

Original Research Article

Analysis of practical application of nursing management based on network cloud platform in patients with *Mycoplasma pneumonia* treated with dexamethasone and azithromycin

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Abstract

Purpose: To investigate the practical application of nursing management based on network cloud platform in patients with *Mycoplasma pneumonia* (MP) treated with dexamethasone and azithromycin.

Methods: One hundred and twenty MP patients treated with dexamethasone and azithromycin in Xiang Yang No. 1 People's Hospital, Xiang Yang 441000, Hubei Province, China (January 2019 - January 2020) were equally and randomly assigned to groups A and B. Group B adopted routine nursing management, while group A adopted nursing management based on network cloud platform. The nursing work score, nursing management score, incidence of nursing disputes, patient treatment indices, complication rate (CR) and nursing satisfaction were determined and compared between the two groups.

Results: Compared with group B, group A achieved notably higher nursing work score and nursing management score ($p < 0.001$), lower incidence of nursing disputes and CR ($p < 0.05$), better treatment indices ($p < 0.001$) and higher patient satisfaction with nursing ($p < 0.05$).

Conclusion: Nursing management based on network cloud platform optimizes nursing management of MP patients treated with dexamethasone and azithromycin, and it comprehensively enhances nursing quality and nursing effect.

Keywords: Network cloud platform, Nursing management, Dexamethasone, Azithromycin

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INTRODUCTION

Patients suffering from *Mycoplasma pneumonia* (MP) usually present with cough, fever and other clinical manifestations. The disease can be

controlled through systematic treatment, although it triggers poor prognosis of patients, mostly in children [1-3]. Clinical researchers are currently interested in optimization of the overall nursing quality and reduction of the negative

impact of pathogens on patients through scientific and efficient nursing management. Nowadays, with continuous advances in network techniques, many hospitals have preliminarily established a “cloud” nursing management system. This kind of network-based nursing management platform enhances the comprehensive quality of nursing staff, improves their standardized nursing consciousness, and provides a more convenient channel for nursing managers to carry out quality control [4-7]. Based on this, this study was performed to determine actual efficacy of cloud nursing management platform on MP patients treated with dexamethasone and azithromycin.

METHODS

Patient information

One hundred and twenty MP patients treated with dexamethasone and azithromycin in Xiang Yang No. 1 People's Hospital, Xiang Yang 441000, Hubei Province, China (January 2019 - January 2020) were randomly and equally divided into groups A and B. No notable differences in general information were observed between the two groups ($p > 0.05$; Table 1).

Inclusion criteria

Patients who received imaging examination and serum *Mycoplasma pneumoniae* IgM examination, and those who met the diagnostic criteria for MP in internal medicine [8-11] were included in the study. This study received approval from the hospital ethics committee and followed international guidelines. The patients or their families signed informed consent.

Exclusion criteria

Patients with mental problems or who were unable to communicate with others, and patients with other organic diseases, were excluded from the study.

Treatments

Patients in group B received routine nursing management. The nursing staff still followed the nursing management system, adopted the traditional nursing management mode, and properly implemented nursing management. Group A patients received nursing management based on the network cloud platform, which was given through the following specific steps:

(1) Off-the-job training was given to nursing staff participating in the study in order to familiarize themselves with the mode of operation of the network cloud platform, and they were given platform authority to carry out nursing management operation after passing the exam. (2) The hospital admission office was responsible for inputting basic information, and for transmitting the information to the MP disease areas. The staff in this area were also responsible for inputting patients specific information. (3) The staff made full use of section contents of the network cloud platform, such as the evaluation section, the performance assessment section and the nursing quality section.

Under this scheme, nursing managers could standardize the behavior of nursing staff and improve the nursing quality by strengthening the use of the nursing quality section, which was specifically reflected in the fact that the nursing quality section could completely record the nursing operation scores, reports of analysis of nursing complications, and analysis of risk factors in nursing.

Table 1: Comparison of general patient information

Parameters	Group A (n=60)	Group B (n=60)	χ^2/t	P-value
Gender			0.034	0.855
Male	32	33		
Female	28	27		
Age (years)				
Age range	14-74	14-74		
Mean age	38.2±5.6	38.9±5.2	0.710	0.479
Hypertension	10	9	0.063	0.803
Coronary disease	6	7	0.086	0.769
Highest body temperature (°C)	39.2±0.8	39.4±0.7	1.457	0.148
Pneumonia severity index	42.5±20.1	42.6±20.8	0.027	0.979
CURB-65 score for pneumonia	0.74±0.32	0.76±0.21	0.405	0.686

The nursing staff could reduce the nursing risk and optimize the nursing quality through evidence-based nursing with the help of large data collection [12-15]. (4) After becoming familiar with the first-level and second-level modules of the network cloud platform, the nursing staff became more skilled in using the platform to optimize daily nursing. Using the data analysis function of the platform, the staff input daily situation of patients into the platform, and observed patients' recovery more intuitively. (5) The nursing staff taught patients how to use visitor system and patient account to log in, so that patients could make an evaluation of nursing at any time. The staff timely adjusted nursing scheme in line with the patients' evaluation so as to reduce the possibility of nurse-patient disputes.

Evaluation of nursing/treatment indices

Nursing work score

A self-designed scale was adopted to compare nursing safety, health education, psychological nursing and nursing records. The scoring range was 0-100 points, and the lower the score, the lower the quality of nursing work.

Nursing management score

A self-designed scale was adopted to compare parameters such as basic management, ward management and systematic management. The scoring range was 0 - 100 points: the lower the score, the lower the quality of nursing management.

Incidence of nursing disputes comprised nursing complaints and nursing disputes. The number of cases was recorded, and the proportion was calculated.

Patients' treatment indexes comprised of time taken for disappearance of cough, and time taken for fever to subside. The CR of patients included hypoxic encephalopathy, emphysema, heart failure, respiratory failure and pyopneumothorax. The number of cases in each group was recorded, and the proportion was calculated.

Nursing satisfaction

A self-designed scale was adopted, with the scoring range between 0-5 stars: 5 stars indicated *fully satisfied*, 3-4 stars denoted *satisfied*, and ≤ 2 stars reflected *dissatisfied*. The

two groups were compared with respect to the number of patients who were satisfied.

Statistical analysis

Data were processed with SPSS20.0 software, while GraphPad Prism 7 (GraphPad Software, San Diego, USA) was used to plot graphics. The study generated count data and measurement data which were analyzed using χ^2 test and *t*-test, respectively. Differences were considered statistically significant when $p < 0.05$.

RESULTS

Nursing work scores

The nursing work score in group A was remarkably higher compared with group B ($p < 0.001$). These results are presented in Table 2.

Table 2: Comparison of nursing work scores (points)

Group	Nursing safety	Health education	Psychological nursing	Nursing records
A	89.2±3.2	95.6±2.1	89.1±2.5	97.2±1.5
B	80.1±2.5	82.5±3.2	79.8±1.5	93.0±2.5
<i>t</i>	17.358	26.511	24.709	11.159
<i>P</i> -value	< 0.001	< 0.001	< 0.001	< 0.001

Data are expressed as mean \pm SD; n = 60

Nursing management scores

Table 3 shows that the nursing management score was notably higher in group A than in group B ($p < 0.001$).

Table 3: Comparison of nursing management scores (points)

Group	Basic management	Ward management	Systematic management
A	94.2±2.5	97.1±1.6	97.3±2.1
B	85.5±3.6	88.9±3.5	87.6±2.9
<i>t</i>	15.376	16.505	20.985
<i>P</i> -value	< 0.001	< 0.001	< 0.001

Data are expressed as mean \pm SD; n = 60

Incidence of nursing disputes

The incidence of nursing disputes in group A was lower compared with group B ($\chi^2 = 5.926$, $p < 0.05$; Table 4).

Treatment indices

Table 5 shows that treatment indexes in group A were better compared with group B ($p < 0.001$).

Table 4: Comparison of the incidence of nursing disputes (n = 60)

Group	Nursing complaints	Nursing disputes	No nursing disputes
A	1 (1.7)	1 (1.7)	58 (96.7)
B	4 (6.7)	6 (10.0)	50 (83.3)
χ^2	1.878	3.793	5.926
P-value	0.171	0.051	0.015

Table 5: Comparison of times of disappearance of cough and fever between the two groups (days)

Group	Cough disappearance time	Fever subsided time	Mean hospitalization time
A	6.2±1.5	7.0±1.9	11.2±2.5
B	8.6±2.5	8.4±1.7	16.4±3.2
t	6.376	4.254	9.919
P-value	< 0.001	< 0.001	< 0.001

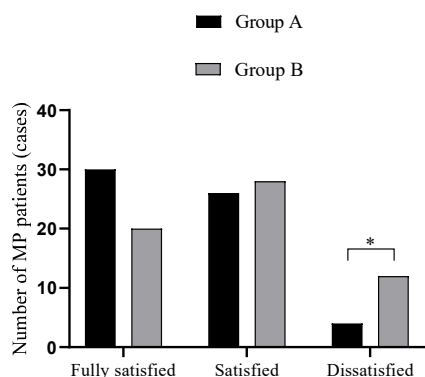
Data are expressed as mean ± SD (n = 60)

Complication rate (CR)

The CR in group A was lower compared with group B ($\chi^2 = 4.615$, $p < 0.05$). These results are listed in Table 6.

Nursing satisfaction

The nursing satisfaction was higher in group A than in group B ($\chi^2 = 4.615$, $p < 0.05$), as presented in Figure 1.

**Figure 1:** Comparison of nursing satisfaction. * $P < 0.05$ **Table 6:** Comparison of CR [n (%)]

Group	Hypoxic encephalopathy	Emphysema	Heart failure	Respiratory failure	Pyopneumothorax	Total incidence
A	1(1.7)	1(1.7)	1(1.7)	1(1.7)	0(0.0)	4(6.7)
B	4(6.7)	2(3.3)	3(5.0)	2(3.3)	1(1.7)	12(20.0)
χ^2	1.878	0.342	1.035	0.342	1.008	4.615
P-value	0.171	0.559	0.309	0.559	0.315	0.032

DISCUSSION

Mycoplasma pneumoniae (MP) which accounts for 25 % of total pneumonia, has become one area of high research interest in the field of pneumonia [16]. Children are prone to MP. *Mycoplasma pneumoniae* has the same antigen with human tissue, and patients usually have autoantibodies after the onset of the disease. This is accompanied with weakened immune system which makes important organs vulnerable to bacterial invasion. Therefore, it is necessary to combine treatment with nursing care so as to ensure the life of patients. Dexamethasone and azithromycin are common drugs for the treatment of MP patients through intravenous infusion. The combination therapy of dexamethasone and azithromycin has achieved significant therapeutic effects. The emergence of the network cloud platform as a new nursing management mode can further enhance the overall treatment efficacy in patients.

Cloud platform is a product of the new era based on network technology, which specific application in hospitals is to conduct online all aspects of hospital management, nursing management and other matters so that managers can obtain all kinds of information more quickly and conveniently, thereby providing a scientific basis for the formulation of nursing decisions [17].

This online management mode enables nursing managers to access patient information at any time and record their rehabilitation status. At the same time, with internal and external supervision, sections in the cloud platform enable the nursing staff to improve their quality of service comprehensively.

In this study, the scores on nursing work and nursing management in group A were notably higher, because the cloud platform played the role of web notepad, thereby making all information clearer and intuitive, with better consciousness and better information adoption by nursing staff. Thus, the comprehensive.

nursing management produced an improved effect. Due to the improved comprehensive skills of nursing staff and optimization of nursing quality, the incidence of nursing disputes and CR in group A were lower and the treatment indices in group A were better compared with group B. These findings are consistent with those stated in an earlier study [18]. In that study, 300 MP patients who were treated with dexamethasone and azithromycin received online nursing management mode, and control group adopted routine nursing management. The cough disappearance time and fever disappearance time in the study group (6.3 ± 1.6 and 7.2 ± 2.0 days) were remarkably lower than the control group values [18]. Thus, patients of study group received more comprehensive nursing, thereby confirming the positive role of cloud platform in assisting nursing management. Moreover, the patients were satisfied with the nursing management mode, which was beneficial to their recovery.

CONCLUSION

The network cloud platform effectively improved the level of nursing management, optimized nursing quality, and comprehensively enhanced the effect of nursing in MP patients treated with dexamethasone and azithromycin. Therefore, nursing management based on network cloud platform merits wide application in clinical practice.

DECLARATIONS

Conflict of Interest

No conflict of interest associated with this work.

Contribution of Authors

We declare that this work was done by the authors named in this article, and all liabilities pertaining to claims relating to the content of this article will be borne by the authors. Yan Sheng, Lingling Wang and Yaping Yang conceived the study and drafted the manuscript. Yuanding Guo and Qingyi Guo collected and analyzed the data and revised the manuscript. Yan Zhao and Huifen Shen compared nursing work scores. All authors read and approved the final manuscript.

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