Reduction of physical restraints on patients during hospitalisation/rehabilitation: a clinical trial

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ABSTRACT

Background. This study reports on the experience and insights of a clinical trial to reduce physical restraints on patients during hospitalisation/rehabilitation. Staff education and management input were the key components of the restraint reduction programme.

Methods. This study involved one control hospital, one intervention hospital, and a school of nursing. The restraint reduction programme consisted of staff education and setting up of a restraint reduction committee. A stepwise cyclical model of identifying goals and obstacles, determining strategies, and evaluating outcomes was used. A number of alternatives to the use of restraints were introduced to the staff, and family involvement was encouraged. Interviews were conducted before and after intervention using a physical restraint questionnaire to examine any change in staff knowledge, attitudes, and behaviours on physical restraints. The restraint and fall rates before and after intervention were also compared.

Results. This intervention succeeded in bringing about positive changes in the use of restraints, as the staff tended to use less restrictive measures when applying restraints, although the restraint rates remained unchanged. Implementation of the project was beset by numerous challenges. The threat from severe acute respiratory syndrome, the dynamics of human relationships in a bureaucratic organisation, territorial issues among professional disciplines, and interactions with the broader environment of health service manpower and provision limited the research team’s control over the way the study was conducted, and the staff became generally frustrated with the project.

Conclusion. When embarking on a project of this type, the interests of multiple stakeholders need to be balanced, and personal, professional, and inter-disciplinary dynamics should be considered. Cultivating hospital management and its staff a sense of ownership over a project is important for a project to succeed. Restraint reduction projects should be initiated by health care facilities.

Key words: Aged; Rehabilitation; Research; Restraint, physical

INTRODUCTION

The use of physical restraints on patients during hospitalisation/rehabilitation is associated with an increased risk of morbidity and mortality.1 Despite increasing awareness of patients’ rights, the use of physical restraints remains a common practice in Hong Kong.2-4 Staff resistance to change is an
obstacle to implementation of restraint reduction policies. A well-designed educational package\textsuperscript{5,6} and management support through a restraint reduction committee (RRC)\textsuperscript{7,8} enable reduction of staff resistance to the use of physical restraints on patients.\textsuperscript{9} The RRC monitors implementation of restraint reduction policies. Its composition may include physicians, nurses, social workers, occupational therapists, physical therapists, activity therapists, administrators, front-line workers, and residents/patients and their families.\textsuperscript{7,10} This study reports on the experience and insights of a restraint reduction programme.

METHODS

This prospective clinical trial involved one control hospital, one intervention hospital, and a school of nursing. The restraint reduction programme consisted of 2 interventions: staff education and setting up of an RRC. The daily rates of use of physical restraints and the number of falls were collected, as were the demographics and clinical characteristics of the restrained and non-restrained patients before and after intervention. A pilot study had been carried out in a long-term care facility.

The model by Grol\textsuperscript{11,12} was used to evaluate whether the goals were attained before moving on to the next level of intervention. The model consisted of stepwise implementation cycles, including determining goals, identifying possible obstacles, developing and implementing a strategy, and evaluating the results.\textsuperscript{13}

Various components of the intervention were introduced in stages. First, the management held meetings and reached a consensus on the basic operational protocol of the restraint policy for the hospital. Ward managers were the key personnel for implementing the intervention; they involved in every stage of the project. Next, all staff members were educated based on pre-intervention staff attitudes, beliefs, and behaviours relating to the use of restraints. Then, weekly meetings of the RRC were commenced. A number of alternatives to the use of restraints were introduced to the staff, and family involvement was encouraged.

Phase 1: Determining goals, identifying obstacles, and developing strategies

Staff involvement and education

A series of briefing sessions were held in the medical and geriatric units to inform staff about the rationale, timeline, and logistics of the project and to address their questions. All staff needed to be involved for the programme to be successful.\textsuperscript{14,15} One common concern was the consequences should the patient fall after removal of the restraints.\textsuperscript{16,17} The ward managers and nursing officers (charge nurses) were therefore invited to show management’s commitment to restraint reduction and to address questions about administrative reprisals and legal liability.

A staff education programme was developed based on information from the literature, experiences gained in a pilot study, and the results of the pre-education questionnaire survey. Before the staff participated in the education programme, a questionnaire on knowledge, attitudes, and behaviours on the use of restraints\textsuperscript{18} (validated for local use\textsuperscript{19,20}) had been administered. 114 nurses and 54 health care aides completed the questionnaire; the response rate was 80.4%. Some common misconceptions included inadequate awareness of the harmful effects of restraints (e.g., death, strangulation, skin problems) and the existence of alternatives. Most staff believed that using restraints could reduce the incidence of falls (89.9%) and nursing care time (77.8%). The same questionnaire was administered again after the intervention.

The learning strategies included case discussions, sharing of experiences and viewpoints, and presentation of evidence. The staff education programme was given in a 3-session workshop. Repeated sessions were conducted to ensure participation of all staff. Nurses and allied health professionals attended the classes as a group, other health workers such as personal care workers and physical therapists’ assistants attended another class focused on helping nurses to perform the nursing-related activities that support the activities of daily living of the patients.

In March 2003, when collection of the pre-intervention data was about to complete, Hong Kong had an outbreak of severe acute respiratory syndrome (SARS). Research activities were halted and were not resumed until 7 months later. The education programme was shortened to 2 sessions. The hospital deemed it more important to train
staff about infection control rather than restraint reduction. The hospital was only able to arrange for a 1-hour in-service education session for all staff, and 12 repeat sessions were conducted from October to November 2003. Staff education was to continue on an informal and individual basis during RRC meetings, ward rounds, and personal encounters. For various reasons the management was only able to attend the first session, but the nurse specialist was present for all 12 sessions.

**Phase 2: Implementing restraint reduction strategies**

**Restrain reduction committee**
The functions of an RRC included developing a restraint reduction policy, devising strategies to institute the policy, and monitoring its implementation in practice. The overall policy on the use of physical restraints was already in place. The RRC deemed existing policy sufficient and no revision was made.

Instead of a special weekly RRC meeting, the RRC meeting was incorporated into the weekly case conference in the units. During case conferences, the multidisciplinary team identified the circumstances for the use of restraints, the feasibility of alternatives, and possible solutions. In reality, the rotating medical officers were not always aware of the project. Some of the medical officers, occupational and physical therapists, and social workers were reluctant to make decisions to remove or reduce restraints on patients, stating that this was the jurisdiction of the nurses. The research team then contacted the senior staff involved (e.g. senior medical officer and the managers of the occupational and physical therapy departments) and ward managers to ensure that recommendations made by the RRC were followed up. This was successful in heightening awareness about the goals of the project, although the outcomes were less successful when involving the allied health disciplines.

**Family involvement and education**
Family involvement is an integral part to the success of restraint reduction. In March 2004 (3 months after setting up the RRC), educational pamphlets on restraint reduction and family involvement were distributed. However, the interest of the families in restraint reduction was low. In the next 6 months, only one family member actively sought out the research team to learn more about restraint reduction.

In April 2004, 25 family members were interviewed. Of them, 84% had no particular opinion on the use of restraints; 88% were not aware of alternatives to restraints and would not touch anything affixed to the patient; and 40% did not feel comfortable seeking help or discussing the patient’s condition with staff. Family members lacked knowledge about the appropriate use of restraints and their roles in restraint reduction. This may be because Chinese people are more inclined to abide with the rules and regulations set by authorities.

In April 2004 after the interviews, 4 educational, interaction-based talks (each lasting for 35 to 45 minutes) were delivered to the family members. The talks provided suggestions to family members on how to participate in restraint reduction and encouraged them to seek help from staff. However, only 23 family members attended. Despite various attempts to engage the families, there was little increase in interest.

**Introducing alternatives to restraints**
To help staff to actualise restraint reduction, alternatives to restraints were provided. For instance, finding a volunteer or family member to spend more time with the patient or calming patients who were cognitively impaired by meeting their needs. Three alternative restraint products were suggested: (1) a restraining belt that allows for greater movement of the torso, (2) a bed crane affixed to the bedside to avoid the use of full-size bedside rails, and (3) a protective cover for the insertion sites of intravenous cannulas that prevents patients from pulling out the cannulas. After a trial period, the ward managers did not find the first 2 items useful, and the third item had not yet become available in the market. Provision of rocking chairs and boxes with materials for diversion can be useful alternatives. However, rocking chairs are not common in Chinese communities, and diversional therapy was not what the occupational therapists would usually focus on in a rehabilitation setting, where functional improvement was the primary focus. Efforts to introduce restraint alternatives met with considerable resistance, although the staff became more likely to think twice before introducing physical restraints, or chose a less restrictive form of restraint (e.g. boxing gloves instead of wrist ties).
Phase 3: Evaluating outcomes and re-strategising actions

Post-intervention staff survey
To examine any change in staff knowledge, attitudes, and behaviours on physical restraints, the same physical restraint questionnaire was distributed to nurses, health care aides, and allied health professionals after intervention. Although some bedside observations showed evidence of reduction in the use of restraints, analysis of the questionnaires revealed no changes in most items, particularly those of the registered nurses (RNs).

In July 2004, a point prevalence survey on actual practices in the use of restraints in the units was conducted. The restraint rate was 12.8%, with some kind of restraint used on 16 of 125 patients. This figure was close to that in the medical and geriatric units of 13.6% recorded after intervention. Restraints were used because no alternatives could be identified in 37.4% of the cases. However, alternatives were in fact available if staff explored further.

Between July and August 2004, 4 focus group interviews with the RNs in the medical and geriatric units were conducted. A total of 22 RNs took part and they all believed that they had done their best with regard to reducing restraints. Some had joined the units relatively recently and were not aware of the project, and some had attempted to use innovative measures to reduce the use of restraints. For example, one RN reported that she had put a patient’s mattress on the floor. The confused patient rolled under another patient’s bed and pulled on the surrounding cords and wires.

The staff members who participated in the focus groups were pessimistic about what else could be done to improve on the use of restraints. The staff seemed to work under intense pressure and were generally frustrated about their work and the project. There was an overwhelming sense of anger and resentment at both the management and the research team. Therefore, the proposed second series of educational talks for staff was cancelled. The final data collection was completed in November 2004, and a final report was submitted to the funding agency in May 2006.

Final outcomes
Our study did not find a significant reduction in restraint rates after the intervention programme. Nonetheless, an increase in the use of intermittent restraints and a concomitant decrease in the use of continuous restraints were observed. The staff adopted a less restrictive policy. Interestingly, there was a increase in restraint rates in the control hospital.

DISCUSSION
In a study of physical restraints in a psychiatric hospital in Norway, most staff believed that they had used the restraints correctly, and they preferred using physical restraints even though these might have adverse effects on patients. Staff often made their clinical decisions based on tradition, rather than evidence-based research. Despite a series of educational sessions, the beliefs of the staff remained unchanged. For knowledge-based change to occur, other factors need to be in place. For example, clinicians should take charge of the problem, want to change, and have the knowledge and resources. This project was initiated by the research team of a nursing school rather than the hospital, and the hospital was not a university teaching hospital and had yet to develop a research culture. The staff felt that they had to take on extra responsibilities for the project. They did not deem it as a quality improvement measure that the hospital wanted to pursue. In future projects, hospital management teams should explicitly endorse restraint reduction throughout the process in order to inculcate in staff a sense of involvement in quality improvement.

Collaboration among different professionals is the main component for success in reducing the use of physical restraints on elderly persons. However, the weekly RRC meeting/case conference revealed that inclusion in a project through assigned membership (by the hospital) was insufficient to generate collaborative efforts. Staff in different disciplines might also hold different views and expectations about interventions. Members of the allied health team, and sometimes even the attending physician, were reluctant to make decisions about the use or removal of restraints, stating that this was part of the domain of nursing practice.

It is necessary to consider organisational factors in implementing changes, and to implement changes in a planned and orchestrated manner. Organisational factors include staff size, centralisation of decision-
making, administrative support, and research climate.33

The threat from SARS, the dynamics of human relationships in a bureaucratic organisation, territorial issues among professional disciplines, and interactions with the broader environment of health service manpower and provisions limited the research team’s control over the way the study was conducted. Nonetheless, the intervention did succeed in bringing about positive changes in the use of restraints, as the staff tended to use less restrictive measures when applying restraints.

Most studies on the development of best practice focused on research dissemination and utilisation,34 and placed less emphasis on implementation of interventions. Studies usually provide research outcomes without reference to the multiple difficulties that were encountered and overcome. This study has taught that the interests of multiple stakeholders need to be balanced, and personal, professional, and inter-disciplinary dynamics should be considered. Among various models of research implementation, little is discussed on the diffusion of innovations. Further studies on the manner in which staff participate, and how the pattern of participation affects outcomes may provide more practicable guidelines for clinical interventions.35

Practice-based disciplines such as nursing are complex, context-dependent, and not amenable to simple research-based prescriptions.36 Cultivating hospital management and its staff a sense of ownership over a project is important for a project to succeed. Restraint reduction projects should be initiated by health care facilities. Qualitative studies may be better than quantitative studies at informing researchers during implementation of an intervention. The findings generated from observational studies may better inform how evidence-based practices should be delivered. A participatory action study approach that explores the implementation process may also be useful.

ACKNOWLEDGEMENTS

This project was supported by a grant from the Research Grants Council of the Hong Kong Special Administrative Region, China (PolyU 5284/01M). The School of Nursing and the Dean’s Reserve, Faculty of Health and Social Sciences of The Hong Kong Polytechnic University also funded part of this project.

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