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Evaluating nursing practice models in the context of SARS

Introduction

We continue to learn from the 2003 outbreak of severe acute respiratory syndrome (SARS) in Hong Kong. Working with SARS patients, nurses have learned not only about the importance of infection control measures but also about the psychosocial needs of patients.¹ Every day, nurses in Hong Kong are faced with workload and time constraint issues. This situation encourages the practice of functional-team nursing, which promotes efficiency and task completion at the expense of attending to the needs of individual patients. This focus on task completion using an assembly line approach raises the risk of cross-infection among patients from nurses. Can an alternative nursing practice provide a better care delivery model able to meet the needs of patients, given what we have learned from caring for SARS patients?

This study also addressed the sustainability of hand washing, the most basic yet important principle of infection control. As the threat of a recurrent SARS outbreak recedes, nurses might not be as vigilant about maintaining personal hygiene, especially when under pressure from heavy work demands. These pressures might also adversely affect nurses' ability to promote patient education about the importance of hand washing in preventing infection and its spread.

Traditionally, three nursing models are found within hospital settings: (1) functional nursing, (2) team nursing, and (3) primary nursing. Functional nursing uses a task-centred approach with the focus on specific routines for each nurse. Team nursing involves having a team leader and a team of multi-skilled direct care providers, assigned specific tasks while caring for a large group of patients. This kind of nursing often fails to take responsibility for overall patient goals. The team leader, who is an experienced nurse, should provide support and direction for team members but often s/he is very involved in administrative work, away from the patients. Primary nursing, on the other hand, is nursing care provided to a particular patient who is under the continuous guidance and care of one nurse, working with her/his associate nurses to care for a group of patients from admission to discharge. The cornerstone of primary nursing is the importance of the relationship between the nurse and the patient. In Hong Kong, a mix of cubicle nursing (a modified functional and team approach within and beyond the cubicle) and named nurse (modified primary nursing without a focus on continuity of care) practice can be found.² An alternative model, using a blend of the team and primary nursing, was adopted in this study.³ Within this modular concept, a patient unit was geographically organised with a small team of nurses permanently assigned to provide total care of this patient group. The ward was divided into modules. Each nurse within a designated module worked as a partner with the others in that module, attending a group of patients, along with health care assistants, to provide continuity of care. This practice model aimed to foster increased knowledge of the patients through total care, continuity of care, patient-focused orientation, and direct communication. This modular design has been shown to decrease the time taken to meet individual needs⁴ and might therefore be a more efficient means of delivering nursing care. Additionally, given that it provides a fixed number of nurses involved in the care of a designated group of patients, cross-infection between nurses and patients should be curtailed. Further, this model might support the notion of nurses' 'engagement', which enhances the patients' sense that they are being cared for.⁵ Apart from becoming more patient-

Key Messages

1. Modular nursing practice led to a change in the nature of direct care activities with an improvement in the frequency of patient/family education.
2. A general increase in the frequency of nurses' hand washing was observed; however, a lapse in hand washing was noted when nurses perceived time pressure.
3. Geographical separation for infection control created inefficiencies due to insufficient human resources.

Hong Kong Med J 2008;14(Suppl 1):S42-5

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RFICID project number: HA-NS-005

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centred, nurses who work closely with each other within a module should also develop more collegial relationships and thus provide support for one another.

Aims and objectives

The purpose of the study was to compare conventional nursing practice with a modular design of nursing delivery by measuring the nature and frequency of nursing activities, efficiency, infection control practice, namely hand hygiene, as well as satisfaction levels among nurses and patients.

Methods

This study was conducted from December 2004 to November 2005. The study was designed as a descriptive and quasi-experimental one with modular nursing as the intervention. It consisted of a pre-intervention (T0) and two post-intervention phases (T1 and T2). A medical and two surgical wards were selected for study by the management. Several focus group meetings were conducted with senior nursing staff from the participating wards to enable the research team to acquaint staff with the model design and to solicit their input regarding proposed structural changes. This was followed by a series of educational sessions for the staff. The data collection tools used to evaluate the modular nursing practice included: a work sampling observation checklist, focus group interviews with nurses, questionnaires to gauge nurses' perceived competence and caring attributes, patient satisfaction questionnaires, and a hand hygiene audit. Descriptive and statistical analyses were conducted for data from observations and questionnaires. Content analysis was performed on the qualitative data from the nurses' interviews. The subjective data essentially helped to corroborate and clarify the work sampling observations, lending credence to the findings and interpretations.

Results

While there were no significant changes in direct care for all the studied wards, a clinically important increase in patient/family education resulted from the continuity of care. Positive correlations between nurses' caring attributes and their sense of competence in care were found only in the post-intervention phase. Patient satisfaction scores increased in the context of higher rather than lower nurse-patient ratios in continuity of care. Efficiency was considered more important for the whole ward than for an individual module. There was a general increase in nurses' hand washing and personal break activities. But a lapse in hand washing was found when nurses perceived time pressure. Some, but not all, nurses took a positive view of geographical separation and continuity of care as a means of infection control. A positive correlation between their perceived competence in how well and how often they followed infection control practices was found only in the post-intervention phases.

Discussion

Modular nursing, with its emphasis on total patient care and continuity in attending to the same group of patients rather than focusing on tasks, did not lead to a consistent decrease or increase in direct care but a general increase was found in T2 vs T0. It has been reported that a daily increase in time spent by nurses with patients reduces urinary tract infections in postoperative care since more time is available for catheter care and ambulation of patients.⁶ An increase in catheter care in a urology ward was noted in our study before and after the nurse-patient ratio was adjusted. Needleman et al⁷ also found that an increase in the amount of nurse-patient time was related to a decrease in the incidence of nosocomial urinary tract infections. Nonetheless, the research team would like to add that the decrease in infection may not only be related to an increase in the percentage of direct care by nurses, but also reflect the relationships that developed with patients, which led to better care. This was clear from the focus group interview data that showed nurses felt more accountable to patients' needs (Table).

Patient/family teaching activities are important aspects of direct care as the amount of time nurses spend on patient/family teaching activities is often negligible, despite a higher percentage of time spent on direct care.⁷ Findings from the patients' satisfaction survey supported this and other studies that have shown that patients being managed with primary nursing care are better informed.⁸ The results indicate that patients value helpful nurses who provide them with information and explanations about their care in a recognisably busy ward.

Hand washing is considered an essential element of safe patient care for controlling both nosocomial infections in patients and occupationally acquired infection in health care workers. Insufficient time for adhering to hand washing recommendations may reflect a nurse's awareness of a hierarchy of patient needs and competing demands when the nurse-patient ratio is high.^{9,10} Hence, the frequency of hand washing may increase if nurses are given more time. In our study, there was a general increase in hand washing activity. From the nurses' interviews, it seems that a sense of being more in control with a relatively predictable patient census facilitates nurses' hand hygiene compliance since they feel less time pressure. Further investigation of this aspect is suggested.

In an acute-care setting, team efficiency rather than individual efficiency is important. Geographical separation where nurses cannot cross boundaries to help colleagues is not feasible in light of the entrenched value of the team and the reality of work demands. It is reasonable to believe that physical assistance can be rendered with more emphasis on good hand hygiene practices while continuity of care remains intact. There is a need to have a better coordination of admissions to minimise unnecessary transfers, inflow

Table. Findings from nurses' focus group interviews on continuity of care for the post-intervention phases*

Perceived no increase in nurse-patient interaction (2%) [†]	Perceived not many changes in nurse-patient interaction from continuity of care (44%) [‡]	Perceived benefits of nurse-patient interaction from continuity of care (54%) [§]
<p>"...it has been done all along."</p>	<p>"Time is of the essence and [such interaction is possible] only if we have time." "...would have talked to patients during some nursing procedures." "Patients did not need additional information since many of them were clear about their reasons for surgeries." "A shorter stay would not allow this to happen." "Turnover is high."</p>	<p>"It increases my understanding of patients' needs for discharge planning." "It enhances nurse-physician communication, which promotes my professional role." "... it enables me to identify a patient with depressive symptoms and intervene accordingly, ie the patient was moved closer to the nursing station." "...improves the level of nurse-patient trust, resulting in patient compliance in treatment and less misunderstanding." "Knowing more about the patients allows me to communicate with their families about their needs." "...increases interactions with patients enhances my accountability/commitment to patient care, eg ensuring my follow-up on the patient's need to have his menu changed as promised." "...increases level of satisfaction for both the nurse and the patient." "...enables you to explain the visitor policy with much ease when the family knows you." "...enables me to act as a bridge for physician-patient communication, eg in HIV cases." "Knowing that the patient will be under my continuous care in my module increases my accountability." "...want to do more for the patient, eg more education, etc" "...could promote safety in medication administration since you are more familiar with the patients."</p>

* While there was not a tremendous difference in the percentages, there was an overall change from the nurses' initial views about continuity of care, as many indicated that they had practised patient-focused care within cubicle nursing all along

[†] No increase in nurse-patient interactions in T1 and T2 attributed this to the fact that the practice/care was the same

[‡] Not many changes in their patient interactions as a result of the model design; nurses referred to the issues of time and the nature of patients

[§] Nurses who perceived the benefits of increased nurse-patient interactions covered the areas of better nurse-patient interactions, nurse-physician communication and nurse-family communication, as well as professional role enhancement, increased nurse-patient satisfaction and promotion of safety

and outflow of cases and thus reduce cross-transmission and provide better management of human resources. Historically, nurses have performed some non-nursing functions such as transport; the reasons for using nurses in transport and the feasibility of establishing a centralised transport operation should be examined.

Notwithstanding the responses to the areas of infection control, patient-focused care, and efficiency in the interviews, the fact that nurses in T0 did not think there was a need to change their practices underscores the importance of the subsequent views of those that recognised the value of modular nursing. It has been asserted that a nurse's "conception of work precedes and forms the basis for the development of knowledge, skills and attributes used in accomplishing work".⁹ If competence rests with nurses' conception of their work, then new competence, through nurses' heightened awareness of the value of continuity of care through modular nursing, will lead to an altered conception. Nurses' self-reported caring attributes and competence in all aspects of care in the pre- and post-intervention phases might reflect the impact on their altered

views. The positive correlation between nurses' caring attributes developed through continuity of care and their sense of competence in care merit further exploration.

Conclusions

While there were few significant changes between the pre- and post-intervention phases, the study did reveal the clinical importance of some changes, as well as highlighting issues in general daily nursing care. It seems that desirable nurse-patient contact is not related only to variations in the percentage of direct care but perhaps also to consideration of the nature of the activities, attitudes of nurses, and patient perceptions of nurses' work demands. The clinical importance of continuity of care should be highlighted even in an acute setting with an examination of nurse-patient ratios and nurse-patient relationships. An entrenched culture of collegiality translating into teamwork and ward efficiency is hindered by geographical separation in a general ward setting. Nurses' perceived lack of control over the number of inflow and outflow cases could be better managed to minimise a task-oriented

approach. A longer period of time for implementation is needed, since it takes time to overcome nurses' resistance to change and replace it with a sense of adjustment and ownership. Nurses in this study, like others, indicated that hand washing lapses under time pressure. A general increase in hand washing activities and nurses' personal time is hence encouraging but the issue of a stable nurse-patient ratio still needs to be addressed to further facilitate infection control. Ultimately, a supportive environment providing nurses with a sense of control over their work demands is important for their professional and personal growth in humanistic care with good infection control practice. As implementation of evidence-based practice change based on outcome measurement is increasingly emphasised in our health care system, meaningful changes for an organisation rest not only on outcome comparison but also on an understanding of those things that underpin further care improvements.¹¹

Recommendations

Efficiency and task grouping

1. Enable nurses to work with a revised workflow based not only on the principle of 'from clean to dirty' but to list common tasks for the ward and group them according to their priorities.
2. Invite nurses who work better with task grouping to share their experience with those who need time to adapt.

Total patient care with staff mix

Have nurses work with health care assistants to educate them about infection control in context.

Geographical separation

1. Remove this separation to allow flexibility in meeting the needs of the ward while maintaining the notion of continuity of care and the modular team. The interviews and work sampling indicate many benefits flowing from the changed nature of activities.
2. Re-evaluate the merits of the patient transport system.
3. Re-evaluate the admission and discharge system to achieve a better coordinated, centralised system.

Infection control audit

1. Identify common procedures specific to the ward rather than follow just one standard plan as some of the plan procedures might not be carried out as often.
2. Have a clear follow-up after data are sent to the wards by the infection control department.
3. Have nurses share their reasons for and difficulties with hand hygiene compliance.

Continuity of care

Enable the ward clerk to direct family or physician's questions about patients of particular modules to the nurses involved or to the nurse-in-charge if the particular modular nurses are busy.

Acknowledgement

This project forms part of a series of studies commissioned by the Food and Health Bureau of the Hong Kong SAR Government and funded by the Research Fund for the Control of Infectious Diseases (Project No. HA-NS-005).

Results of the pilot study were published in the *Journal of Clinical Nursing*: Chan EA, Chung JW, Wong TK, Yang JC. An evaluation of nursing practice models in the context of the severe acute respiratory syndrome epidemic in Hong Kong: a preliminary study. *J Clin Nurs* 2006;15:661-70.

Results of this study were published in full in the *Journal of Clinical Nursing*: Chan EA, Chung WY, Wong KS. Learning from the severe acute respiratory syndrome (SARS) epidemic. *J Clin Nurs*. Epub 2007 Dec 20.

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