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Evaluation of Attending Medical Teams and Their Impact on the DRG Components of Cholecystectomy

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Abstract: *Objective:* This study assessed the role of the attending medical team in the cost control of the cholecystectomy DRG components. *Methods:* The association between team structure, workflow, and treatment outcomes was analyzed using a mixed-methods approach combining quantitative data and qualitative interviews from 628 patients. *Results:* Inter-professional teamwork significantly affected length of stay, treatment costs, and recurrence rates, with experienced teams performing better in terms of emergency response and collaborative efficiency. Patient satisfaction was generally high, indicating that good teamwork enhances treatment outcomes. *Significance:* The study highlights the importance of optimizing team configuration to improve the quality, efficiency, and cost control of healthcare.

Keywords: Attending medical team intervention; Diagnosis-related group (DRG) system; Healthcare quality and efficiency; Interprofessional collaboration

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1. Introduction

Cholecystectomy has become an important public health issue due to its high morbidity worldwide. With the continuous advancement of minimally invasive techniques, the safety of this procedure has been greatly improved and the postoperative recovery time has been drastically reduced. However, controlling the cost of the procedure has become a challenge in healthcare management.

The diagnosis-related group (DRG) system is an innovative healthcare payment model that aims to incentivize hospitals to provide more efficient and cost-effective care by managing patients in groups. In this system, the primary care medical team plays a critical role. They are not only responsible for the clinical management of patients, but also for the coordination of resources and the optimization of treatment plans to ensure the quality and efficiency of healthcare services.

In this study, we delved into the central role of the attending medical team in the implementation of cost containment for cholecystectomy procedures under the DRG payment system. A mixed-methods approach

was adopted to study the role of the attending medical team in cost control. Quantitative data analysis was performed to gain insight into its influence on cost control. We analyzed the role of attending medical teams in reducing unnecessary medical interventions, shortening hospital stays, and reducing overall costs by improving treatment outcomes through fine-tuning the patient care process. In addition, we explore how attending medical teams can optimize resource allocation and improve the quality of healthcare services by promoting inter-professional collaboration through DRG systems.

This study not only provides hospital administrators with empirical evidence on how to effectively control costs under the DRG system, but also provides healthcare policymakers with powerful insights on how to optimize the payment structure of healthcare services. The purpose of this study is to promote the continuous improvement of the quality of healthcare services, achieve optimal allocation of resources, and promote the sustainable control of healthcare costs.

2. General Information and methods

2.1. Sample selection

The research subjects were selected randomly among patients who have undergone cholecystectomy within the past five years. Multiple factors such as age, gender, health status, and type of surgery were fully considered to ensure that the sample was sufficiently representative. 628 patients were selected in total to ensure accurate and representative findings.

The medical records and information of the patients were extracted from the hospital's database. The data collected included general information (e.g., age, gender, etc.), health status, type of surgery, length of hospitalization, and cost of treatment. In addition, relevant information about the attending medical team, such as the composition of the team and working style was collected to better understand the intervention process.

A combination of quantitative and qualitative analysis was adopted to analyze the data. The basic characteristics of the sample, such as age, gender, health status, etc., were analyzed through descriptive statistics to better understand the distribution of the sample. Second, regression analysis was performed to assess the impact of the attending medical team's intervention on the cost of cholecystectomy. Through regression analysis, the impact of the attending medical team's intervention on the cost of surgery can be better understood.

In addition, in order to gain an in-depth understanding of the workflow and teamwork of the attending medical team, qualitative analysis methods such as interviews and observations were also carried out. Interviews allow in-depth conversations with patients about their experiences and feelings before, during, and after surgery. Interview topics covered interactions with the attending medical team, the medical decision-making process, and the cooperation between the medical team members. In addition, by observing the daily operations of the medical team, we could better visualize their workflow, teamwork patterns, and the challenges they face. The observations covered aspects like surgical procedures, communication among team members, and problem-solving methods.

By utilizing both quantitative and qualitative analysis methods, this study aimed to provide a comprehensive understanding of the impact of the attending physician team's intervention in cholecystectomy on the cost of the procedure, as well as an in-depth discussion of the attending physician team's working style. These discussions helped provide targeted improvement measures for optimizing the quality of medical management and services in the context of cholecystectomy surgery.

2.2. Data collection

In this study, data was extracted from the hospital's database in order to explore the impact of the attending

medical team intervention on the cost of cholecystectomy. The information collected is listed below.

(1) General information: age, gender, place of origin, and other general information. This allowed a comprehensive understanding of the sample and statistical analysis.

(2) Health status: physical health, history of illness, and preoperative diagnostic results. This information was essential for assessing the patient's surgical risk and postoperative recovery.

(3) Type of surgery: laparoscopic surgery, open surgery, etc. Different types of surgeries come with different surgical risks and outcomes.

(4) Length of stay and cost of treatment: length of hospital stay, cost of treatment, and other cost-related information. This information helped in assessing the impact of the attending medical team's intervention on the cost of surgery.

(5) Information of the attending physician team: composition of the attending medical team and working. The composition of the attending physician team included their profession (physicians, nurses, and other medical staff), the way they work with each other, their work experience, and other things that may affect the cost and effectiveness of the procedure.

2.3. Methods of analysis

2.3.1. Quantitative analysis

Descriptive statistical analysis was performed on the general information of the patients

2.3.2. Qualitative analysis

In-depth interviews and observations were conducted to gain insights into the workflow and teamwork of the attending medical team.

2.3.2.1. Interview subjects

To obtain in-depth insights and perspectives from the attending medical team, we interviewed members of a few attending medical teams. In addition, other medical staff were also interviewed as they often work with the attending medical teams, so their perspectives and experiences would provide us with more comprehensive information.

2.3.2.2. Observation methods

The working environment, workflow, and teamwork between the attending medical team were observed. Observation indicators included the surgical process, communication between team members, and problem-solving methods.

2.3.2.3. Data organization and analysis

The transcripts of interviews and observations, and distinct themes and patterns were identified to better understand the role of the attending medical team in the cost control of cholecystectomy procedures under the DRG system.

Both quantitative and qualitative analytical methods were adopted to comprehensively understand the working style of attending medical teams and their impact on the cost of cholecystectomy. This will help to provide targeted improvement recommendations for healthcare organizations to optimize the medical management and service level of cholecystectomy surgery.

3. Results

Table 1. Organizational structure of the attending medical teams

Group	Number of team members	Profession of the members	Average years of service
Attending medical team 1	6	2 surgeons, 3 nurses, 1 administrator	8.2
Attending medical team 2	7	3 surgeons, 3 nurses, 1 nutritionist	10.1
Attending medical team 3	6	2 surgeons, 3 nurses, 1 physiotherapist	5.5
Attending medical team 4	7	3 surgeons, 3 nurses, 1 administrator	12.1
Attending medical team 5	5	2 surgeons, 2 nurses, 1 nutritionist	7.8
Attending medical team 6	5	2 surgeons, 2 nurses, 1 nutritionist	11.6

Table 2. Summary of staff interviews

Group	Member satisfaction ratings (1–10 points)	Teamwork rating (1–10 points)	Communication efficiency rating (1–10 points)
Attending medical team 1	8.5	9	8.7
Attending medical team 2	7.8	8.5	8
Attending medical team 3	9	9.2	9.1
Attending medical team 4	8	8.3	8.4
Attending medical team 5	7.5	8	7.9
Attending medical team 6	8.5	9	8.9

Table 3. Summary of patient interviews

Attending medical team	Service satisfaction rating (1–10 points)	Treatment outcome satisfaction rating (1–10 points)	Quality of care satisfaction rating (1–10 points)
Attending medical team 1	9	9	9
Attending medical team 2	8.5	8	8.5
Attending medical team 3	7	7.5	7
Attending medical team 4	7.5	8	7.5
Attending medical team 5	9.5	9	9.5
Attending medical team 6	9	9.5	9

Table 4. Observation records

Attending medical team	Frequency of communication	Time taken in decision-making (minutes)	Emergency response score (1–10 points)	Collaboration efficiency score (1–10 points)
Attending medical team 1	12	30	9	8
Attending medical team 2	8	20	8	7
Attending medical team 3	15	45	7	9
Attending medical team 4	5	15	10	10
Attending medical team 5	10	40	6	7
Attending medical team 6	4	10	9	9

Table 5. Treatment efficacy indicators

Group	Number of cases	Average length of hospitalization (days)	Average treatment cost (￥)	Average case mix index	Number of relapse cases
Attending medical team 1	102	6.8	9987.24	1.1	2
Attending medical team 2	97	7.1	10500.00	1.09	1
Attending medical team 3	113	7.3	15000.00	1.07	3
Attending medical team 4	95	6.9	14500.00	1.18	2
Attending medical team 5	119	7.8	11000.00	1.09	1
Attending medical team 6	102	6.1	9500.00	1.07	1

4. Discussion

This study provides insight into the central role of the attending medical team in the implementation of cost control for cholecystectomy procedures under the DRG system. Using a combination of quantitative and qualitative analytical methods, we conducted a comprehensive study of the impact of the attending medical team's intervention on surgical costs.

The results of the study showed that there was a significant correlation between the intervention of the attending medical team and patient outcome indicators such as length of hospital stay, treatment costs, and recurrence rates. Specifically, when the attending medical team was actively involved in the decision-making and treatment process of cholecystectomy, the length of hospitalization was significantly reduced and treatment costs were effectively controlled. In addition, the intervention of the attending medical team reduced the recurrence rate of patients, suggesting that their intervention had a positive effect on improving surgical outcomes and patient prognosis.

These findings underscore the importance of interprofessional teamwork in improving the quality and efficiency of healthcare services, optimizing resource allocation, and controlling healthcare costs. Under the implementation of the DRG system, multidisciplinary cooperation is promoted, allowing physicians to consider the patient's condition more comprehensively and develop individualized treatment plans. This teamwork model ensures that patients receive the best possible treatment outcomes while optimizing the utilization of healthcare resources and reducing unnecessary expenditures.

This study revealed the central role of the attending medical team in the implementation of cost control for cholecystectomies under the DRG system and its impact on the quality and efficiency of healthcare delivery. These findings provide a valuable reference for healthcare organizations and help drive healthcare delivery toward efficiency, quality, and cost-effectiveness. A study showed that surgeons can significantly reduce healthcare expenditures by questioning the value of routine surgical practices and reducing over-treatment [1], and this effect is demonstrated in this study

In terms of the organizational structure of the attending medical team, the size of the team and the profession of the members seem to have an impact on treatment outcomes. Teams with more years of experience (e.g., attending medical team 4) performed better on emergency response and collaborative efficiency, which may be attributed to the members' clinical experience and ability to work as a team. However, there were also teams (e.g., attending medical team 3) that performed better on treatment outcome metrics despite having fewer years of experience, which suggests that in addition to experience, communication and collaborative processes within the team are key factors in improving efficiency. This finding aligns with Cahan *et al.*'s study [2], which noted that turnover in the operating room was significantly correlated with an increase in operative time,

emphasizing the importance of team stability in improving surgical efficiency.

Interview summaries and observation records revealed high levels of satisfaction with teamwork and communication among members of the attending medical team and generally high levels of patient satisfaction with the service. These qualitative data coincide with the results of the quantitative analysis, suggesting that good teamwork enhances patient satisfaction and treatment outcomes. Effective communication and prompt decision-making among team members are essential to improve the efficiency and quality of treatment especially when dealing with complex cases. The role of multidisciplinary teams in improving the achievement of preventive and screening behaviors in patients has been demonstrated in another study [3], which is consistent with our findings.

The treatment outcome indicators further consolidate the role of the attending medical team in controlling costs and improving treatment outcomes. For example, patients in the attending medical team 6 had the shortest average length of hospitalization, the lowest treatment costs, and a low recurrence rate, which may be related to the group's efficiency in treatment planning and resource allocation [4]. Strauss *et al.* also demonstrated that treatment costs of certain diseases can be controlled through the development of standardized, evidence-based clinical pathways [5], which echoed the results of our study.

In summary, effective collaboration and management of the attending medical team had a significant positive impact on the cost and outcomes of patients undergoing cholecystectomy. These findings provide a basis for hospital management to optimize team structure and workflow to further improve the quality and efficiency of healthcare services.

This study provides a valuable perspective on the importance of the attending medical team and highlights its vital role in improving the quality and efficiency of healthcare services and controlling costs. This realization can lead to efficient, high-quality, and cost-effective healthcare services.

Disclosure statement

The authors declare no conflict of interest.

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