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RESEARCH ARTICLE

INITIAL DEVELOPMENT OF A SCREENING TOOL FOR POSTOPERATIVE DELIRIUM PRODROME

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ABSTRACT

Managing postoperative delirium is challenging for nurses. Nurses encounter postoperative delirium cases in clinical, risk assessment, and preventive care situations and tend to rely on their individual experiences.

AIMS: This study examines the factor structure underlying postoperative delirium prodrome to develop an easily administered postoperative delirium screening tool for clinical nurses.

METHODS: In Research I, we extracted prodrome concepts based on a literature review. We conducted an investigative survey with 20 nurses for prodrome in Survey II. Based on these, in Survey III, we developed the tool's first draft, administering it to 725 nurses who had at least three years surgical experience at one of 19 National University hospitals across the country.

RESULTS: We extracted 50 items from 12 studies on postoperative delirium prodrome in Research I. The nurses' interviews yielded 82 items in Survey II. Thus, a questionnaire comprising 126 items was developed and administered in Survey III. The factor analysis yielded 10 factors with 40 items. The important underlying factors included "mental function dominated by delusions," "decreased cognitive function," "appearance of arousal," and "discomfort and confusion," of which the latter two were unique to this screening tool.

CONCLUSIONS: Ten postoperative delirium prodrome factors were extracted in survey III. Of these "decreased activity and motivation," "physiological arousal" "discomfort and confusion," were consistent with two existing tools, the CAM-ICU and ICDSC. Additionally, we observed that "physiological arousal" and "discomfort and confusion" were two unique factors.

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INTRODUCTION

According to the DSM-5, diagnostic criteria for delirium are "disturbance of consciousness, cognitive changes, paresthesia, fluctuations within a single day, and physiological causes. A diagnosis is given if four diagnostic criteria are met. Managing postoperative delirium is challenging for nurses. Nurses encounter postoperative delirium cases in clinical, risk assessment, and preventive care situations and tend to rely on their individual experiences (Masumi, 2006). Reports indicate that 95.7% of clinical nurses are aware that it is difficult to care for postoperative delirium patients (Masumi, 2005). Nurses who are less knowledgeable of postoperative delirium experience negative emotions such as anger and fear when responding to postoperative delirium onset (Toshiyuki, 2000). Postoperative delirium tends to manifest at night, when there are fewer nurses; consequently, these nurses may be more likely to experience physical and mental exhaustion. Thus, early detection of postoperative delirium is important (Shigeaki, 2007). Aging postoperative delirium patients, disease severity, and increased morbidity due to complications suggests that future incidence is unlikely to decrease (Shigeaki, 2005). This study clarifies the factor structure of

postoperative delirium prodrome in order to develop a postoperative delirium screening tool for nurses that is easy to use in clinical settings.

METHODS

This study comprised three parts: research I, and surveys II and III.

1. **Research I:** Concepts were extracted from prior studies on postoperative delirium prodrome using the online database medical center journal, Web version. The keyword "delirium" was entered. We selected only original papers published in a 28-year span, ranging 1983–2011.
2. **Survey II:** Terms were extracted from transcripts of interviews with nurses who had experience with postoperative delirium prodrome. Participants comprised 20 nurses who had previously managed delirium onset patients and worked in university hospital wards, with more than five years of clinical nursing experience in the surgical ward. The survey was conducted from December 2010 to February 2011,

using semi-structured interviews related to postoperative delirium onset prodrome.

3. **Survey III:** This involved analyzing the results of the surveys and drafting a final questionnaire.

We first conducted a pilot test on 10 nurses whomet the study criteria and five faculty members of the College of Nursing. Ambiguous, similar, and repeated items were excluded in the first questionnaire draft. We conducted a survey—using this questionnaire—between May 10 and June 27, 2011. Participants comprised 725 nurses with at least three years of clinical nursing experience in the surgical ward. They were randomly selected from 19 of 45 hospitals across Japan that are affiliated with the National University Hospital. The questionnaire comprised 132 postoperative delirium prodrome items and used a 5-point Likert scale. Pearson's product-moment correlation coefficient was used for statistical analyses. All items were examined for ceiling and floor effects. Factor analysis with varimax rotation was performed. Cronbach's coefficient was calculated to verify reliability. PASW Statistics 18 software was used for data analyses.

Ethical Considerations

Nurses in surveys II and III were informed that participation was voluntary and that they could decline freely.

The surveys were conducted after obtaining the approval of Mie Prefectural College of Nursing Graduate School of Research Ethics Review Committee (approval numbers 102 403 and 110 103, respectively).

RESULTS

1. **Research I:** Based on 480 search results, we identified 12 target papers related to postoperative delirium symptoms/prodrome. We extracted 50 items related to postoperative delirium prodrome from these papers.
2. **Survey II:** We selected 82 items from the interviews with 20 nurses.
3. **Survey III:** The pilot test with 132 items (82 survey I items and 50 survey II items) resulted in the exclusion of six items. Of the 725 distributed questionnaires, 346 were returned with a recovery rate of 47.7%, and 327 were valid responses; thus, the effective response rate was 94.5%. Participants' mean age was 34.7 years ($SD = 7.4$). A total of 193 nurses worked in surgical wards (59%) while 76 nurses worked in the ICU (23.2%). Average overall experience was 12.2 years ($SD = 7.6$) and average experience in surgery was 8.4 years ($SD = 5.4$). Items with product-moment correlation coefficients of 0.7 or more were excluded. The factor analysis using varimax rotation extracted 10 factors. Items with eigenvalues greater than 1.0 and factor loadings less than 0.5 were also excluded. Items with skewness less than 0.5 and those that showed a Kurtosis less than 2 were omitted. The extraction of factors based on item factor loadings of 0.5 resulted in a 10-factor structure for 40 items. Cronbach's was 0.94. The factors were as follows: "delusions", "decreased activity and motivation", "meaningless

action", "decreased cognitive function", "physiological arousal", "confusion", "complaints of fear and worry", "disorientation", "difficulty with urination", "sleep-wake cycle failure".

DISCUSSION

"Mental functioning dominated by delusions", could help determine the prodrome in advance. This observation is consistent with research (Lipowski's, 1990). Delusions is a major symptom of delirium and is considered to predict its onset. "Decreased activity and motivation", is a symptom of a type of low-activity delirium that tends to be overlooked by nurses (Eisuke, 2010). This factor is extremely important since there is a high possibility of hypoactive delirium remaining undetected. "Meaningless action", includes touching the oxygen mask, drip route, and drip penetration. "Decreased cognitive function" is considered to be an important symptom. "Physiological arousal" implies that the nurse detects a blank expression in patients' eyes and mask-like facial appearance. These items objectively determine nurses' observation of the presence or absence of arousal. This is consistent with previous studies on postoperative patients' facial expression and responsiveness of the eyes (Junpei, 2011). This novel finding has not been recorded in existing screening tools, such as the Confusion Assessment Method for the ICU (CAM-ICU) and Intensive Care Delirium Screening Checklist (ICDSC). "Discomfort and confusion", refers to observations regarding the presence or absence of emotional expression; inconsistencies in conversations or behavioral responses may facilitate early detection of postoperative delirium onset. This item evaluates the unusualness of patients' behaviors. "Complaints of fear and worry" reflects the high likelihood of the patient engaging in potentially dangerous behaviors such as physically hurting others—including the nurse or self-injury. Early detection is especially important to ensure early response. This is an important factor since nurses can quickly notice corresponding signs. We believe that care for the patient leads to nurses' safety. Any lapse of time (Nobue, 2011) in interpreting psychomotor excitement can affect the development of postoperative delirium. "Disorientation" is a state in which the individual fails to understand his/her condition or situation (Wong, 2010). Although the individual can normally answer questions correctly, during delirium accuracy may decline, which may indicate disorientation. "Difficulty with urination", reflects patients' post-surgery discomfort in the urethra from dwelling catheters (attached to the urinary bladder to allow continuous discharge of urine outside the body, thereby avoiding collection in the bladder). According to Rumi *et al.*'s study, significant post-operative patients who complained of catheter-related discomfort reported postoperative delirium (Rumi, 2008). "Sleep-wake cycle failure" indicates a very strong relationship between delirium onset and deep sleep. Toyoe *et al.* emphasize the relationship between delirium onset and circadian rhythm modulation (Toyoe, 2010). Melatonin regulates the sleep-wake cycle and indirectly affects prostaglandin production. The sleep-wake rhythm needs adjustment in order to prevent postoperative delirium onset. Bellapart's research found a significant relationship between

melatonin production during sleep, severity of postoperative delirium, and urinary prostaglandin (Bellapart, 2012. Fumiko, 2008). Therefore, its inclusion in the questionnaire is important. Ten factors with 40 items were extracted as postoperative delirium prodrome and were compared to each item of the CAM-ICU and ICDSC. As a result, "Physiological arousal" and "discomfort and confusion" are unique to the present study, suggesting that the developed questionnaire measures two additional, though important aspects that may help screen for postoperative delirium prodrome.

CONCLUSION

Ten postoperative delirium prodrome factors were extracted in survey III. Of these "decreased activity and motivation", "physiological arousal", "discomfort and confusion", "complaints of fear and worry", "disorientation" and "sleep-wake cycle failure" were consistent with two existing tools, the CAM-ICU and ICDSC. Additionally, we observed that "physiological arousal" and "discomfort and confusion" were two unique factors.

References

- Bellapart J, Boots R. (2012) *Potential use of melatonin in sleep and delirium in the critically ill*. Br J Anaesth, Vol.108, N4, pp.572-80.
- Eisuke M. (2010) *Low activity type delirium*. Gen Hosp Psychiatr, Vol.22, N1, pp.65-71.
- Fumiko I, Yayoi K, Masahiko Y. (2008) *Consideration by the urinary excretion pattern PGD2 and nighttime sleep-wake status on postoperative delirium symptoms*. Japan Academy of Nursing Science Scientific Meeting lecture collection. Vol.28, N1, pp.260-263.
- Jumpei M. (2011) *Postoperative delirium onset prediction factors in the surgical area*, Medicine and biology.

- Vol.155, N11, pp.825-829.
- Lipowski ZJ. (1990) *Delirium acute confusional states*. New York: Oxford University Press, pp.54-70.
- Masumi H. (2006) *Assessment structure of the nurses about the prediction of acute elderly patients of delirium occurs*. St. Luke's Nursing Society Journal. Vol.10, pp.11-10.
- Masumi H. (2005) *Current situation and problems of delirium care of femur fractures hospitalized patients in Kanagawa*. Kanagawa University of Human Services Journal. Vol.2, N1, pp.3-11.
- Nobue N. (2011) *Interviews with patients who received the restraint immediately after hospitalization in psychology acute ward of the patient at the time of restraint*. Japan Nurse Society Spirit Nurse. Vol.41, N12, pp.122-125.
- Shigeaki W. (2007) *Prediction and intervention for the development and measurement tools of delirium, acute confused state*. Japan Geriatric Nurse. Vol.11, N2, pp.26-30.
- Shigeaki W. (2005) *Algorithm of assessment and care of postoperative delirium developed abdominal as an example a typical surgery in thoracic surgery*. Nurse Res. Vol.38, N7, pp.543-558.
- Toshiyuki W. (2000) *What is the psychiatric symptoms*. Nurse J. Vol.64, N8, pp.703-706.
- Toyoe T, Miki N, Akemi H. (2010) *Surgery received elderly sleep evaluation: analysis association between delirium onsets*. Japan Critical Care Nurse. Vol.6, N3, pp.55-62.
- Rumi Y, Shooka A, Keiko S. (2008) *The reaction of elderly patients for the inducer of postoperative delirium*. Gerontology Nurse. Vol.13, N1, pp.13-22.
- Wong CL. (2010) *Does this patient have delirium value of bedside instruments*. JAMA Vol.304, N7, pp.779-786.
