The Use of Information Technology to Enhance Patient Safety and Nursing Efficiency

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Abstract:

The aim of this study was to determine how a nursing information system improves patient safety and nursing care quality in a hospital in Taiwan. Nurses and patients were surveyed by questionnaire and data retrieval before and after the implementation of NIS. Physiologic values were easier to read and interpret; less time to complete electronic records; reduction of errors in drug administration, blood drawing and transportation of specimens with bar codes; improvement in satisfaction with electronic shift handover; reduction in nursing turnover; patient satisfaction improved.

Keywords: *Information systems, patient safety, nursing*

Introduction

Patient safety is an issue that has received increasing attention from medical organizations. In an analysis of medical errors reported by Taiwan's patient safety notification system from 2005–2012, the Taiwan Joint Commission on Hospital Accreditation discovered that medical errors causing major injury or death accounted for close to 3% of all such errors, and affected more than 1,400 persons each year [1].

Nursing efficiency is also an important issue. Nevertheless, one half of all nurses must stay at work for 1–2 hours after the end of their shifts, and the chief reason for this is the need to complete nursing records [2]. Because of this, when time is limited, handwritten records often contain errors and omissions, are difficult to read, and may lead to nursing errors or disputes [3].

In order to improve operating procedures and provide an effective safety management model, various safety management functions, including communications among personnel, incident notification, and risk management, can be implemented via an information platform [4].

Methods

A pre- and post-test quasi-experimental design was used.

Results

Nurses and patients were surveyed by questionnaire and data retrieval before and after the implementation of NIS in terms of blood drawing, nursing process, drug administration, bar code scanning, shift handover, and information and communication integration. Physiologic values were easier to read and interpret; it took less time to complete electronic records (3.7 vs. 9.1min); the number of errors in drug administration was reduced (0.08% vs. 0.39%); bar codes reduced the number of errors in blood drawing (0 vs. 10) and transportation of specimens (0 vs. 0.42%); satisfaction with electronic shift handover increased significantly; there was a reduction in nursing turnover (14.9% vs. 16%); patient satisfaction increased significantly (3.46 vs. 3.34).

Discussion

Because the hospital's Wi-Fi coverage was only 85% during the period of system construction, this may have influenced their assessment of system efficiency. A satisfaction survey for written shift handover was not conducted before completion of the electronic handover system; therefore, this survey shows the difference in satisfaction only after development and after optimization of the system.

Conclusions

This study provided solid evidence for the importance of NIS in the care of hospitalized patients. Patient safety was improved as was the level of satisfaction of both nurses and patients. The next step in the process would be to link systems via a wireless network. The rapid development of the internet and its use in accessing a vast array of information has created a unique computing environment.

References

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