewed in the field.

Due to the large number of medical staff in the five hospitals, this paper used simple random sampling to collect data, with a sample size of 600 respondents covering doctors, nurses, pharmacists and technicians, sampled from medical staff who had served in the five hospitals for three years.

4. RESULTS

4.1 Demographic Information

Of the 600 valid questionnaires, male medical staff accounted for about 46.5% (279) and female medical staff accounted for about 53.5% (321), showing that there were slightly more women than men in the survey sample. This gender ratio reflects the current situation of gender distribution among medical staff in tertiary public hospitals, and provides basic data for the subsequent analysis of the differences in gender factors on the participation and effectiveness of continuing education.

The age distribution showed that the percentage of young medical staff aged 22-25 was 16.16%, indicating that young medical staff accounted for a certain proportion of the sample. Further age segmentation will help to understand different age groups, the needs and feedback of medical staff on continuing medical education, which is important for the development of more targeted continuing education strategies.

4.2 Descriptive Statistics of Variables

Regarding the descriptive statistical analysis of CME, based on a sample of 600 individuals covering five educational dimensions (professional conferences, in-house training, reading printed educational materials, online professional courses, professionally based face-to-face courses), the data demonstrated minimum, maximum, mean, standard deviation, and median values of continuing medical education. The mean values ranged from 4.667 to 4.907, showing an overall relatively good level. Descriptive statistical analysis on job satisfaction, based on 600 samples covering 9 dimensions: PBLI (identify areas for improvement, engage in learning, apply new knowledge and skills to practice, check for improvement), remuneration (payroll, bonus, welfare), and professional identity (expertise and skills, teamwork), the data demonstrates minimum, maximum, and mean values of job satisfaction, standard deviation and median. The mean values ranged from 4.680 to 4.903, showing an overall relatively good level.

Regarding the descriptive statistical analysis of risk education, based on 600 samples covering six dimensions: medical error (medical knowledge and technology, use of medical equipment, quality of medical services) and risk awareness (identifying medical risks, assessing medical risks, controlling medical risks), the data demonstrated minimum, maximum, mean, standard deviation and median values of risk education. The mean values ranged from 4.733 to 4.867, showing an overall relatively good level. Descriptive statistical analysis on team education, based on 600 samples covering 3 dimensions: cooperative education, organizational culture, and leadership, the data demonstrated minimum, maximum, mean, standard deviation, and median values for team education. The mean values ranged from 4.702 to 4.820, showing an overall relatively good level. Descriptive statistical analysis on medical services, based on 600 samples covering 3 service dimensions: KT, PS, QI, the data demonstrated minimum, maximum, mean, standard deviation, and median values of medical services. The mean values ranged from 4.708 to 4.875, showing an overall relatively good level.

4.3 Reliability analysis of variables

Table 1: Results of the Test of Reliability of the Summary Table (n=600)

Latent variables variables	Measurement items	Cronbach α coefficient
CME	X11-X15	0.961
Job satisfaction	M11-M19	0.975
Risk education	M21-M26	0.992
Team Education	M31-M33	0.882
Medical service	Y11-Y13	0.934

The results of the test of the reliability of the summary table show that the composite reliability of the 600 questionnaires exceeded 0.9, indicating that the reliability of the questionnaires is very satisfactory. The Corrected Item Total Correlation (CITC) values ranged from 0.649 to 0.733 (>0.3) indicating that each item had moderate to strong correlation items with the total score of the rest of the items, which implies that all the questions contributed positively to the measured constructs and were consistent with the overall scale.

4.4 Validity Analysis of Variables

Table 2: Results of the Test of Validity of the Summary Table (n=600)

KMO value		0.988
Bartlett Sphericity Check	Approximate chi-square	42221.023
	<i>df</i>	4950
	p-value	0

From the results of the test of the validity of the summary table, it can be seen that the KMO sampling adequacy measure for the 600 sample questionnaire is 0.988, which is much higher than the minimum acceptable value of 0.5, a value that indicates that the sample size is sufficient for the analysis and that the pattern of correlations is relatively compact, making the factor analysis suitable for this data set. The Bartlett's test yields an approximate chi-square value of 8539.844, which is highly significant.

4.5 Correlation Analysis of Variables

Regarding the correlation analysis of the variables, Pearson's correlation coefficient was used to indicate the strength of the correlation, and the value of the correlation coefficient between job satisfaction and CME was 0.959, the value of the correlation coefficient between risk education and CME was 0.941, the value of the correlation coefficient between team education and CME was 0.916, and the value of the correlation coefficient between MS and job satisfaction was 0.944, the value of correlation coefficient between MS and risk education is 0.926, the value of correlation coefficient between MS and team education is 0.899, and the value of correlation coefficient between MS and CME is 0.948. All the above seven items show significance at 0.01 level, thus indicating that there is a significant positive correlation between all the variables.

4.6 Path Analysis of Variables

Table 3: Path-tested Effects of CME on Factors Influencing MS (n=600)

Table summarizing model regression coefficients							
X	→	Y	Unstandardized path coefficients	SE	z (CR value)	p	Standardized path factor
CME	→	Job satisfaction	0.951	0.011	82.923	0	0.959
CME	→	Risk education	0.959	0.014	68.06	0	0.941
CME	→	Team education	0.96	0.017	56.042	0	0.916
CME	→	MS	0.406	0.059	6.845	0	0.403
Job satisfaction	→	MS	0.336	0.042	8.013	0	0.335
Risk education	→	MS	0.161	0.034	4.725	0	0.163
Team education	→	MS	0.082	0.028	2.91	0.004	0.085

Regarding the path analysis of CME on job satisfaction influencing factors, it can be seen from the above table that: the standardized path coefficient value of CME on job satisfaction influence is $0.959 > 0$ and this path shows significance at the 0.01 level ($z=82.923$, $p=0.000 < 0.01$), thus suggesting that CME will have a significant positive influence relationship on job satisfaction.

The standardized path coefficient value of CME on risk education is $0.941 > 0$ and this path shows significance at the 0.01 level ($z=68.060$, $p=0.000 < 0.01$), thus indicating that CME will have a significant positive impact on risk education.

The standardized path coefficient value of CME on team education is $0.916 > 0$ and this path shows significance at the 0.01 level ($z=56.042$, $p=0.000 < 0.01$), thus suggesting that CME will have a significant positive impact relationship on team education.

The standardized path coefficient value of CME influence on MS is $0.403 > 0$ and this path shows significance at 0.01 level ($z=6.845$, $p=0.000 < 0.01$), thus indicating that CME will have a significant positive influence on healthcare services.

The standardized path coefficient value of job satisfaction on MS is $0.330 > 0$ and this path shows significance at the 0.01 level ($z=8.013$, $p=0.000 < 0.01$), thus indicating that job satisfaction will have a significant positive impact on healthcare services.

The standardized path coefficient value of the impact of risk education on MS is $0.163 > 0$ and this path shows significance at the 0.01 level ($z=4.725$, $p=0.000 < 0.01$), thus indicating that risk education has a significant positive impact on healthcare services.

The standardized path coefficient value of the impact of team education on MS is $0.085 > 0$ and this path shows significance at the 0.01 level ($z=2.910$, $p=0.004 < 0.01$), thus indicating that team education will have a significant positive impact relationship on healthcare services.

4.7 Mediation Analysis of Variables

Table 4: Test Effects of CME on Mediating Factors Influencing MS (n=600)

Summary of the results of the intermediation test										
Term	c Total effect	a	b	a*b Interme- diate effect value	a*b (Boot SE)	a*b (z- value)	a*b (p- value)	a*b (95% Boot CI)	c' Direct effect	Test Conclusion
CME=>Job Satisfaction=> MS	0.959 **	0.951 **	0.336 **	0.319	0.044	7.289	0	0.230 ~ 0.407	0.406 **	Part of an intermediary
CME => Risk Education => MS	0.959 **	0.959 **	0.161 **	0.155	0.035	4.357	0	0.085 ~ 0.218	0.406 **	Part of an intermediary
CME=>Team Education=> MS	0.959 **	0.960 **	0.082 **	0.078	0.029	2.675	0.007	0.024 ~ 0.134	0.406 **	Part of an intermediary

* $p < 0.05$ ** $p < 0.01$

Regarding the mediation analysis, the c-value of the models CME=>Job Satisfaction=>MS, CME=>Risk Education=>MS, and CME=>Team Education=>MS is 0.959, which means that CME has a significant positive effect on MS, and this effect is statistically significant ($p < 0.01$).

The findings of all the models point to "partial mediation", which means that CME has a positive effect on MS through job satisfaction, risk education and team education, and CME also has a positive effect on MS directly.

4.8 Structural Equation Modeling (SEM) Analysis

Table 5: Effect of Model Regression Coefficients Testing the effect of CME on MS Influencing Factors (n=600)

Table summarizing model regression coefficients							
X	→	Y	Unstandardized regression coefficients	SE	z (CR value)	p	Standardized regression coefficient
CME	→	Job satisfaction	0.891	0.06	14.813	0	1
CME	→	Risk education	1.008	0.063	16.001	0	1
CME	→	Team education	1.078	0.064	16.759	0	1
CME	→	MS	0.314	0.012	25.663	0	0.288
Job satisfaction	→	MS	0.158	0.011	14.462	0	0.129
Risk education	→	MS	0.393	0.012	31.88	0	0.364
Team education	→	MS	0.221	0.013	16.763	0	0.219

Regarding the Structural Equation Modeling (SEM) analysis, the table above shows that the effect of CME on job satisfaction: the unstandardized regression coefficient is 0.891, the standard error is 0.06, the z-value is 14.813, and the p-value is 0.0, and the standardized regression coefficient is 1. This indicates that CME has a significant positive effect on work, and that this relationship is statistically significant.

Effect of CME on risk education: The unstandardized regression coefficient is 1.008, standard error is 0.063, z-value is 16.001, p-value is 0.0, and the standardized regression coefficient is also 1. This suggests that there is a significant positive effect of CME on risk, and this relationship is statistically significant.

Effect of CME on team education: unstandardized regression coefficient is 1.078, standard error is 0.064, z-value is 16.759, p-value is 0.0, and standardized regression coefficient is 1. This indicates that there is a significant positive effect of CME on the team and this relationship is statistically significant.

The effect of CME on MS: unstandardized regression coefficient is 0.314, standard error is 0.012, z-value is 25.663, p-value is 0.0 and standardized regression coefficient is 0.288. this indicates that CME has a significant positive effect on service, but its influence is small in relation to work, risk and team.

The effect of job satisfaction on MS: significantly positively affects healthcare services, $B=0.158$, $p=0$, $\beta=0.129$.

The effect of risk education on MS: significantly positively affects healthcare services, $B=0.393$, $p=0$, $\beta=0.364$.

The effect of team education on MS: significantly positively affects healthcare services, $B=0.221$, $p=0$, $\beta=0.219$.

The results of the study showed that: the effect of CME on job satisfaction: significantly positively affects job satisfaction, $B=0.891$, $p=0$, $\beta=1$; the effect of CME on risk education: significantly positively affects risk education, $B=1.008$, $p=0$, $\beta=1$; the effect of CME on team education: significantly positively affects team education, $B=1.078$, $p=0$, $\beta=1$; the effect of job satisfaction on MS: significantly positively affects healthcare, $B=0.158$, $p=0$, $\beta=0.129$; risk education on MS: significantly positively affects healthcare, $B=0.393$, $p=0$, $\beta=0.364$; job satisfaction on MS: significantly positively affects healthcare, $B=0.221$, $p=0$, $\beta=0.219$; Effect of CME on MS: significantly positively affects healthcare services, $B=0.314$, $p=0$, $\beta=0.288$.

5. DISCUSSION AND CONCLUSIONS

5.1 To Reveal the Positive Effects of CME Activities on Job Satisfaction, Risk Education and Team Education and the Drivers Behind Them.

The positive effect of CME on job satisfaction is significant and this finding reveals the important role of CME in enhancing job satisfaction among healthcare workers.

By participating in CME, healthcare professionals are able to continue to learn and master the latest medical knowledge and skills, which will directly enhance their ability to perform their jobs. By providing up-to-date medical knowledge and skills training, CME helps healthcare workers to enhance their professional competence, improve work efficiency and quality, and thus increase job satisfaction.

The positive effect of CME on risk education was significant, a finding that underscores the importance of CME in enhancing healthcare professionals' knowledge of medical errors and risk awareness. By participating in CME, healthcare professionals are able to better understand and identify medical risks and increase their awareness of the prevention of medical errors, thus reducing the occurrence of medical errors. CME also provides case studies of medical errors and experience sharing so that healthcare professionals can learn from the experiences of others and improve their own risk prevention awareness.

CME also emphasizes the importance of teamwork and communication in risk management. Healthcare professionals need to work closely with other healthcare professionals to share information and experiences to improve coordination and consistency of care. Through CME, healthcare professionals are able to learn effective communication skills and teamwork strategies to improve the healthcare team's overall risk management and response capabilities.

5.2 To Analyze the Impact of Job Satisfaction, Risk Education and Team Education on Hospital MS and the Drivers Behind Them.

The results of this study reveal the multiple mechanisms of CME's action in MS enhancement. CME not only directly positively affects MS, but also indirectly enhances MS through three mediating variables: job satisfaction, risk education, and team education. This multilevel influence mechanism demonstrates the far-reaching impact of CME in the MS industry.

Increased job satisfaction has a positive effect on MS. When healthcare workers are satisfied with their work, they are more actively engaged in their work, and this positive work attitude directly affects the attitude and quality of MS. A satisfied work environment can stimulate the potential of healthcare workers, making them more focused on patient care and improving work efficiency and quality. In addition, increased job satisfaction can also reduce the turnover rate of healthcare workers and maintain the stability and continuity of the healthcare team, thus further improving the level of MS.

The improvement of risk education has a significant impact on the safety and quality of MS. Through CME, healthcare professionals are able to gain a deeper understanding of medical risks and increase their awareness of the prevention of medical errors. This enhanced risk awareness enables healthcare workers to pay more attention to details in their work and take preventive measures to reduce the occurrence of medical errors. Therefore, the enhancement of risk education helps to improve the safety of MS, reduce patient harm, and enhance patient trust and satisfaction with MS.

The enhancement of team education positively contributes to the synergy and effectiveness of healthcare delivery. Through CME, healthcare workers are able to learn the importance and skills of teamwork and improve organizational cultural identity and leadership skills. This enhancement of team education helps to establish a favorable teamwork atmosphere and promotes communication and collaboration among healthcare professionals. Close cooperation among team members can improve the coordination and consistency of MS and enhance the effectiveness and efficiency of MS.

5.3 To Study the Positive Effects of CME Activities on Job Satisfaction, Risk Education and Team Education, and how all three Factors Work Together to Enhance MS.

CME indirectly enhances healthcare delivery through three mediating variables: job satisfaction, risk education, and team education. These three factors work together to promote the improvement of MS. Therefore, hospital administrators should emphasize CME and provide diverse learning opportunities for healthcare workers to enhance their competence in job satisfaction, risk education and team education. At the same time, the government and society should also increase their support and investment in CME to provide a better learning and growth environment for healthcare workers, and jointly promote the progress of the MS industry.

CME plays a crucial role in the MS industry. It not only directly improves the professional knowledge and skills of healthcare workers, but also indirectly promotes the overall improvement of MS by enhancing three aspects: job satisfaction, risk education and team education. This multidimensional enhancement role not only improves the quality of MS, but also enhances patient satisfaction, laying a solid foundation for the sustainable development of hospitals.

Hospital administrators should recognize the importance of CME in improving healthcare delivery and make it an important part of the hospital's strategic development. Administrators should ensure the diversity and quality of CME programs to meet the professional development needs of different healthcare professionals. By providing diverse CME opportunities such as online courses, seminars, workshops, and simulation training, hospitals can help healthcare professionals

continuously improve their professional competencies and adapt to changes and developments in the MS industry. Hospital administrators should ensure that the CME program is aligned with the overall strategic goals of the hospital in order to promote the personal development of healthcare workers and the overall improvement of the hospital's service quality. Through CME, hospitals are able to develop more healthcare professionals with leadership, innovation and professionalism, thus improving the service level of the entire healthcare team. At the same time, hospital administrators should pay attention to the evaluation and feedback of the CME program to ensure its continuous improvement and adaptation to the actual needs of healthcare workers.

The government and society should also increase their support and investment in CME. The government can encourage hospitals and healthcare organizations to carry out CME programs by formulating relevant policies, providing financial support and tax incentives. Society can provide resources and support for CME programs by providing volunteer services, donations and partnerships. Through the joint efforts of the government and society, a better learning and growth environment can be provided for healthcare professionals and the overall progress of the MS industry can be promoted.

The importance of CME in the MS industry cannot be ignored. Hospital administrators should pay attention to the development of CME and provide diverse CME opportunities to promote the professional development of healthcare workers, improve the quality of healthcare services, enhance patient satisfaction, and promote the sustainable development of hospitals. At the same time, the government and society should also increase their support and investment in CME to provide a better learning and growth environment for healthcare professionals and jointly promote the progress of the MS industry. Through such multifaceted cooperation and efforts, we can look forward to a more professional, efficient and humanized healthcare system that provides better MS to patients.

CME had a significant positive effect on MS ($B=0.406$, $p<0.01$, $\beta=0.402$), a finding that highlights the central role of CME in improving the quality of MS.

Job satisfaction has a significant positive effect on MS ($B=0.336$, $p<0.01$, $\beta=0.329$), a finding that emphasizes the importance of job satisfaction among healthcare workers in improving the quality of MS.

Risk education has a significant positive effect on MS ($B=0.161$, $p<0.01$, $\beta=0.162$), a finding that emphasizes the important role of risk education in improving the quality of MS.

The effect of team education on MS was relatively small, but it also had a significant positive effect ($B=0.082$, $p<0.01$, $\beta=0.085$). This finding emphasizes the important role of team education in improving the quality of MS.

The results of this study indicate that CME, job satisfaction, risk education and team education are all important factors in improving the quality of MS. Among them, CME and job satisfaction have the most significant impact, which emphasizes the important role of continuing education in improving the performance and service quality of medical staff. Risk education and team education, although relatively less influential, remain important components in improving service

quality. Therefore, hospital administrators should consider these factors and take comprehensive measures, including providing high-quality CME, focusing on medical staff job satisfaction, and enhancing risk education and team training, to improve MS and meet patient needs.

The results of this study show that CME has a complete effect (standardized coefficient of 1) on job satisfaction, risk education, and team education in the model, but also has a positive and significant, but relatively small, effect on MS. This may mean that although continuing medical education has a direct and significant effect on improving job satisfaction, risk education and team education of medical staff, these factors have a relatively more indirect or smaller effect on the ultimate improvement of service quality.

Although the effect of CME on MS is also positive and significant, its relatively small standardized regression coefficient (0.288) suggests that CME has a relatively indirect or small effect on the level of MS.

Further analysis of the impact of job satisfaction, risk education and team education on healthcare services shows that all three factors have a significant positive impact on healthcare services.

CME has had a significant effect in improving the personal competence and quality of medical staff, but to further enhance the level of MS, it is necessary to focus on and improve the overall working environment, risk management and teamwork of medical staff.

CME plays an important role in improving MS. Through CME, medical staff can improve their professional knowledge and skills, which can lead to increased job satisfaction, risk awareness and teamwork. However, in order to further improve the level of MS, it is also necessary to focus on the overall working environment, risk management and teamwork of medical staff. Therefore, hospital administrators should pay attention to the implementation of CME and take comprehensive measures to improve MS and meet patient needs.

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