Medical Research
Volume 6, Issue 3, 2024, Page 1-6
https://doi.org/10.6913/mrhk.060301

Medical Research

Research on the Application of Mind Map in Emergency Triage of Acute Abdomen

Hebao SHU[1#], Li ZHANG[*]

1.Emergency and Disaster Medical Center, The Seventh Affiliated Hospital of Sun Yat-Sen University, No. 628Zhenyuan Road, Guangming District, Shenzhen, Guangdong, 518107, PR China
*Email:shuhebao@sysush.com, https://orcid.org/0009-0000-7462-4789 *Corresponding author E-mail: zhangli3@sysush.com, https://orcid.org/0009-0002-0888-7075 Emergency and Disaster Medical Center, The Seventh Affiliated Hospital, Sun Yat-sen University, 518107, PR CHINA*

Abstract

Objective: To explore the application effect of Mind Map in the emergency triage of Acute Abdomen. **Methods:** Thirty-six patients with Acute Abdomen admitted to the emergency department of our hospital from July 2021 to December 2021 were set as the control group, during which the conventional emergency triage process was implemented. Another 36 patients with Acute Abdomen admitted to the emergency department of our hospital from January 2022 to June 2022 were set as the experimental group, during which the Mind Map tool was used for triage. The accuracy of triage and the time taken for triage assessment were compared between the two groups. **Results:** The accuracy of pre-triage classification and grading in the experimental group was significantly higher than that in the control group, and the time taken for triage assessment was significantly shorter than that in the control group. **Conclusion:** The pre-triage process based on Mind Map can significantly improve the accuracy and efficiency of emergency triage for Acute Abdomen, achieving standardized management of Acute Abdomen triage, and is worth promoting.

Keywords Acute Abdomen; Mind Map; Emergency Triage

Acute Abdomen is a critical condition characterized by sudden onset abdominal pain, with features such as rapid onset, complex condition, and swift progression. Delayed diagnosis and treatment can cause severe harm, even death[1]. Therefore, rapid and accurate triage and early treatment are crucial. The Mind Map, an emerging teaching tool in recent years, organizes and summarizes dull content by combining text and images, presenting hierarchical relationships of various themes to facilitate memory and learning for learners[2]. This study introduces the Mind Map tool to assist emergency department nursing staff in quickly and accurately triaging Acute Abdomen, thereby making the triage process more standardized and regulated. The specific report is as follows.

1 Data and Methods

1.1 Clinical Data

From July 2021 to December 2021, 36 patients with Acute Abdomen admitted to our hospital's emergency department were designated as the control group, including 18 males and 18 females, aged 23 to 75 years, with an average age of (42.83±14.25) years. Another 36 patients with Acute Abdomen admitted to our hospital's emergency department from January 2022 to June 2022 were designated as the experimental group, including 17 males and 19 females, aged 21 to 77 years, with an average age of (46.94±17.15) years. There was no significant difference in general data between the two groups ($P > 0.05$). All patients in both groups were older than 14 years and could clearly answer questions related to disease diagnosis and treatment asked by medical staff. Patients whose causes of Acute Abdomen could not be diagnosed or whose case data were incomplete were excluded.

1.2 Methods

The control group implemented the routine emergency triage process, specifically: the emergency nurse, according to the SOAP formula, inquired about the patient's chief complaint, conducted vital signs and related physical examinations, recorded the patient's chief complaint and accompanying symptoms (S), signs and abnormal findings (O), made a preliminary diagnosis (A), and performed injury classification (P), and then triaged the patient.

The experimental group used the Mind Map tool for pre-triage, with specific content as follows:

(1) Establishment of the Mind Map working group: The Mind Map group consists of one emergency department physician, the head nurse, and two nurses. The group members are mainly responsible for creating the Mind Map and providing relevant triage training to the emergency department nursing staff.

(2) Mind Map creation: The Mind Map group reviewed literature and analyzed the current issues in the triage of Acute Abdomen in the hospital's emergency department. They identified "Acute Abdomen Pre-Triage" as the core keyword, branching out into eight primary branches: observation, inquiry, examination, measurement, grading, and departmental classification, each representing the relevant work content of the emergency triage nurses, as shown in Figure 1.

(3) Mind Map training: The Mind Map group first conducted theoretical teaching for the department's nursing staff, explaining the key points and essentials of Acute Abdomen condition

assessment, triage strategies for patients with unclear symptoms or causes, and introduced the content and precautions of each branch of the created Mind Map. Then, they used scenario simulation methods for practical teaching to further consolidate the nurses' proficiency in applying the Mind Map.

(4) Clinical application of the Mind Map: After training, the created Mind Map was printed and laminated, distributed to each nurse (and also shared in the department's WeChat work group), and pasted on the triage desk for easy reference and study by the nurses.

Table 1 Comparison of the Accuracy Rates of Pre-Triage Departmental Classification and Grading Between Two Groups [n (%)]

Group	Number of Cases	Accuracy Rate of Pre-Triage Departmental Classification	Accuracy Rate of Grading
Experimental Group	36	36（100.00）	35（97.22）
Control Group	36	30（83.33）	28（77.78）
P Value		0.025	0.033

1.3 Observation Indicators

Record and compare the pre-triage accuracy rate, grading accuracy rate, and the time required for triage assessment between the two groups. Among them, pre-triage accuracy refers to the triage nurse's ability to accurately direct acute abdomen patients to the appropriate specialty; grading accuracy refers to the triage nurse's ability to accurately distinguish the patient's condition into level 1 (critical), level 2 (severe), level 3 (urgent), and level 4 (non-urgent)[3].

1.4 Statistical Methods

Using SPSS25.0 statistical software, measurement data are described by ($\overline{x} \pm s$) and tested with t-test; count data are described by rate and tested with χ^2 test or Fisher's exact probability method, $P < 0.05$ indicates a statistically significant difference.

2 Results

The pre-triage accuracy rate and grading accuracy rate of the experimental group were significantly higher than those of the control group ($P < 0.05$), as illustrated in Table 1. The triage assessment time for the experimental group was (2.14±0.80) minutes, shorter than that of the control group (2.89±0.98) minutes, with a significant difference ($t = 3.562$, $P = 0.001$).

3 Discussion

Currently, there is no unified standard for the triage of Acute Abdomen in clinical practice. Nurses mainly rely on their professional level and experience for triage, which involves a certain

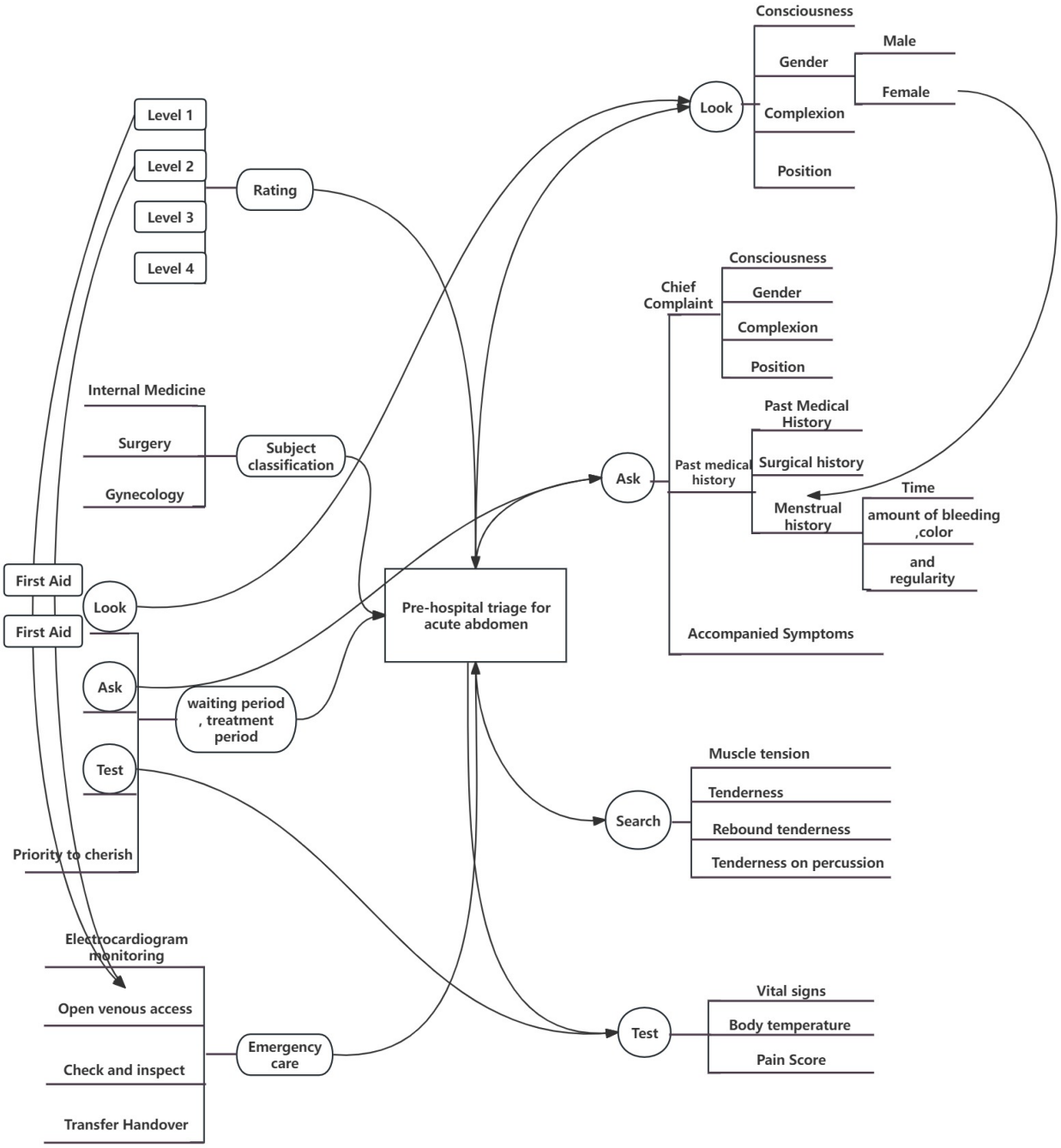

Figure 1: Mind Map for Acute Abdomen Triage

degree of subjectivity and uncertainty. This is especially true for patients with unclear symptoms, or for the elderly and children who may not fully describe their symptoms, leading to potential errors in departmental classification and grading by nurses, thereby missing the optimal treatment time[4]. Mind Map is a training tool that fully integrates reading and thinking, making it easy to follow patterns, allowing learners to quickly grasp the necessary information. It is currently widely used in nursing education, nursing management, and health education[5].

This study applied mind maps to the pre-triage of acute abdomen cases. The mind map group created the mind maps through literature review, current situation analysis, and discussion to ensure the content was systematic and comprehensive. They continuously refined and modified the mind maps in clinical practice to ensure the feasibility of the designed mind maps[6]. The results indicated that the accuracy of pre-triage classification and grading in the experimental group was higher than that in the control group, demonstrating that mind maps can significantly enhance the accuracy of acute abdomen triage. The reason may be that the mind maps clearly present the key points of acute abdomen triage in graphic branches, which are well-organized. This can overcome the shortcomings of conventional emergency triage methods, where scattered inquiry language and unclear thinking lead to incomplete observation and inquiry of medical history. It avoids subjectivity and blindness in triage, quickly and intuitively guides the triage thinking of emergency nurses, and helps improve triage accuracy[7].

In addition, this study also found that the triage time in the experimental group was significantly shorter than that in the control group. The reason is that the Mind Map can help emergency nurses quickly and proficiently master the triage process and emergency handling plan for Acute Abdomen. This allows them to make a quick and accurate preliminary judgment of the patient's condition when receiving patients with Acute Abdomen, thereby shortening the triage time[8]. At the same time, the Mind Map clarifies the key points of triaging Acute Abdomen for emergency nurses, effectively avoiding ineffective communication between nurses and patients, helping to reduce triage assessment time, and facilitating early treatment for patients.

In summary, the pre-triage process based on the Mind Map can significantly improve the accuracy and efficiency of triaging Acute Abdomen in emergency departments, achieving standardized management of Acute Abdomen triage, and is worth promoting.

Article History

Received: July 10, 2024 **Accepted:** July 12, 2024 **Published:** September 30, 2024

References

[1] Zhou Baodong, Xu Honglei, Zhao Sanpeng, et al. Retrospective analysis of the types and diagnosis and treatment of 1979 cases of Acute Abdomen in primary hospitals [J]. Chinese Journal of Integrated Traditional and Western Medicine Surgery, 2019, 25(5): 809-812.

[2] Xu Zhouwei, Chen Weidong, Zhang Jianlin, et al. Application of Symptom-Based Mind Maps Combined with Case-Based Teaching Methods in Clinical Teaching of Acute Abdomen [J]. Chinese Journal of Emergency Medicine, 2022, 42(10): 915-920.

[3] Lü Liqing, Liu Juan. The Impact of Triage Management System on the Accuracy of Triage for Patients with Acute Abdomen [J]. Journal of Practical Clinical Medicine, 2018, 22(20): 58-60.

[4] Wang Qingyan, Liu Xin, Dai Yue, et al. Observation on the combined application of the PQRST Triage Formula and Self-made Abdominal Organ Projection Map in the triage of Acute Abdomen patients [J]. Chinese Journal of Practical Nursing, 2017, 33(34):2691-2693.

[5] Wang Yangyang, Xiang Na, Li Yang. Progress in the application of Mind Map in the teaching of nursing professional courses [J]. Chinese Journal of Modern Nursing, 2020, 26(1):127-131.

[6] Yang Yufang. The impact of Scenario Simulation Drill combined with Mind Map teaching on the quality of Emergency Triage and job competency [J]. Nursing Practice and Research,

2021, 18(2):313-316.
[7] In summary, the pre-triage process based on the Mind Map can significantly improve the accuracy and efficiency of triaging Acute Abdomen in emergency departments, achieving standardized management of Acute Abdomen triage, and is worth promoting.
[8] Sun Xuelian, Gao Wenhui, Chen Ting, et al. Application of Mind Maps in Standardizing the Emergency Triage Process for Acute Abdominal Conditions [J]. Journal of Nursing Continuing Education, 2019, 34(24): 2244-2247.

To Cite This Article Hebao SHU,et al. (2024). Research on the Application of Mind Map in Emergency Triage of Acute Abdomen. *Medical Research*, *6*(3), 1-6. https://doi.org/10.6913/mrhk.060301

Medical Research, ISSN 2664-0333 (print), ISSN 2664-0341 (online), DOI 10.6913/mrhk, a bimonthly, founded on 2018, Indexed by CNKI, Google Scholar, AIRITI, Scilit, CrossRef, Elsevier PlumX, etc., published by Creative Publishing Co., Limited. Email: wtocom@gmail.com, https://mrhk.cc, https://cpcl.hk.