Factors affecting the quality of dementia care at acute care hospitals: A cross-sectional study

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Abstract

Aim and objectives: The purpose of this study was to investigate which factors are associated with the quality of dementia care in acute care hospitals.

Background: The number of people with dementia who are admitted to acute care hospitals is increasing. Improving the quality of dementia care in acute care hospitals is an important issue. Prior studies have demonstrated that not only knowledge and nursing experience, but also psychological factors and the nursing practice environment are related to high-quality care on general wards.

Design: Cross-sectional hypothesis testing design.

Methods: Participants were nurses providing care to people with dementia at acute care hospitals. Questionnaires were distributed to 300 acute care hospitals in Japan, 10 copies each, and 773 valid responses were received. Based on the hypothesis model, variables were tested using multiple regression analysis. The model described the relationship between quality of care, personal attributes, and the nursing practice environment. The STROBE checklist was used.

Results: Almost 90% of the study sample was female, the mean age was 37.4 ± 9.3 years, and the mean nursing experience was 14.0 ± 8.7 years. The results showed that nursing foundations for quality of care, staffing and resource adequacy, specialist consultation, promoting systematic recreation and exchange, knowledge, and feelings towards people with dementia were associated with the quality of dementia care in acute care hospitals. The adjusted coefficient of determination was 0.367.

Conclusion: This study identified factors associated with the quality of dementia care in acute care hospitals. Knowledge and feelings towards people with dementia are important, and the nursing practice environment plays an important role in improving the quality of dementia care.

Relevance to clinical practice: Not only improving nurse's practical ability but also a supportive nursing practice environment enhances the quality of dementia care in acute care hospitals.

Keywords:

nursing care, dementia, work performance, clinical competence, quality of health care, hospitals

What does this paper contribute to the wider global clinical community?

- The present study was the first to identify factors that affect the quality of dementia care at acute care hospitals.

- Positive relationships were seen between the quality of dementia care and having an established nursing foundation, adequate human resources, and specialists at the hospital, and making efforts to engage people with dementia in recreational activities.

- Knowledge and feelings towards people with dementia had a greater effect than environmental factors on the quality of care.

1. Introduction

There were estimated to be more than 50 million people with dementia worldwide in 2019. The number is expected to double every 20 years to approximately 152 million in 2050 (Alzheimer's Disease International, 2019). In Japan, the number of such people is expected to increase to 6.75 million in 2025, which would be 20% of elderly individuals in the country (Cabinet Office, 2017). Under the current circumstances, approximately 20% of inpatients were reported to be people with dementia or decreased cognitive function as of 2015 (Ministry of Health, Labour and Welfare, 2015), and the number of people with dementia, including those not diagnosed, admitted to acute care hospitals for treatments such as surgery is predicted to continue to increase rapidly. With dementia, declines occur in aspects of cognitive function such as memory, attention, language, and judgment (World Health Organization, 2020). The practical ability to respond to these characteristics is required among the nurses who provide care to people with dementia. However, previous studies have indicated that nurses who work at acute care hospitals lack knowledge and skills in dementia care (Dewing et al., 2016; Digby et al., 2017; Evripidou et al., 2019). Moreover, interviews of the family members of patients regarding the nursing care provided during hospitalization indicated that the individuality of the care provided during hospitalization was low and that family members were not satisfied with the care provided (Jurgens et al., 2012). People with dementia are more prone to adverse events such as delirium and falls than those without dementia during hospitalization, and tend to be more likely to undergo long-term hospitalization once they are hospitalized (Capita Healthcare Decisions, 2012; Dewing et al., 2016).

Japan, which was the first country to see an increase in the proportion of elderly individuals in the population, has begun training healthcare professionals to improve their ability to respond to dementia under the Comprehensive Strategy to Accelerate Dementia Measures (New Orange Plan), which was formulated in response to the increase in the number of individuals with dementia. In addition, healthcare policy reforms are being implemented to promote multidisciplinary care and improve the quality of dementia care at hospitals. Thus, improvements in the quality of care of people with dementia are being required of the country as a whole. Improving the quality of care of people with dementia at hospitals is also an urgent global priority as the number of such people increases worldwide.

Dementia care at acute care hospitals has become a focus of attention, and in recent years, studies of dementia care educational programs and training have been conducted (Surr et al., 2016). Improved

knowledge and attitudes are essential for improving the quality of dementia care, and training that focuses on these aspects is also needed at acute care hospitals. However, nurses at acute care hospitals are known to feel burdened by factors such as a lack of self-confidence with respect to dementia care and inadequate staffing and time to provide such care (Dewing et al., 2016; Digby et al., 2017; Pinkert et al., 2018). Because of these factors, nurses have been reported to experience severe stress and fatigue when in contact with people with dementia (Edberg et al., 2015) and to feel that providing high-quality dementia care has been made difficult (Tropea et al., 2017). This kind of negative psychological state and the inadequacy of the environment for providing dementia care are thought to be related to the quality of care.

2. Background

In the 1980s, a study was conducted in the United States regarding "magnet hospitals" that have a high rate of nurse retention and produce good nursing practices. As a result of this study, it became widely recognized that a well-structured organizational environment is related to high-quality nursing practices (Kramer and Hafner, 1989). Investigations have subsequently been conducted on what type of work environment plays a role in the psychological states of nurses and care outcomes not only at hospitals but in a variety of nursing environments. A good hospital working environment was shown to be associated with improved nursing care quality and decreased patient mortality (Aiken et al., 2009), and it was found that improving the psychological state of individual nurses—as reflected in burnout, job satisfaction, and emotional exhaustion—along with the work environment resulted in better patient outcomes (Copanitsanou et al., 2017; Swiger et al., 2017). In 2019, a meta-analysis of the nurse work environment in hospitals reported that nursing in better work environments had 28%-32% lower odds of job dissatisfaction, burnout, or intention to leave. Furthermore, they had 23%-51% lower odds of rating nursing unit quality and safety as fair or poor (Lake et al., 2019). Moreover, examination of the effects of factors related to hospital nursing work—specifically, the nurse-physician relationship, nurse management at the ward level, management and organizational support at the hospital level, perceived workload, discretionary authority, and social capital—on the quality of care at hospitals through effects on burnout and work engagement showed that a good work environment had positive effects on burnout and work engagement and consequently on the quality of care (Van Bogaert et al., 2013a, 2013b, 2014, 2017). In other words, the organizational environment and psychological states of nurses have been shown to actually affect the quality of nursing care.

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In addition, providing training and know-how alone is not sufficient to improve the quality of care in dementia care at acute care hospitals. It is also necessary to relieve the sense of psychological burden experienced by nurses with respect to dementia care and establish a work environment that facilitates such care. Studies examining the work environment for dementia care and the quality of care found that for the staff involved in dementia care, support from and confidence in managers and an environment that allowed autonomy improved self-efficacy and reduced stress in the institutional care setting (Karantzas et al., 2016; McCabe et al., 2017). In the concept analysis, it was revealed that a team approach was as important as knowledge and experience for dementia nursing competency in acute care settings (Yamaguchi et al., 2019). However, the question of how the psychological state of individuals and the work environment are related to the quality of care has not been examined with a specific focus on dementia nursing practice at acute care hospitals. Improving the quality of care in the setting of the acute care hospital requires not only capable individuals, but also a supportive work environment. Consequently, the personal attributes and factors in the work environment that are related to the quality of dementia care need to be identified. The objective of the present study was to identify the factors that affect the quality of dementia care in an acute care hospital from the perspective of the personal attributes of those involved and the environment.

3. Methods

3.1 Design

The study design was a cross-sectional, hypothesis-testing design following the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist (Supplementary File 1) (Von Elm et al., 2008).

3.2 Participants and data collection

The subjects were nurses working at acute care hospitals in Japan who provided dementia care on wards. Excluded from the study were nurses who had qualifications as certified geriatric nurse specialists or certified dementia care nurses, nurse managers, nurses with less than 1 year of work experience, psychiatric nurses, intensive care unit nurses, and surgical nurses.

The required sample size—calculated using the Gpower 3.1 software and an effect size of 0.05, significance level of 0.05, and power of 0.80—was 358 subjects. Consequently, based on an estimated valid

response rate of approximately 10%, the questionnaire was distributed to 3,000 individuals.

Sampling was performed by obtaining a list of hospitals from the website of the Japan Hospital Association and selecting 300 acute-care hospitals with at least 200 beds nationwide. There were 7314 general hospitals in Japan in the year of the survey (Ministry of Health, Labour and Welfare, 2018). Chronic-care facilities such as psychiatric, pediatric, and rehabilitation hospitals were excluded. We selected every 3rd hospital from the list, and confirmed whether the hospitals fulfill the criteria.

A survey request form and 10 copies of the questionnaire were sent to the director of nursing at each selected hospital. We asked them to distribute 10 copies of the questionnaire to nurses who meet the inclusion criteria. Based on our requests, the managers selected nurses at their discretion.

The questionnaires were then returned directly by mail without the involvement of the nursing department.

3.3 Variables and measurements

As a conceptual framework, in dementia nursing practice in acute care hospitals, it was considered that both personal attributes and the practice environment for dementia care were related to the quality of care. It is assumed that the psychological state of individuals correlated with the quality of dementia care, so feelings towards people with dementia was included among personal attributes along with knowledge and years of work experience. A multiple regression equation model according to this framework was hypothesized and tested.

3.3.1 Personal attributes

The personal attributes examined were those thought to be related to the quality of dementia care based on previous studies: age, years of work experience, knowledge regarding people with dementia, and feelings towards people with dementia. Furthermore, data were collected on the following basic attributes of the subjects: sex, basic educational curriculum, and duty ward.

Twenty subscale items of the Dementia Attitudes Scale (DAS), 10 items each on "dementia knowledge" and "social comfort", were used to assess the subjects' knowledge and feelings towards people with dementia (O'Connor and McFadden, 2010). The DAS is a scale for measuring attitudes toward people with dementia that is recommended for use by students and care providers. "Dementia knowledge" is subscale that

addresses the cognitive domain of attitude, as described by features such as "It is important to know the past history of people with ADRD" and "It is possible to enjoy interacting with people with ADRD." This subscale can measure whether care providers cognize people with dementia based on appropriate knowledge. "Social comfort" is subscale that mainly addresses the affective domains of attitude; it can measure emotions towards people with dementia. Items are rated on a seven-point scale ranging from strongly agree to strongly disagree. Scores range from 20 to 140 points, with higher scores indicating more positive attitudes. Because a Japanese-language version of the scale has not been developed, the investigators translated it, then back-translated it for use in the survey. Permission to use the scale was first obtained from its developer, ML O'Connor. In examining the reliability of the questionnaire in this survey, a Cronbach's alpha of 0.87 was obtained for all items, and values of 0.8 and 0.84 were obtained for the subscales, indicating high reliability. The only difference in the factor structure as compared with the original version was that the item "It is rewarding to work with people who have dementia," which had been associated with feelings, was associated with the knowledge factor. In addition, factor loading for the item "We can do a lot now to improve the lives of people with dementia" overlapped across the two factors. Based on the semantic content of the items, the measurements in the survey were performed using the factor structure of the original version.

3.3.2 The practice environment for dementia nursing

With regard to the dementia care environment, the following variables considered to be related to dementia care practice based on a literature review were assessed: Nursing autonomy; Foundation for demonstrating nursing expertise; management and support provided by nurse managers; adequacy of time and staffing for care; relationship between nurses and physicians; and cooperation with coworkers. Moreover, in view of the activities of certified dementia care nurses, geriatric nurse specialists, and dementia care teams, which have played an active role in dementia care recently in Japan, it was determined whether specialists were available for consultation on dementia care in the organizations with which the nurses were affiliated. Furthermore, given the fact that daycare activities are now being implemented at hospitals, the question of whether activities to promote recreation and interaction among people with dementia are being conducted systematically was added to the conceptual framework.

Subscales of the Japanese version of the Practice Environment Scale of the Nursing Work Index (PES-NWI Japanese version) were used to assess the following variables: Nursing autonomy; Foundation for

demonstrating nursing expertise; management and support provided by nurse managers, adequacy of time and staffing for care, and relationship between nurses and physicians (Lake, 2002; Ogata, 2008; Ogata et al., 2010). The PES-NWI Japanese version consists of 31 items in five subscales: nurse participation in hospital affairs (nine items); nursing foundations for quality of care (10 items); nurse manager ability, leadership, and support of nurses (five items); staffing and resource adequacy (four items); and collegial nurse-physician relationship (three items). It is a scale that was developed with a focus on the nursing practice environment. The items are rated on a four-point scale ranging from totally agree to totally disagree. The scores range from 1 to 4 points. A composite score was created as the mean of the five subscale scores, with higher scores indicating a better nursing practice environment. The average scores of the five subscales are calculated and employed in the analysis. Cronbach's alpha is 0.9 for all items and 0.76 to 0.86 for the subscales, indicating reliability. Validity has also been verified. In the present study, each element of the conceptual framework was matched to a subscale.

For the variable "Cooperation with coworkers," the Coworker Support subscale (four items) of the Japanese version of Job Content Questionnaire (JCQ Japanese version) was used. The items are rated on a four-point scale ranging from strongly agree to strongly disagree. Scores range from 4 to 16 points, with higher scores indicating better support from coworkers. Cronbach's alpha is 0.7 or higher, indicating reliability, and construct validity has also been verified (Karasek, 1985; Kawakami et al., 1995).

Responses to the statements "There are specialists who consult about dementia care" and "There are efforts to promote interaction and recreation for dementia people" were used to assess whether specialists were available for consultation and whether there were systematic initiatives to provide people with recreation and interaction as part of dementia care. Responses to these statements were binarized as "Yes" and "No".

3.3.3 The quality of dementia care

The dependent variable was the quality of dementia care.

The Dementia Nursing Competency Scale in Acute Hospitals (27 items, DNCS-AH), developed by this research team, was used to assess the quality of dementia care. The DNCS-AH consists of five subscales concerning dementia nursing practice. Items are rated on a six-point scale ranging from very often to never. Scores range from 27 to 162 points, with higher scores indicating a higher quality of dementia nursing

practice. The initial DNAS-AH items were generated based on semi-structured interviews with nurses practicing dementia care at acute care hospitals, concept analysis (Yamaguchi et al., 2019) and review of previous studies about dementia care. A total of 773 acute ward nurses who have worked at least one year and experienced taking care of patients with dementia were evaluated using the questionnaire of DNCS-AH. After excluding items with ceiling and floor effects and confirming item-total correlation, five subscales with 27 items were assessed by exploratory factor analysis (EFA) using the Promax rotation. The factor loading of each item was above 0.35 in the EFA model. Internal consistency of DNCS-AH assessed by Cronbach's alpha coefficients was 0.93. Test-retest reliability was assessed by 207 acute hospital nurses at one month. The intraclass correlation coefficients of the DNCS-AH was 0.86. Confirmatory factor validity was implemented to test the fitness of the data to factor structure; the ratio of chi-square was 1349.659 (p <.001); the goodness of fit index was 0.868; the adjusted goodness of fit index was 0.844; the comparative fit index was 0.868; the root mean square error of approximation was 0.065, and the Akaike information criterion was 1467.659.

3.4 Data analysis

To determine the basic attributes of the population, descriptive statistics were calculated for each variable. In the analysis, binary variables were analyzed as dummy variables. To check the distribution of variables, a Kolmogorov-Smirnov test was performed. To determine the relationships between the explanatory variables in the conceptual framework and the quality of dementia care, Spearman's rank-order correlation analysis was performed. For binary categorical variables ("There are specialists who consult about dementia care." and "There are efforts to promote interaction and recreation for dementia people."), an unpaired t-test was performed to determine whether there was a difference between two groups in the DNCS-AH total score.

To validate the conceptual framework, a multiple regression analysis using the forced-entry method was performed for variables for which there was a significant correlation or difference with respect to the quality of dementia care. Multicollinearity was diagnosed by examining the Variance Inflation Factor (VIF). To assess the distribution of residual, the Durbin-Watson ratio and normal Q-Q plot were verified. The software used in the analysis was SPSS version 2.5. A significance level of 0.05 was used.

3.5 Ethical approval and informed consent

The present study was conducted with the prior approval of the Institutional Review Board of Kobe University (approval number: 729). The study subjects provided informed consent for the survey by checking a box in the informed consent section of the questionnaire after reading an explanation of the study objectives and methods and being informed that participation was voluntary and that they would not be disadvantaged by not responding. This information was provided on the survey request form. The survey form was anonymous, and the questionnaires were collected by having the subjects themselves return them so that no coercion was involved.

4. Results

The questionnaire was returned by 878 of the 3,000 individuals to which it was sent (response rate, 29%). Of these, 105 individuals were excluded from the analysis based on factors such as affiliation and attributes that meet the exclusion criteria (nurses who had qualifications as certified geriatric nurse specialists or certified dementia care nurses, nurse managers, nurses with less than 1 year of work experience, psychiatric nurses, intensive care unit nurses, surgical nurses, and nurses who had a missing data in the DNCS-AH scale), and 773 were included.

4.1 Study subjects and scale scores (Table 1)

By sex, 724 of the subjects (93.7%) were women. Examination of their basic educational curriculum showed that 476 (61.6%) had graduated from a 3-year professional school.

Approximately 30% each worked in a surgical ward, internal medicine ward, or mixed ward. Unpaired t-tests and a one-way ANOVA of variance were performed to determine whether there were differences in the DNCS-AH scores according to sex, basic educational curriculum, or duty ward. However, no significant differences were seen between the groups. As a result of the Kolmogorov-Smirnov test, only DNCS-AH score was normally distributed. The mean age of the subjects was 37.4 years (SD = 9.3), and the mean years of work experience was 14.0 (SD = 8.7). The mean, standard deviation, minimum, and maximum for each variable are shown in Table 1.

4.2 Correlations between DNCS-AH score and scores for continuous variables (Table 2)

Spearman's rank-order correlation analysis was performed for DNCS-AH score and scores for the

explanatory variables that were continuous variables. Significant correlations were seen for the following variables: knowledge, $\rho = 0.423$, $p < 0.01$; feelings towards people with dementia, $\rho = 0.420$, $p < 0.01$; nurse participation in hospital affairs, $\rho = 0.311$, $p < 0.01$; nursing foundations for quality of care, $\rho = 0.352$, $p < 0.01$; nurse manager ability, leadership, and support of nurses, $\rho = 0.235$, $p < 0.01$; staffing and resource adequacy, $\rho = 0.241$, $p < 0.01$; collegial nurse-physician relations, $\rho = 0.262$, $p < 0.01$; and coworker support, $\rho = 0.273$, $p < 0.01$.

4.3 Difference in mean DNCS-AH score according to presence or absence of systematic dementia care initiatives (Table 3)

For binary categorical variables, an unpaired t-test was performed to determine whether there was a difference in the mean DNCS-AH score. The results showed a significantly higher mean score ($p < 0.001$) for nurses who worked in organizations that had a mechanism for consulting with specialists and systematically promoted recreation and interaction among patients.

4.4 Factors related to the quality of dementia care (Table 4)

A multiple regression analysis using the forced-entry method was performed with the quality of dementia care as the dependent variable. The explanatory variables were 10 variables for which a significant correlation was seen in the correlation analysis or a significant difference was seen in tests of the differences. Multicollinearity diagnostics showed the variance inflation factor to be ≤5 for all of the variables. Regarding the distribution of the residual, the Durbin-Watson ratio was 2.06 and a normal Q-Q plot was formed a straight line. The coefficient of determination adjusted for degrees of freedom was 0.367 for all of the explanatory variables entered. The following variables were found to be related to the quality of dementia care: feelings towards people with dementia, $\beta = 0.271$, $p < 0.001$; knowledge, $\beta = 0.251$, $p < 0.001$; nursing foundations for quality of care, $\beta = 0.132$, $p < 0.01$; systematic promotion of recreation and interaction, $\beta = 0.106$, $p < 0.01$; staffing and resource adequacy, $\beta = 0.088$, $p < 0.05$; mechanism for consulting with specialists, $\beta = 0.080$, $p < 0.01$.

5. Discussion

The present study identified the personal and environmental factors that affect the quality of dementia

care at acute care hospitals, which previously had not been identified. At the personal level, having a positive emotions and knowledge of people with dementia affected the quality of care. These results indicate that knowledge and feelings play an important role also in improving the quality of care in the course of dementia nursing practice. The quality of dementia care was affected by the following environmental factors where dementia care was practiced: working in an environment with a nursing foundation that supports the quality of care, adequate staffing, the opportunity to consult with specialists about dementia care, and systematic efforts to promote interaction and recreation among people with dementia. This showed that the quality of care is improved by taking a systematic approach to dementia care and establishing an educational system and a practice environment that facilitates efforts to reduce the burden on nurses.

Knowledge is essential for nursing (Garside et al., 2013), and the ability to provide care based on accurate knowledge is also important in the field of dementia care (Dewing et al., 2016; Evripidou et al., 2019; Tsaroucha et al., 2013). The results of the present study also supported this theory, showing that the quality of care increased with the level of accurate knowledge regarding people with dementia. Training to improve the ability of nursing staff to respond to dementia is currently being promoted in Japan, and studies of training for care providers are being conducted internationally (Ministry of Health, Labour and Welfare, 2017; Surr et al., 2016). Training programs were found to significantly enhance nurse's knowledge in the provision of dementia care (Evripidou et al., 2019), systematic support and diligent independent learning will be desirable in the future to enable nurses to develop care based on accurate knowledge.

Previous studies have shown that work-related stress and positivity regarding care affect the quality of care (Copanitsanou et al., 2017; Karantzas et al., 2016; McCabe et al., 2017). Consequently, the present study measured the nurses' feelings towards people with dementia as a psychological factor in providing dementia care. These included both favorable and negative emotions, as indicated by expressions such as "It is rewarding to work with people who have dementia" and "I cannot imagine caring for someone with dementia." As in previous studies, the results indicated that the quality of care increased with the positive emotions the nurses held regarding people with dementia. Moreover, this was the biggest factor affecting the quality of dementia care. Many reports in the literature have noted that nurses who provide dementia care feel burdened by the care they provide and lack confidence in it (Dewing et al., 2016). The present study indicated that a lack of self-efficacy with respect to the care they provide and a negative image of people with dementia are factors in the low quality of dementia care noted at acute care hospitals. The results of the

present study indicated that it is important to take action so that nurses have a positive image of dementia care. Zhao et al. (2020) reported that "interest in dementia care" made the largest contribution for hospital healthcare professionals' attitudes towards dementia care. This suggests a positive image of dementia care can be accomplished by creating a system that supports the nurses by not only enabling them to acquire accurate knowledge and skills through training, but also providing opportunities to reflect on dementia care, and playing a supportive role.

The present study suggested that establishing a nursing foundation that supports care quality plays a role in the quality of dementia care. Reflected in this concept is a hospital nursing system structured so that nursing expertise is manifested, as described by features such as "active inservice/continuing education programs for nurses" and "a clear philosophy of nursing that pervades the patient care environment" (Lake, 2002; Ogata et al., 2008,). It is known that an environment that promotes autonomous activities by nurses has positive effects on the psychological state of nurses and the quality of care (McCabe et al., 2017; Swiger et al., 2017). It is important to establish an organizational structure that enables nurses to exhibit their expertise and provide dementia care autonomously. Ensuring adequate staffing and time for appropriate care to be provided played a role in the quality of care. For nurses who work at acute care hospitals, the sense of burden that results from a lack of time and personnel when caring for people with dementia can lead to negative emotions regarding dementia care and be a source of stress (Tropea et al., 2017). Ensuring adequate time and personnel to provide care, including addressing in-hospital daycare and cooperating with volunteers and individuals from other occupations, will likely become increasingly important for improving the quality of care provided by individual nurses.

The present study showed that establishing a system for consulting with experts, the factor that was included in the present study because we considered that it is related to dementia nursing practice from our experience, is related to the quality of dementia care. Specialists such as certified dementia care nurses and geriatric nursing specialists, along with dementia care teams, have already started to play an active role in dementia care, and a practical benefit of having a mechanism for consulting with such specialists and educational activities is thought to be improving the quality of care provided by generalist nurses. This finding may reinforce the significance of the experts' activities from the perspective of not only a direct effect of the involvement of specialists with the patient but also the possible improvement of the quality of dementia care among nurses in the organization as a whole. A study by Griffiths et al. (2015) found that an

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important role of nurses who are dementia specialists is increasing the dementia care skills of generalist nurses. The expansion of such activities in the future will be desirable to increase the quality of dementia care provided by individual nurses at acute care hospitals.

In recent years, some acute care hospitals have initiated recreational and social activities specifically for people with dementia, such as dementia daycare programs and reminiscence therapy. The present study suggested that systematically addressing social interactions and recreational activities for people with dementia affects the quality of care that nurses provide. A work environment that systematically approaches dementia care is thought to not only directly reduce the burden on nurses through division of care duties, but also to lead to an improved quality of care as a result of nurses having opportunities to be in charge of people with dementia and care tailored to such people, which improves awareness of dementia care. It has been noted that there is no individualized care and that satisfaction with hospitalization is poor (Jurgens et al., 2012), which provides further justification for continuing to establish an environment for providing care to people with dementia in the future.

Although it is generally thought that clinical ability increases with work experience (Numminen et al., 2013; Swiger et al., 2017), the results of the present study showed no relationship between age or years of work experience and the quality of dementia care. Regarding dementia care, Evripidou et al. (2019) reported that "registered nurses under 50 years of age or with more than 10 years of experience indicated more hopeful attitudes. Moreover, nurses over the age of 50, who indicated less hopeful attitudes, provided less person-centered care ($p < 0.01$). In contrast, nurses under the age of 40 indicated more hopeful attitudes, resulting in providing more person-centered care for people with dementia". A possible explanation for the absence of a relationship between practical ability and years of work experience in dementia care is that dementia care education in the clinical setting, such as training to improve the ability of nursing staff to respond to dementia, has been implemented in earnest only in recent years.

Although a previous study in fields not limited to dementia care found that factors such as the relationship between nurses and physicians, management and support by nurse managers, and support from coworkers were related to improvements in the quality of care (Lake et al., 2019; Swiger et al., 2017), the present study found no such relationships. Factors in the general working environment, such as relationships with superiors, physicians, and coworkers, did not appear to have a major effect on the psychological factors related to the quality of care, such as the sense of burden, a lack of confidence, and a lack of knowledge, which are

characteristics of dementia care at acute care hospitals. Especially, in the multiple regression model, there is a very weak negative correlation between nurse manager ability, leadership, and support of nurses and quality of dementia care. On the other hand, the Spearman's rank correlation revealed a positive correlation between them. In this study, knowledge and feelings towards people with dementia had a stronger association with the quality of dementia care than the work environment. Therefore, it was considered that nurse manager ability, leadership, and support of nurses were especially influenced by knowledge and feelings towards people with dementia and it is assumed that nurses had implemented a high quality of care even if their managers were not supportive.

6. Limitations

One of the limitations in this study was sampling bias. We selected hospitals randomly from a list of the Japan Hospital Association and distributed ten questionnaires to each hospital. However, participants were not selected randomly at each hospital, so the representatives might have differed between hospitals. The other limitation was that the answers depended on participants' self-evaluations, so we should collect objective data or include patients' views for more rigorous results. Additionally, the present study used a cross-sectional design that does not support a causal conclusion.

7. Conclusions

The present study identified factors that affect the quality of care in the practice of dementia care at acute-care hospitals. The quality of dementia care was correlated with the nurses' feelings and knowledge of people with dementia, the establishment of a nursing foundation, and whether staffing was adequate. Also affecting the quality of care were whether specialists were available for consultations on dementia care and whether the nurse worked at a hospital that took a systematic approach to dementia care.

The individuals' feelings and knowledge were found to have a stronger effect on the quality of care than the environment in which nursing was practiced. Consequently, to improve the quality of dementia care, the aim must first be to improve individual nurses' feelings and knowledge. As the ability of individuals is increased, approaches to improving the nursing practice environment should then be implemented, such as establishing a foundation and system for nursing and providing specialized care for people with dementia.

8. Relevant to clinical practice

The results of this study will be helpful for improving the quality of dementia nursing in acute care hospitals, which is currently an important issue. The first priority for putting high-quality dementia care into practice at acute care hospitals is for nurses to improve their practical ability by acquiring knowledge and skills though individual education and training or diligent self-learning. Also important for improving the quality of care, however, are to reduce the sense of burden, build confidence, and alleviate the stress that nurses involved in actual care experience with respect to dementia care. The negative image and stress on dementia nursing can affect the quality of care in acute care hospitals. Accomplishing this will require ongoing measures to alleviate the substantive burden by means such as enabling support from specialists with specialized skills and knowledge, establishing a nursing system, and ensuring adequate staffing.

Conflict of interest

The authors declare that there is no conflict of interest.

Author Contributions

Shoko Urashima: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Resources, Data curation, Writing – original draft. Chieko Greiner: Conceptualization, Methodology, Validation, Resources, Writing – review & editing, Supervision, Project administration, Funding acquisition. Hirochika Ryuno: Validation, Formal analysis. Yuko Yamaguchi: Validation, Formal analysis.

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Table 1. Participant demographics and measurement scores

n=773

		n	%
Sex	Female	724	93.7
	Male	48	6.2
	Non-response	1	0.1
Education	University	92	11.9
	College (3 years)	72	9.3
	Diploma (3 years)	476	61.6
	Upper secondary school	55	7.1
	Other	76	9.8
	Non-response	2	0.3
Duty ward	Surgical ward	237	30.7
	Internal medicine ward	257	33.2
	Mixed ward	275	35.6
	Other	3	0.4
	Non-response	1	0.1

	Mean ± SD	Min-Max
Age	37.4± 9.3	22-60
Work experience	14.0± 8.7	2-39
Knowledge	50.6± 6.4	18-70
Feelings towards people with dementia	43.5± 8.3	11-68
the Japanese version of The Practice Environment Scale of the Nursing Work Index[†]	2.6±0.4	1.2-4
Nurse Participation in Hospital Affairs[‡]	2.6± 0.4	1.1-4
Nursing Foundations for Quality of Care[‡]	2.7± 0.4	1.1-4
Nurse Manager Ability, Leadership, and Support of Nurses[‡]	2.8± 0.6	1-4
Staffing and Resource Adequacy[‡]	2.1± 0.5	1-4
Collegial Nurse–Physician Relations[‡]	2.6± 0.6	1-4
Coworker Support	11.8± 1.5	4-16
The Dementia Nursing Competency Scale in Acute Hospitals	111.9±14.4	39-161

[†]: The composite score of the Practice Environment Scale of the Nursing Work Index
[‡]: The average scores of the five subscales of the Japanese version of the Practice Environment Scale of the Nursing Work Index

Table 2. Correlation between total DNCS-AH score and continuous variables

n=773

Variable	Correlates of the total score on the DNCS-AH
Age	-0.039
Work experience	-0.023
Knowledge	0.423**
Feelings towards people with dementia	0.420**
Nurse Participation in Hospital Affairs	0.311**
Nursing Foundations for Quality of Care	0.352**
Nurse Manager Ability, Leadership, and Support of Nurses	0.235**
Staffing and Resource Adequacy	0.241**
Collegial Nurse-Physician Relations	0.262**
Coworker Support	0.273**

**: $p < 0.01$ Spearman's rank correlation test

Table 3. Difference in mean DNCS-AH score according to presence or absence of systematic dementia care initiatives

n=773

	Frequency （%）	Mean ±SD
Specialists		
Yes	465 （60.9）	113.6±13.8 ⌉***
No	299 （39.1）	109.2±15.0 ⌋
Efforts to promote recreation		
Yes	173 （22.7）	116.9±13.4 ⌉***
No	590 （77.3）	110.4±14.4 ⌋

***: $p < 0.001$ independent t-test

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Table 4. Multiple regression of DNCS-AH of personal attributes and the practice environment for dementia nursing

n=773

Variable		B (95%CI)	β
Personal attributes	Knowledge	0.571 (0.418, 0.724)	0.251***
	Feelings towards people with dementia	0.467 (0.351, 0.582)	0.271***
The practice environment for dementia nursing	Nurse Participation in Hospital Affairs	1.991 (-1.108, 5.09)	0.060
	Nursing Foundations for Quality of Care	4.989 (1.441, 8.537)	0.132**
	Nurse Manager Ability, Leadership, and Support of Nurses	-0.999 (-2.899, 0.901)	-0.039
	Staffing and Resource Adequacy	2.330 (0.471, 4.19)	0.088*
	Collegial Nurse–Physician Relations	0.244 (-1.584, 2.072)	0.010
	Coworker Support	0.577 (-0.04, 1.195)	0.062
	There are specialists who consult about dementia care.	2.346 (0.578, 4.114)	0.080**
	There are efforts to promote interaction and recreation for dementia people.	3.632 (1.589, 5.676)	0.106**
R^2			0.376
Adjusted R^2			0.367

*: $p <0.05$ **: $p <0.01$ ***: $p <0.001$ multiple regression analysis (simultaneous forced entry)