

原 著

Changes in nurses' competency for pressure ulcer management after the introduction of a pressure ulcer management program

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Key words

pressure ulcer, competency, nurse, pressure ulcer management

Abstract

Aim : The purpose of this study was to identify changes in nurses' competency for pressure ulcer management after the introduction of a pressure ulcer management program in a hospital in Japan.

Methods : A pressure ulcer management program was introduced in a general hospital in Japan in three phases. Nine nurses from the hospital were recruited. Data were collected using semi-structured interviews both before and after the introduction of the pressure ulcer management program. The interviews were coded and analyzed.

Results : After the introduction of the pressure ulcer management program, the nurses acquired additional knowledge and skills. The number of early stage pressure ulcers which the nurses could detect increased. The number of healed pressure ulcers also increased, giving them many successful experiences in pressure ulcer healing. The nurses also showed improved motivation to prevent and heal pressure ulcers after the establishment of the pressure ulcer management program.

Conclusions : Our results showed that the introduction of a pressure ulcer management program improved overall nursing competency for the prevention and healing of pressure ulcers.

INTRODUCTION

Pressure ulcers present a problem for bedridden patients and the nurses who care for them. In the United States, the prevalence of pressure ulcers is reported to be between 14.3% and 15.6% in acute care settings¹⁾ and 27.7% in long-term care facilities²⁾. On the other hand in Japan, a large-scale surveillance of pressure ulcers revealed a prevalence

of only 3.6% in 9320 hospitals included university hospitals, general hospitals, long-term hospitals and psychopathic hospitals³⁾. This indicates that the prevalence of pressure ulcers is relatively low in Japan, though no drastic decline has been observed. Previous studies have reported that the development of pressure ulcers may be linked to nursing attitudes, education, and competence for pressure

ulcer prevention and management⁴⁻⁷). In the present study we investigate whether competency, which is a key factor in nurses' behavior, is related to continued pressure ulcer management.

The National Pressure Ulcer Advisory Panel (NPUAP) Education Committee clarified nursing competency requirements for prevention and treatment of pressure ulcers⁸). A previous study reported that the prevalence of pressure ulcers was decreased by the implementation of a protocol for skin care along with staff education⁹). However since they focused only on knowledge and skills for pressure ulcer management and the prevalence of pressure ulcers, it was unclear what motives, traits, values, and attitudes were necessary to reduce prevalence. Maylor¹⁰) studied locus of control orientation and perception of the value of pressure ulcer prevention and reported that orthopedic nurses differed in relation to staff in other specialties in their beliefs, department knowledge level, and perceived value of pressure ulcer prevention; however there were no descriptions of specific motives, traits, values and attitudes.

The purpose of this study was to identify changes in nurses' competency for pressure ulcer management, including risk and wound assessment for pressure ulcers, tissue load management and local treatment, after the introduction of a pressure ulcer management program (PUMP). This would help to determine which specific motives, traits, values, attitudes, knowledge and skills are required for pressure ulcer management. It would also demonstrate the contribution of changing nursing practice to improving pressure ulcer management, resulting in reduction in pressure ulcer prevalence and improvement of patients' quality of life.

DEFINITION (Figure 1)

Competency: competency is an underlying characteristic of an individual that is causally related to criterion-referenced effectiveness in performing a specific job¹¹). Competency comprises six characteristics: motives, traits, atti-

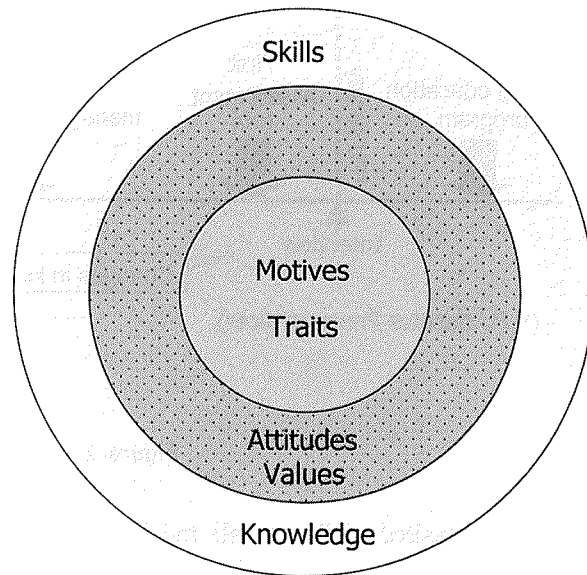


Figure 1. The competency framework

tudes, values, knowledge and skills. As illustrated in Figure 1, knowledge and skills tend to be visible and relatively superficial characteristics of people¹¹). Traits, motives, attitudes and values are related to personality.

METHODS

A qualitative study with semi-structured interviews was chosen. The number of healed pressure ulcers was also monitored prospectively. The study was carried out in five wards of a general hospital with 305 beds. Nurses belonging to the Pressure Ulcer Management Committee were recruited. All eligible participants agreed to participate and gave permission for interviews to be tape-recorded.

1. Procedure (Figure 2)

The researchers divided competency into two parts (knowledge and skills; motives, traits, attitudes and values) and conducted semi-structured interviews. To identify changes in nurses' knowledge and skills, participants underwent semi-structured interviews before and after introduction of a PUMP. The interviews after introduction of the PUMP were conducted 5 months later. To assess knowledge and skills, a researcher showed the nurses photographs of pressure

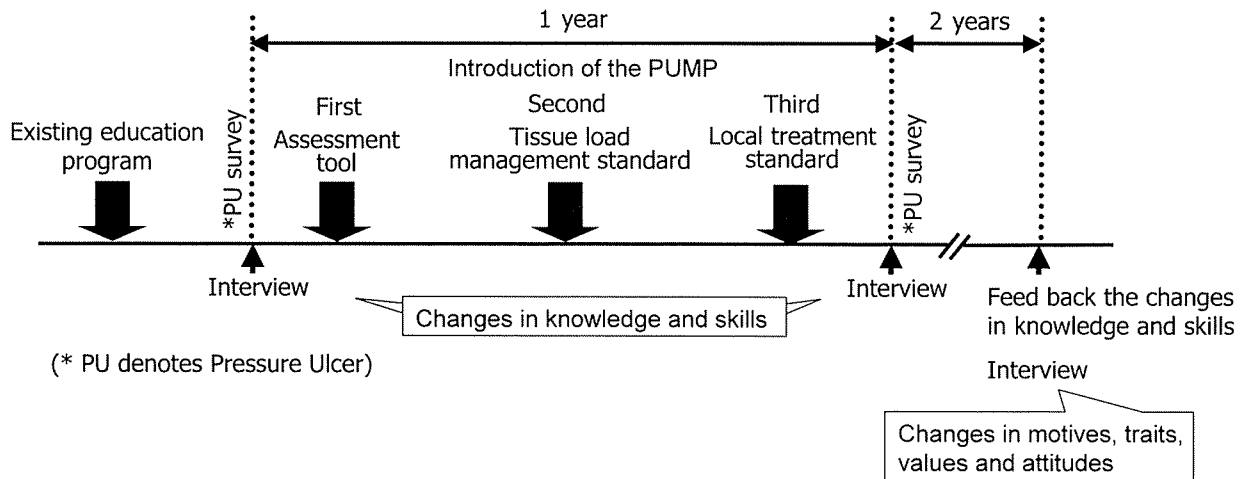


Figure 2. Method of collecting data

ulcers and asked, 'Please tell me how to assess and treat this wound'. The nurses' assessment and treatment methods were compared with criteria given by a wound management specialist. The changes in knowledge and skills after introduction of the PUMP were determined.

After the researchers analyzed changes in nurses' knowledge and skills, the researchers gave the changes in their knowledge and skills to the nurses. Therefore semi-structured interviews were also conducted to describe retrospectively at changes in motives, traits, values and attitudes 2 years later from introduction of the PUMP since the participants needed time to review their change in knowledge and skills. To assess changes in motives, traits, values and attitudes, the researchers asked the nurses, 'Do you think your risk or wound assessment, and treatment were changed after the introduction of the PUMP?' If the nurses indicated a change, they were asked, 'Why do you think your risk or wound assessment, and treatment, were changed?' Changes in the nurses' motives, traits, values and attitudes towards pressure ulcer management were determined from the transcripts. The number of healed pressure ulcers also was monitored both before and after introduction of the PUMP.

2. The PUMP

The PUMP consisted of three management

strategies: risk/wound assessment for pressure ulcers, tissue load management and local treatment. Pre-existing education programs in the hospital already included skin care and nutrition supplementation. The researchers introduced the three strategies in three phases.

Risk/wound assessment for pressure ulcers used three tools: the Braden Scale¹²⁻¹³⁾, the K-scale¹⁴⁾ and the Pressure Sore Status Tool (PSST)¹⁵⁾. The Braden scale comprises six items selected from a conceptual diagram of the factors involved in the development of pressure ulcers. Sensory perception, moisture, activity, mobility and nutrition are each given a score from 1 to 4, and friction/shear is given a score from 1 to 3. The K-scale is a two-step risk assessment scale, composed of underlying subscales: immovability, bony prominence and malnutrition; and trigger scales: interface pressure, moisture and shear force. The PSST was used for assessment of pressure ulcer status. After location and shape of pressure ulcers are recorded, 13 items are each given a score from 1 to 5: size, depth, edges, undermining, necrotic tissue type, necrotic tissue amount, exudate type, exudate amount, skin color surrounding wound, peripheral tissue edema, peripheral tissue induration, granulation tissue and epithelialization. The authors gave lectures to all nurses in the five wards explaining how to score using these tools. We also showed

the nurses pictures of pressure ulcers and asked them to measure wound healing, to check interrater reliability. The nurses were requested to record the serum albumin, total protein and hemoglobin levels from blood tests on the sheets.

To manage tissue load, a double-layer-type air cell mattress (Tricell, Cape Co., Ltd., Japan)¹⁶⁾ was used for patients with a greater than stage I pressure ulcer to control the interface pressure. This mattress was developed for patients with extreme bony prominences. It consists of 24 double-layer air cells 10 cm thick and provides pressure redistribution via cyclic changes in loading and unloading at 5minute intervals. The authors explained the use of the mattress and management of issues such as confirmation of power and bot-toming out. When pressure ulcers were healed and the patients could reposition, the mat-tress was removed.

To manage local treatment, the program provided instruction on how to select optimal ointments and wound dressings depending on the state of the pressure ulcers. This included wound management strategies such as clean-ing the wound at each dressing change, keep-ing the wound moist while healing, and managing wound infection. The nurses were instructed in the use of an algorithm for se-lection of ointments and wound dressings. The authors visited all five wards regularly to give explanations and advice as necessary and respond to any questions that the nurses had about the program.

ANALYSIS

The changes in knowledge and skills were analyzed for each phase: risk/wound assess-ment for pressure ulcers, tissue load manage-ment, and local treatment. Knowledge and skills for wound assessment were compared using criteria for (a) adequacy of wound as-sessment and (b) recognition of the wound healing process. Characteristics of the differ-ences in assessments before and after the PUMP were extracted from the interview

transcripts and were coded and categorized.

To assess the changes in motives, traits, values and attitudes, each word and sentence was evaluated in two categories:(a) motives and traits, and (b) values and attitudes. Each word and sentence was analyzed, statements with similar meanings were grouped to-gether, and changes in each of the categories were evaluated.

ETHICAL CONSIDERATIONS

This research conformed to the ethical guidelines for clinical research by the Japan Ministry of Health, Labor and Welfare. A re-searcher provided oral and written descrip-tions of the study to both the participants and the directors of nursing service depart-ments, and informed consent was obtained. The purpose and methodology were explained to the participants, and each had the opportu-nity to decline, request further clarification /explanation, or cancel their participation at any time. All data were coded to be identifi-able. Interviews were taped-recorded and transcribed with the consent of the partici-pants.

CREDIBILITY

The trustworthiness of the study was es-tablished by prolonged involvement, persis-tent observation, triangulation, peer debrief-ing and member check¹⁷⁾. The researchers trained in clinical practice for three months, and participated in pressure ulcer manage-ment rounds for one and a half years in or-der to build a relationship with the nurses in the wards and understand any changing situation in the wards. Data were collected from statements made by the participants and from comparisons between assessments made by the participants and a wound man-agement specialist. A pressure ulcer survey was also conducted to provide quantitative in-formation to explain the qualitative data. The data and findings were peer reviewed by su-pervisors who were familiar with the topic and with qualitative research to ensure that

the process was conducted in an appropriate and systematic manner. The researchers discussed the results with some of the participants.

RESULTS

1. Characteristics of the participants

Nine out of 10 nurses belonging to the Pressure Ulcer Management Committee participated in this study. One of the 10 nurses was lost to follow-up due to leaving the job. All the participants were female and had completed 3 year of nursing training. Their nursing experience ranged from 6 to 22 years. All nine nurses went through the same program but the extent of change in their competency varied.

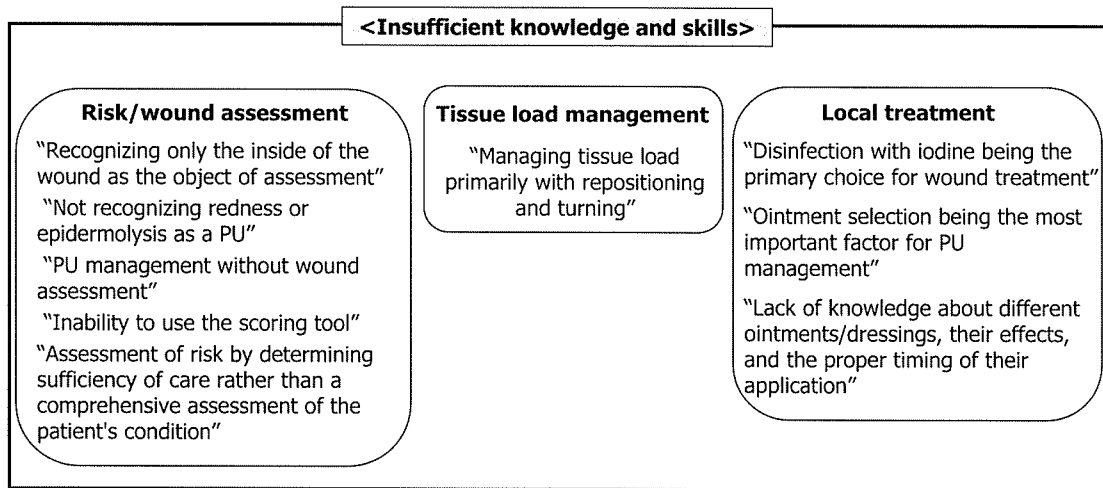
2. Changes in knowledge and skills after introduction of the PUMP (Figure 3)

When the PUMP was introduced the nurses first received training for risk/wound assessment, and then practical instruction on tissue load management and local treatment. Successful experiences in pressure ulcer healing gave confirmation that appropriate care was being given. They received frequent reinforcement of their acquired knowledge/skills, and demonstrated an interest in developing new interventions.

Before the introduction of the PUMP,

knowledge and skills relating to each of the three management strategies of the program were assessed and categorized. For risk/wound assessment five categories were identified: recognizing only the inside of the wound as the object of assessment, not recognizing redness or epidermolysis as a pressure ulcer, pressure ulcer management without wound assessment, inability to use the scoring tool, and assessment of risk by determining sufficiency of care rather than a comprehensive assessment of the patient's condition. For tissue load management one category was identified: managing tissue load primarily with repositioning and turning. For local treatment three categories were identified: disinfection with iodine being the primary choice for wound treatment, ointment selection being the most important factor for pressure ulcer management, and a lack of knowledge about different ointments/dressings, their effects, and the proper timing of their application.

The first phase of the introduction of the PUMP focused on training in four knowledge and skill areas: recognizing periwound skin as the object of assessment, adequate pressure ulcer management based on wound assessment, recognition of persistent redness as an indication of pressure ulcer, and carrying out



PU denotes Pressure Ulcer
 < > : Category
 " " : Sub-category

Figure 3-1. Nurse's knowledge and skills before introduction of the PUMP

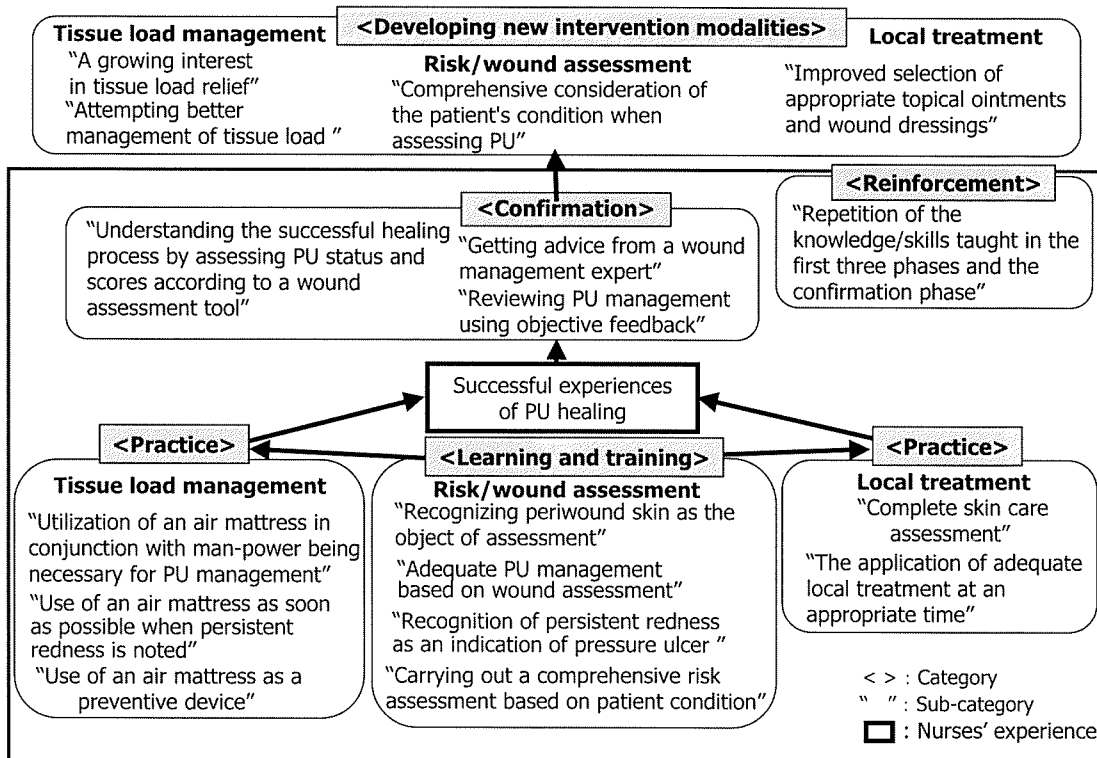


Figure 3-2. Relationship of knowledge and skills acquired after introduction of the PUMP

a comprehensive risk assessment based on patient condition. The tissue load management phase focused on practical instruction in three knowledge and skill areas: utilization of an air mattress in conjunction with man-power being necessary for pressure ulcer management, use of an air mattress as soon as possible when persistent redness is noted, and use of an air mattress as a preventive device. The local treatment phase focused on practical instruction in two knowledge/skill areas: complete skin care assessment, and the application of adequate local treatment at an appropriate time. The practical knowledge and skills in phase two and three were related to the risk/wound assessment taught in phase one.

The confirmation phase focused on three knowledge/skill areas: understanding the successful healing process by assessing pressure ulcer status and scores according to a wound assessment tool, getting advice from a wound management expert, and reviewing pressure ulcer management using objective feedback.

Reinforcement was achieved by repetition of

the knowledge/skills taught in the first three phases and the confirmation phase.

After introduction of the program, the following behavior changes were detected among the nurses: comprehensive consideration of the patient's condition when assessing pressure ulcer, a growing interest in tissue load relief, attempting better management of tissue load, and improved selection of appropriate topical ointments and wound dressings. Eventually they also demonstrated the development of new intervention modalities.

3. Competency before and after introduction of the PUMP and relationship between change in PU state and competency (Figure 4)

Figure 4 showed competency (motives, traits, attitudes, values, knowledge and skills) before and after introduction of the PUMP. The categories in knowledge and skills were based on scheme in figure 3-1, 3-2. In addition, it showed relationship between change in PU state and competency.

Before the introduction of the PUMP, the nurses had insufficient knowledge and skills. The nurses' attitudes regarding the manage-

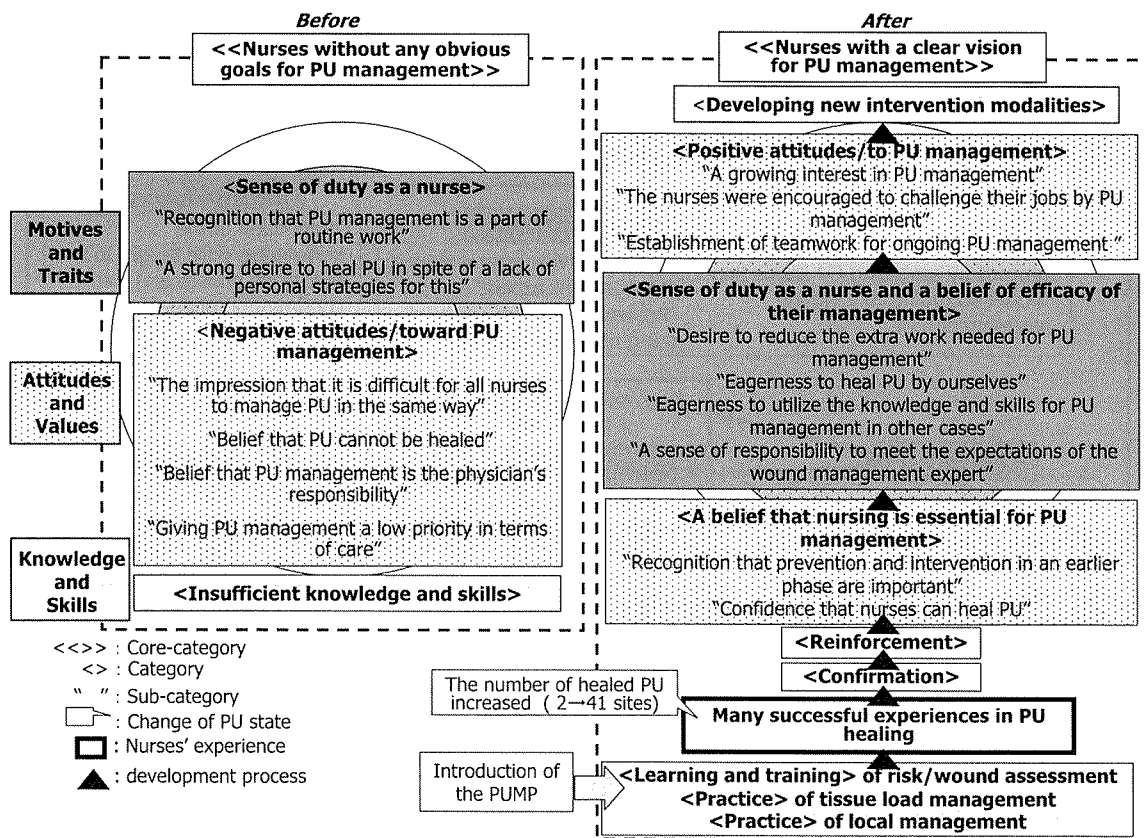


Figure 4. State of competency before and after introduction of the PUMP and relationship between change in PU state and competency

ment of pressure ulcers were negative. Four categories were identified: the impression that it is difficult for all nurses to manage pressure ulcers in the same way, belief that pressure ulcers can not be healed, belief that pressure ulcer management is the physician's responsibility, and giving pressure ulcer management a low priority in terms of care.

The nurses' motives and traits were based on their sense of duty as a nurse. Two categories were identified: recognition that pressure ulcer management is a part of routine work, and a strong desire to heal pressure ulcers in spite of a lack of personal strategies for this. Therefore the nurses did not have any obvious goals for pressure ulcer management.

With the introduction of the PUMP, the nurses acquired new knowledge and skills and had many successful experiences in pressure ulcer healing. They received confirmation and reinforcement of their knowledge and skills. The number of healed pressure ulcers in-

creased from 2 to 41 (Table 1).

The nurses' attitudes and values changed to a belief that nursing is essential for pressure ulcer management. Two categories were identified: recognition that prevention and intervention in an earlier phase are important, and confidence that nurses can heal pressure ulcers.

The nurses' motives and traits changed to become based on their sense of duty as a nurse and a belief of efficacy of their management. Four categories were identified: desire to reduce the extra work needed for pressure ulcer management, eagerness to heal

Table 1. The number of healed pressure ulcers before and after the PUMP

	Healed	Non-healed
Before N=19	2	17
After N=56	41	15

(N)

pressure ulcers by ourselves, eagerness to utilize the knowledge and skills for pressure ulcer management in other cases, and a sense of responsibility to meet the expectations of the wound management expert.

The nurses' attitudes regarding the management of pressure ulcers became positive. Three categories were identified: a growing interest in pressure ulcer management, the nurses were encouraged to challenge their jobs by pressure ulcer management, and establishment of teamwork for ongoing pressure ulcer management. As a result, the nurses had a clear vision for pressure ulcer management.

DISCUSSION

The present study identified the changes in nurses' competency for pressure ulcer management after introduction of a PUMP. It identified that the nurses could acquire prevention strategies through successful experiences in pressure ulcer healing. Provo¹⁸⁾ showed that one of the barriers to preventive intervention was the low priority given to prevention of pressure ulcers. In this study, the nurses gave a high priority to prevention even though they had heavy workloads in their wards. This was because the nurses noticed that prevention was the most effective strategy to reduce the burden of treatment for pressure ulcers. Before introduction of the PUMP, they believed that pressure ulcers could not be healed, but after introduction of the PUMP, they had successful experiences in pressure ulcer healing and gained confidence that nurses can heal pressure ulcers. Furthermore they acquired the knowledge and skills to heal pressure ulcers, and felt a desire to reduce the extra work needed for pressure ulcer management, realizing the difficulty of healing pressure ulcers. The nurses also understood that the mattress was effective in preventing pressure ulcers through tissue load management. These attitudes and values towards pressure ulcer management and the knowledge/skills of tissue load management

led to the motivation to prevent pressure ulcers.

The researchers also found that the nurses acquired knowledge and skills such as the development of new intervention modalities by themselves, and developed obvious goals for pressure ulcer management. Moore et al.¹⁹⁾ suggested that lack of time and staff prevented nurses' positive attitudes from being reflected in clinical practice. In the present study, the nurses participating in the PUMP were able to spend many hours practicing, and became interested in pressure ulcer management. These positive attitudes were caused by successful experiences in pressure ulcer healing.

With the introduction of the PUMP to this hospital, a wound management specialist nurse visited the hospital every week and gave encouragement to the ward nurses. Supplies and equipment for the PUMP were made available to the nurses at any time. Inge²⁰⁾ suggested that without a support system it is almost impossible to implement changes in the way nurses act and think with respect to pressure ulcers. Therefore the two support systems were thought to be effective in facilitating successful experiences in pressure ulcer healing.

Our results show that the researchers introduced a successful nurse education program for pressure ulcer management. This program consists of three steps. Firstly, it is necessary to learn the knowledge and skills for pressure ulcer management by introducing the training phases of the PUMP in order. Secondly, nurses need to gain confidence and positive attitudes through successful experiences in pressure ulcer healing. To have these experiences, nurses should review pressure ulcer management using objective feedback and pressure ulcer assessment tools, and prevalence survey. Thirdly, it is important to make nurses recognize that prevention of pressure ulcers will reduce their workload.

In the present study, one of the factors in the success of the PUMP was presence of the

wound management specialist nurses who continuously educated and supported the participating nurses. If there is nobody available in the institution to give this support, it may be difficult to improve the overall nursing competency for the prevention and healing of pressure ulcers. It is also difficult to generalize the results of this study to other institutions due to the small sample size. In future studies, the participants should include nurses who have had four years of nursing training and wound management specialist nurses such as Wound, Ostomy and Continence nurses to enhance the validity of these results. This would help to clarify the competency requirements for pressure ulcer management and to refine an education program to train nurses who manage pressure ulcers.

CONCLUSION

After the introduction of the PUMP, the nurses continued to further their knowledge and skills. In addition, they also had successful experiences of PU healing, which led to the motives and traits such as "Desire to reduce the extra work needed for PU management" and "Eagerness to heal PU by ourselves". They also showed developing new intervention modalities, as a result, they could continue PU management and started PU prevention.

Nurses could realize successful experiences of PU healing through quantitative data about the number of healed PU. Successful experiences of PU healing is thus considered to be a key factor improving nurse competency to continue PU management and start PU prevention.

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褥瘡ケア基準導入後の看護師の褥瘡管理に関するコンピテンシーの変化

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キーワード

褥瘡, コンピテンシー, 看護師, 褥瘡管理

要 旨

目的：褥瘡ケア基準導入後の看護師がもつ褥瘡管理に関するコンピテンシーを明確にすることである。

方法：調査場所は305床の一般病院における5病棟である。対象は上記病棟の看護師9名である。データは褥瘡ケア基準導入前後に半構成的面接を行い、収集した。得られたデータはコード化し、質的記述的に分析した。

結果：褥瘡ケア基準導入により、看護師は褥瘡管理に関する知識・スキルを習得、実践できるようになった。また看護師は褥瘡を浅い段階で発見することが可能となり、褥瘡の治癒数の増加をデータとして把握することで、多く治癒体験をした。看護師は褥瘡の治癒体験をすることで、褥瘡管理に対する動機づけに繋がり、褥瘡管理を継続し、予防をすることが可能となった。

結論：褥瘡ケア基準導入による褥瘡の治癒体験が、褥瘡管理の継続及び褥瘡予防の動機づけにおいて重要であることが示唆された。