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Research Article

Relationship between Unit-Level Nurses' Expectations from Nursing Assistant Roles and Individual Nursing Assistants' Information-Sharing Behaviors: A Multilevel Mediation Analysis

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SUMMARY

Purpose: This study aimed to investigate the relationship between the expectations of unit-level nurses from nursing assistants (NAs), frequency of individual NAs' information-sharing behaviors with nurses, and the effect of NAs' self-perceived roles on this relationship. NAs provide patient care along with nurses, and their information-sharing behaviors with nurses may be influenced by the expectations of the nurses.

Methods: Nurses and NAs from 104 integrated community care (sub- and postacute) units were included in this Japanese cross-sectional study conducted from July to September 2018. Nurses' expectations from NAs and the NAs' self-perceived roles and information-sharing frequency were measured. Multilevel mediation analysis was performed for NAs' information-sharing behaviors, such as expressing, asking, providing linguistic responses, and providing feedback.

Results: Unit-level nurses' expectations from NAs were associated with the frequency of NAs' asking and responding behaviors with nurses ($p < .05$), mediated by the NAs' self-perceived roles. The frequency of NAs' expressing behaviors and feedback were also associated with their self-perceived roles ($p < .001$).

Conclusions: High expectations of unit-level nurses from NAs led to better perception by NAs of their roles and led to better information-sharing behaviors. Educating nurses on NAs' roles may improve information-sharing between nurses and NAs that leads to safe and appropriate care to patients.

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Introduction

Nursing assistants (NAs) are often included as a part of a care delivery team. A systematic review of the activities of NAs revealed that NAs globally provide direct care, regardless of their specialty area [1]. NAs also provide patient care by themselves; therefore, they need to collaborate with the nurses. Sharing patient information and collaboration between nurses and NAs are critical to providing high-quality patient care [2,3]. Organizational research by Mesmer-Magnus et al. [4] reported that information-sharing within teams was a positive predictor of team performance [4].

Similarly, appropriate information-sharing between nurses and NAs reportedly reduced patient fall rates [5]. Thus, facilitating information-sharing between nurses and NAs is important for quality care [6].

There is a global shortage of medical personnel, and to reduce costs at medical facilities, there has been an increased focus on personnel who can assist with nursing tasks without the need for specific qualifications [1,3,7]. Some tasks of NAs are complex and require high-level skills and are the same as those of nurses [1]. Therefore, promoting collaboration between nurses and NAs is essential for delivery of quality care. However, NAs are seldom considered as professionals or members of the healthcare team despite them providing direct patient care in healthcare settings [8,9].

To cope with the rapidly aging population in Japan, integrated community care units (sub- or postacute care units) have been established to help people live in the familiarity of their communities. Specifically, one or two integrated community care units

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have been established in each hospital. Some patients in these units require rehabilitation and disease management, whereas others require acute treatment [10]. Most patients wish to return home or be admitted to a nursing home, but they require support with activities of daily living. Nurses and NAs work together to provide care, such as assistance with eating, toileting, and bathing.

In Japan, task shifting is being promoted to increase healthcare professionals' efficiency when completing tasks. In nursing tasks, NAs at some hospitals are certified care workers who have professionally learned about caregiving, whereas some NAs are unlicensed. NAs' tasks overlap those performed by nurses under the latter's supervision. Although NAs do not require some of the specific certifications as those required for certified care workers, they are expected to provide patients with care that is necessary for recuperative living, such as assistance with eating, toileting, and bathing, based on the training provided by hospitals. Therefore, in this study, we define an NA as a staff member who assists in providing basic patient care.

Nurses' expectations of the NA role

Although nurses and NAs have different roles, their tasks in direct patient care overlap. The role of the nurse is to assist in medical treatment, provide patient care, perform clinical decision making, and coordinate patient care [11], whereas the NA is providing direct patient care as well as care that does not involve direct contact with the patient to support the nurse's work.

Kalisch [12] indicated that nurses' leadership is a key element of an effectively functioning nursing team. To meet this goal, understanding the role of each team member is essential. Previous research has indicated that nurses and NAs have different perceptions of the NA role [2], which varies even among nurses [13,14]. The role of NAs is largely viewed from the perspective of the tasks they perform rather than how they function as members of a nursing team. In a previous study, Saiki et al. [15] focused on how NAs serve as a part of a nursing team and established a relationship between nurses' perceptions of the roles of NAs and their information-sharing behaviors with NAs. To promote interprofessional collaboration, all nurses in a unit must understand the role of NAs and convey their role expectations to the NAs. However, to the best of our knowledge, no study has quantitatively examined the relationship between the expectation of NAs by all members of a nursing unit and the individual NA's behaviors.

In Japan, registered nurses and assistant nurses (licensed practical nurses) are hired as professional nurses [16,17]. Registered nurses are licensed by the national government, whereas assistant nurses are licensed by the prefecture and legally perform their duties under the direction of a physician or nurse. Although registered nurses and assistant nurses have different legal work order systems, they perform almost identical tasks. To support the work of nurses and assistant nurses, NAs are employed, and there is no difference between nurses and assistant nurses in their relationship with NAs [39]. We treated both nurses and assistant nurses as nurses in this study.

NAs' information-sharing behaviors with nurses

A major part of an NA's role involves interacting with patients and observing minor changes in the patients' conditions [14,18]; NAs often note information about patients that can only be acquired by them [18,19]. However, nurses believe that NAs do not communicate such information at the time of delivering care [12]. Another study found that NAs are unable to ask nurses questions or fail to provide them with information about care [20]. Therefore, information-sharing, especially by NAs, may not be adequate.

In the field of healthcare, face-to-face communication is important for sharing information among employees [21]. According to Downs and Adrian [22], each person is a sender and receiver of information, with the receiver also providing feedback. The accuracy of the shared information increases when the receiver verifies the received information and provides feedback [22]. Therefore, nurses and NAs must improve their information-sharing behaviors, such as providing information, asking questions, verifying their understanding, and providing feedback. Accordingly, identifying strategies that improve NAs' information-sharing behaviors is essential.

Mediating effects of each individual NA's role perception

The hierarchical relationship between nurses and NAs makes it challenging for NAs to share information with nurses [9]. NAs were found to actively provide input and ask questions about care in units where team members are aware of the role of NAs [18]. Nurses' understanding of the role of NAs who work with them could be the key to improving NAs' information-sharing behaviors.

According to the role theory, an individual understands the role expectations of "specific others" and, subsequently, internalizes the role expectations of "generalized others" through role acquisition [23]. The "specific others" are also known as "significant others," and they influence the individual [24]. Previous studies have showed that the perception of the presence of nurses is a key factor in NA's behavior [20,25]. Saiki et al. [26] revealed that NAs' perception of the nurses' expectations from their roles was the key factor influencing how NAs participated in the nursing team. Therefore, NAs may internalize their roles from the role expectations of nurses and choose their own behaviors. We hypothesized that unit-level nurses' expectation from NAs mediates the role perceptions of NAs and improves their information-sharing behaviors with the nurses, which is an essential part of their jobs.

This study aimed to investigate the relationship between the expectations of unit-level nurses from NAs and the frequency of individual NAs' information-sharing behaviors with nurses and to assess the potential mediating effect of NAs' self-perceived roles in this relationship.

Methods

Study design and participants

This was a cross-sectional study on nurses, including registered nurses and assistant nurses, and NAs working in integrated community care units in Japan from July to September 2018. The number of nurses and NAs in each unit was 19.8 and 6.2, respectively [16].

All the nurses assigned to the included units were recruited, excluding only the frontline nurse managers of these units who were rarely expected to work with NAs. An earlier study reported that the stage of socialization at which the values and norms of an organization are acquired is approximately 6 months after employment [27]. It may have taken 6 months for NAs to be influenced by nurses; therefore, NAs who had worked in the unit for >6 months were targeted.

Data collection

Figure 1 presents the flowchart of participant recruitment. Data were collected from July to September 2018 by sending research requests to 182 hospitals randomly selected from Japan. We provided written explanation to the directors of the nursing departments of hospitals with at least one integrated community care unit requesting their participation. A survey was conducted at each

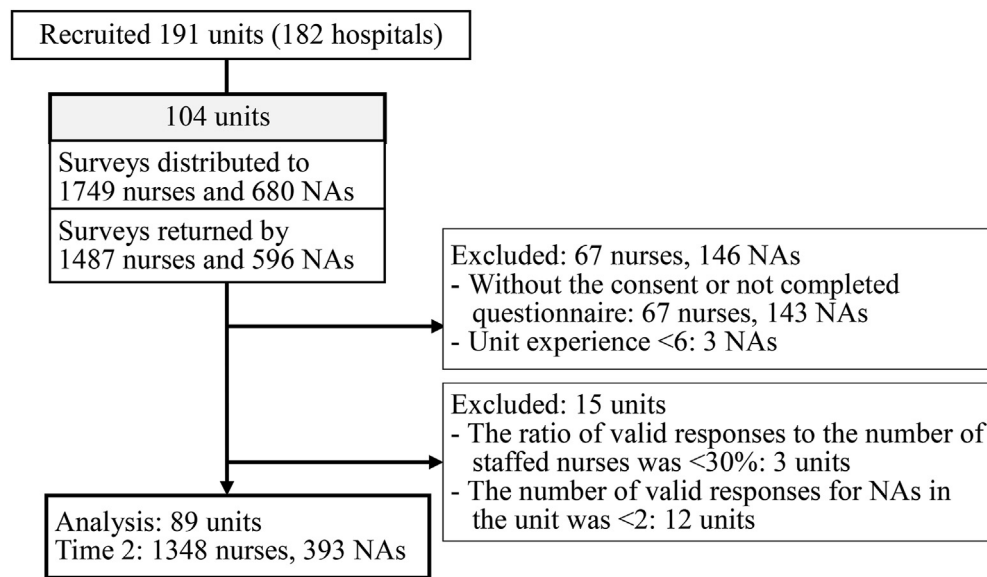


Figure 1. Participant Recruitment Flowchart.

hospital wherein each unit provided their consent and the units of the hospitals willing to participate were identified. Frontline nurse managers distributed the questionnaires to all nurses and NAs in their units. Collection boxes were placed in the units for 2 weeks, and the participants were instructed to seal their completed anonymous questionnaires in the unmarked opaque security envelopes provided and place the sealed envelopes in the collection boxes, which were returned to the researcher without checking the collection status. Overall, 1,787 nurses and 596 NAs from 104 units responded to the survey.

Inclusion criteria were participant consent to research and at least 6 months of unit experience for the NAs. The study excluded 67 nurses and 143 NAs with no research consent or with blank responses and 3 NAs with <6 months of experience. Nurses were treated as a unit-level variable. In order to ensure unit representativeness, we excluded three units with <30% valid responses from the number of nurses in each unit after checking participation. In addition, 12 units with <2 valid responses were excluded to assure variance in each unit for NAs. We assessed 1348 nurses and 393 NAs from 89 units for the final analysis.

Measurements

Nurses' expectations of the role of NAs and the NAs' perceptions of their role

Nurses' expectations from NAs and NAs' perceptions of their own role were measured using a perception scale for the role of NAs [28]. The scale comprises 16 items with the following four subscales: "improving patients' abilities through daily care," "caring for various patients using broad perspectives," "facilitating coordination and cooperation among team members," and "increasing the amount of information on patients among team members." We asked the nurses the following introductory question: "Do you expect NAs to take on this role in your unit?" For NAs, we provided the following introductory question: "Do you think the nurses in your unit expect you to take on each role?" The participants rated each item on a 5-point Likert scale from XX to XX. Cronbach's alpha coefficients of the subscales were 0.78–0.81 for nurses and 0.67–0.84 for NAs. As per the method approved by the author of the scale, the sum of the mean scores for each subscale was calculated and used as the NA role perception score (range: 5–20).

The indicators for evaluating the validity of the aggregation of nurses' expectations from NAs as a unit-level variable are as follows: ICC1 (intraclass correlation), 0.11; ICC2 (reliability of the means), 0.68; and r_{wg} (measure of agreement within units), 0.93 [31]. We calculated the average of the nurses' scores in each unit, which was representative of the unit-level variable. A higher scale score was interpreted as a higher understanding of the NA's roles at the unit level and higher expectations for NAs in their own unit.

NAs information-sharing behaviors with nurses

We operationally defined information-sharing behaviors as verbal behaviors, including expressing, asking, linguistic response, and feedback. To assess the expressing and asking aspects of information-sharing, a subscale of a communication audit developed for Japanese care facilities was used [29], which comprised five items (e.g., information on patient condition). The participants were asked, "On average, how often do you express the following items to nurses?" for expressing and "On average, how often do you ask nurses for the following items?" for asking to evaluate the behavior toward the entire unit. Responses were rated on a 5-point Likert scale from 1 (never) to 5 (always).

To measure linguistic responses, the "linguistic response to the conversation" subscale of the revised version of the Listening Skills Scales was used [30]. Participants were presented with the following sentence: "Please choose the statement that best applies to your behavior when interacting with a nurse." This scale comprises seven items, e.g., not only listening but sometimes telling the other person what you thought or felt. Responses were rated on a 5-point Likert scale, with responses ranging from 1 (absolutely inappropriate) to 5 (absolutely appropriate).

The participants were asked how often they provided feedback to nurses regarding the information they received. The scale was developed in an earlier study on nurses and its reliability ($\alpha=0.91$) and content validity have been confirmed [15]. This feedback included the value of the information they received from nurses in terms of its validity; the importance of the information; and the possibility, result, and effects of the utilization of this information. The participants were asked "On average, how often do you provide feedback regarding the following items to nurses if you received any information from nurses?" This scale comprises five items (e.g., telling nurses that the information is important for the NA's job).

The responses were rated on a 5-point Likert scale from 1 (never) to 5 (always).

Cronbach's alpha coefficients for the information-sharing behaviors of telling, asking, linguistic response, and feedback were 0.89, 0.88, 0.90, and 0.93, respectively. We calculated the mean score of each of the four scales and used each for analysis. Higher scale scores are interpreted as higher frequency of each behavior.

Unit- and individual-level characteristics of the participants

Frontline nurse managers were asked about the number of nurses and NAs in their units. We calculated the ratio of NAs to nurses in the units. The greater the ratio of NAs to nurses, the more likely NAs were assumed to share information with nurses. Hence, we adopted the staff ratio as the unit-level control variable. Nurses and NAs were individually asked about their age, gender, marital status, employment status (permanent or part-time), and years of experience working at the hospital. NAs were also asked whether they were certified care workers. From the list of NAs' individual characteristics, we adopted employment status, hospital experience, and qualification of certified care workers as individual-level control variables, which were expected to be related to NAs' information-sharing behaviors toward nurses.

Ethical considerations

All participants were informed regarding the study purpose, methods, voluntary nature of participation, and privacy protections. We only analyzed the data of participants who provided consent. The unit identification given to each questionnaire was used only to connect each case between nurses and NAs. This study was approved by the Institutional Review Board of the X University (Approval no. 11XX2).

Statistical analyses

To examine how much of the overall variance in the dependent variables could be explained by the interclass variance, the ICCs were calculated using the null model. The ICCs for each dependent variable were as follows: 15.2% for expressing, 17.1% for asking, 3.1% for linguistic response, and 4.0% for feedback. Although the ICC typically ranges between 5.0% and 20.0% [31] and the ICC of the linguistic response and feedback were <5.0%, we adapted hierarchical linear modeling for all dependent variables as this study aimed to examine the effects of unit-level variables on individuals.

A random intercept model wherein the variance was allowed only in the intercept of each unit was used to analyze NAs' information-sharing behaviors as the dependent variable, and the

restricted maximum likelihood method was used for estimation. Referring to methodological studies, we tested for cross-level mediation (2-1-1 model) [32,33]. We presented the proposed analytical model in Figure 2. First, we entered the nurses' expectations from NAs as a unit-level independent variable (Model 1). Second, we entered variables using Model 1 into Model 2, in which the individual NAs' role perception is the dependent variable. Third, we added individual NAs' role perceptions to Model 1 as a mediator variable (Model 3). Finally, we used bootstrapping with 20,000 Monte Carlo replications to examine the multilevel mediation effect [34]. Statistical analysis was performed using the "lme4" package [35] in R Studio version 3.5.1 at a significance level of 5.0%. Monte Carlo confidence intervals (CIs) were calculated using the R web utility developed by Selig et al. [36].

Results

Participant data

Table 1 presents the demographic data of the participants. Means (standard deviations) for the four information-sharing behaviors of NAs were as follows: 3.48 (0.89) for expressing, 3.24 (0.77) for asking, 3.61 (0.65) for linguistic response, and 3.18 (0.87) for feedback (Table 2).

Relationship between nurses' expectations from NAs and the frequency of individual NAs' information-sharing behaviors with nurses

There was a statistically significant relationship between the unit-level nurses' expectations from NAs and the frequency of the following NA information-sharing behaviors: asking (Model 1b, $\gamma_{02} = 0.14$, $p = .008$) and linguistic response (Model 1c, $\gamma_{02} = 0.08$, $p = .038$). In contrast, expressing (Model 1a) and feedback (Model 1d) were not affected (Table 3).

Mediating effects of individual NAs' role perceptions

We investigated the mediating effects of the NAs' role perceptions on the abovementioned relationship (Table 3). Unit-level nurses' expectations from NAs correlated with the individual NA's role perceptions (Model 2, $\gamma_{02} = 0.69$, $p < .001$). Furthermore, each individual NA's role perceptions correlated with the following two information-sharing behaviors: asking (Model 3b, $\gamma_{40} = 0.11$, $p < .001$) and linguistic response (Model 3c, $\gamma_{40} = 0.08$, $p < .001$); nurses' expectations from NAs no longer had a significant effect on individual NA's information-sharing. The 95% CIs calculated by

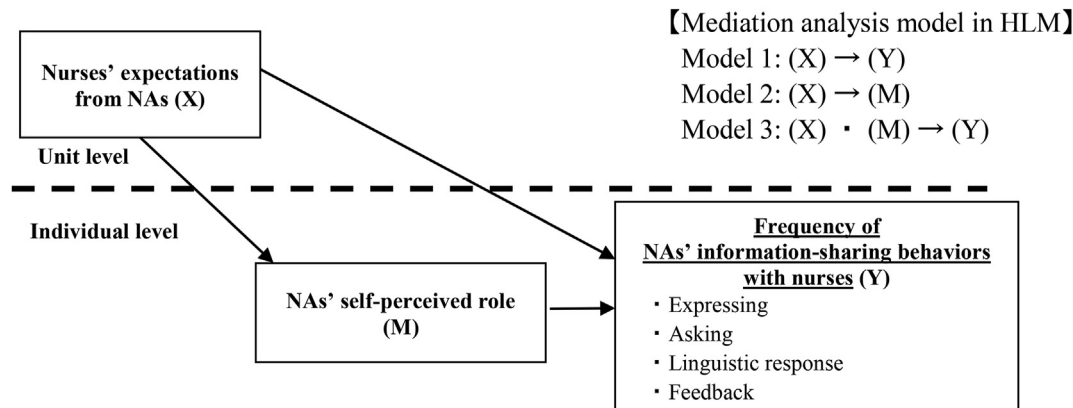


Figure 2. Proposed Analytical Model.

Table 1 Participant Characteristics.

Variables	Categories	Nurses		NAs
		(n = 1348)		(n = 393)
Gender ^a	Women	1228	(91.1)	336 (85.5)
	Men	80	(5.9)	31 (7.9)
	Missing	40	(3.0)	26 (6.6)
Marital status	Single	413	(30.6)	94 (23.9)
	Married	731	(54.2)	193 (49.1)
	Divorce or widowed	135	(10.0)	74 (18.8)
	Missing	69	(5.2)	32 (8.2)
	Employment status	Permanent staff	1208	(89.6)
Position	Assistant nurse manager	140	(10.4)	–
Nurse qualification	Registered nurse	1196	(88.7)	–
	Assistant nurse (licensed practical nurse)	152	(11.3)	–
NA qualification	Certified care worker	–	–	135 (34.4)
	No qualifications	–	–	258 (65.6)

Note: ^an (%), NAs: Nursing Assistants.

Table 2 Descriptive Statistics and Intercorrelations of the Individual-Level Variables.

Individual level	Mean	SD	1	2	3	4	5
NAs (n = 393)							
1 Hospital experience (years)	8.06	7.00					
2 NAs' perceptions of their role	13.76	2.88	.12**				
NAs' information-sharing behaviors							
3 Expressing	3.48	0.89	.04	.40***			
4 Asking	3.24	0.77	.12*	.46***	.67***		
5 Linguistic response	3.61	0.65	.13*	.36***	.42***	.50***	
6 Feedback	3.18	0.87	.03	.43***	.51***	.56***	.48***
Nurses (n = 1348)							
Nurses' expectations from NAs	14.08	2.26					

Note: *p < .05; **p < .01; ***p < .001. NAs: Nursing Assistants.

Table 3 Results of the Multilevel Mediation Analyses Using Hierarchical Linear Modeling.

Variables	NAs' self-perceived roles			NA's information-sharing behaviors					
	Model 2	Expressing		Asking		Linguistic response		Feedback	
		Model 1a	Model 3a	Model 1b	Model 3b	Model 1c	Model 3c	Model 1d	Model 3d
Intercept (γ_{00})	12.38***	2.90***	3.05***	2.93***	3.07***	3.53***	3.64***	2.94***	3.12***
Unit-level control variable									
Staff ratios ^a (γ_{01})	1.96	0.96**	0.72*	0.27	0.06	-0.18	-0.35	0.31	0.07
Individual-level control variable									
Care worker qualification ^b (γ_{10})	-0.30	0.01	0.03	-0.02	0.01	-0.02	0.00	-0.13	-0.10
Permanent staff ^c (γ_{20})	0.41	0.24*	0.20*	0.17	0.13	0.09	0.06	0.18	0.13
Hospital experience (γ_{30})	0.05**	0.00	0.00	0.01*	0.01	0.01**	0.01	0.00	0.00
Unit-level independent variable									
Nurses' expectations of the NA role (γ_{02})	0.69***	0.09	0.02	0.14**	0.06	0.08*	0.04	0.08	-0.01
Individual-level mediating variable									
NAs' self-perceived role (γ_{40})			0.11***		0.11***		0.08***		0.13***
Random effect									
Variance of Level-1 residual	7.00	0.65	0.61	0.50	0.44	0.41	0.36	0.72	0.62
Variance of Level-2 (intercept)	0.68	0.07	0.02	0.07	0.04	0.00	0.00	0.03	0.01
ICC	.09	.10	.03	.13	.08	.01	.00	.04	.02

Note: *p < .05; **p < .01; ***p < .001. NAs: Nursing Assistants. γ is the estimated coefficient for calculating the outcome. Entries presented are estimations of the hierarchical linear modeling regression coefficients.

The ICC of the null model for a mediating variable (NAs' self-perceived role) was 0.13, and those for the dependent variables (expressing, asking, linguistic response, and feedback) were 0.15, 0.17, 0.03, and 0.04, respectively. The nurses' expectations of the NA role at Level-2 and the NA s' self-perceived role at Level-1 were grand-mean centered.

[Model 1] $Y_{ij} = (\gamma_{00} + \gamma_{01} * \text{Staff ratios}_j + \gamma_{02} * \text{Nurses' expectations of the NA role}_j + u_{0j}) + \gamma_{10} * \text{Care worker qualification}_{ij} + \gamma_{20} * \text{Permanent staff}_{ij} + \gamma_{30} * \text{Hospital experience}_{ij} + r_{ij}$.

[Model 2] $M_{ij} = (\gamma_{00} + \gamma_{01} * \text{Staff ratios}_j + \gamma_{02} * \text{Nurses' expectations of the NA role}_j + u_{0j}) + \gamma_{10} * \text{Care worker qualification}_{ij} + \gamma_{20} * \text{Permanent staff}_{ij} + \gamma_{30} * \text{Hospital experience}_{ij} + r_{ij}$.

[Model 3] $Y_{ij} = (\gamma_{00} + \gamma_{01} * \text{Staff ratios}_j + \gamma_{02} * \text{Nurses' expectations of the NA role}_j + u_{0j}) + \gamma_{10} * \text{Care worker qualification}_{ij} + \gamma_{20} * \text{Permanent staff}_{ij} + \gamma_{30} * \text{Hospital experience}_{ij} + \gamma_{40} * \text{NAs' self-perceived role}_{ij} + r_{ij}$.

r_{ij} : The Level-1 error term, u_{0j} : The Level-2 error term.

^a The ratio of NAs to nurses in units.

^b ref = no.

^c ref = part time.

bootstrapping using Monte Carlo replication did not include zero; indirect effects were 0.08 (95% CI: 0.03–0.12) for asking and 0.05 (95% CI: 0.02–0.09) for linguistic response. The NAs' expressing and feedback behaviors correlated with their role perceptions (Model 3a, $\gamma_{40} = 0.11, P < .001$ and Model 3d, $\gamma_{40} = 0.13, P < .001$, respectively).

Discussion

To the best of our knowledge, this is the first study to quantitatively investigate the relationship between unit-level nurses' expectations from NAs and the frequency of NAs' information-sharing behaviors with nurses. In addition, we proposed a mechanism to explain how each individual NA's perceptions of their role mediate the relationship.

Unit-level nurses' expectations from NAs correlated with the frequency of NAs' information-sharing behaviors with nurses and mediating effect of NAs' self-perceived roles

We found that the frequencies of NAs' asking and linguistic response behaviors were high in units where nurses had high expectations from NAs. Previous qualitative studies have shown that understanding the roles of other personnel in interoccupational collaborations is essential for effective communication [6]. We quantitatively evaluated the effects of understanding their role on concrete information-sharing behaviors. The hypothesis was constructed on the basis of role theory and supported by quantitatively proving that the NAs' self-perceived roles fully mediated these relationships. In units where nurses understood NA roles and had high expectations, the NAs may expand their own role perceptions regarding patient care, which may encourage them to engage in information-sharing behaviors, such as asking and linguistic response. In terms of helping NAs understand their role on the unit, our results suggest that the understanding of the NA roles by unit nurses can change the individual NA role perception and elicit better communication behaviors. Moreover, a previous study found that some unit-level nurses understood the NA role, whereas others did not [2,14]. The results of this study indicated that an understanding of the NA role among all nurses on the units would facilitate communication with NAs, allowing for more informed clinical decision making and better care coordination.

In another study, nurses with positive perceptions of NA roles engaged in information-sharing with NAs [15]. Thus, the nurses' high expectations from NAs at the unit level indicate that nurses frequently share information with NAs, which may influence the NA's role perceptions and information-sharing behaviors. Another previous qualitative study reported that during medical record review sessions between nurses and NAs as they start working together, nurses play a directing and coordinating role, whereas NAs share their questions and ask for clarifications [18]. This indicates that the asking and linguistic response behaviors of NAs are important for efficient teamwork. Further, as NAs daily interact with and provide care to patients directly, the asking and linguistic responses of NAs will provide nurses with valuable information, resulting in safe, appropriate, and tailored patient care. This study highlighted the importance of nurses understanding the role of NAs in the unit environment for NAs to engage in asking and linguistic response behaviors.

Relationship between NAs' role perceptions and NA expressing and feedback to nurses

The frequencies of NAs' expressing and feedback to nurses did not correlate with unit-level nurses' expectations from NAs. This finding differed from our hypothesis, but the difference is understandable. Regarding NAs' expressing, an earlier study reported

that NAs promptly share patient information with nurses when NAs strongly feel like a part of the nursing team [11]. In other words, NAs may express themselves to nurses if they see themselves as a part of the nursing team, regardless of the nurses' expectation of NAs. Another study reported that although nurses and NAs recognize the importance of information-sharing between the two groups of healthcare professionals, a heavy workload in a health-care unit hinders this sharing [2]. Therefore, increasing the role perceptions of individual NAs may enable NAs to communicate important patient information to nurses even in a busy environment. However, only some behaviors of NAs will not result in effective information-sharing.

In terms of NAs' feedback, NAs convey the value and usefulness of information received from nurses as perceived by the NAs. It can be assumed that NAs evaluate the information they receive from nurses when required; therefore, NAs' feedback highly depends on their individual intention to establish a relationship with nurses. A previous study found that NAs who are aware of their role in the unit engaged in more discussions with nurses regarding patient care [37]. When NAs are strongly aware of their role, the frequency of their feedback to nurses is expected to increase.

Clarifying the roles of nurses and NAs alone often leads to "it's not my job" syndrome, which hinders true collaboration [38]. Nurses and nurse managers must understand that NAs are members of the nursing team that is involved in patient care and not just individuals who simply perform tasks. Moreover, it is necessary to provide encouragement and opportunities for NAs to share their intentions and thoughts regarding patient care with nurses.

Our results suggest that improving unit nurses' understanding of NAs' roles can change NAs' communication behavior. NAs' own role perceptions were associated with their information-sharing behaviors, and the relationship between unit-level nurses' expectations of NAs differed according to the type of information-sharing behavior, indicating a need for both nurses and NAs to increase awareness regarding NAs' roles. NAs are important collaborative partners for nurses in providing quality healthcare with limited resources. A previous study indicated that less communication between nurses and NAs can lead to a lack of leadership in the nursing team [12]. If information-sharing between nurses and NAs increases, nurses can demonstrate better leadership qualities. In addition, when NAs better understand their own roles, nurses can delegate and direct tasks based on shared goals, which may enable a more effective and appropriate provision of nursing care. Future research is needed to develop interventions to increase awareness regarding the role of NAs among nurses and NAs, as well as to identify leadership steps that individual nurses can take to promote collaboration.

Limitations

There are some limitations to our study. First, information-sharing by NAs that did not coincide with actual behaviors of NAs may have remained unnoticed because a questionnaire survey was used rather than direct observation. Second, not all nurses in each unit completed the questionnaire; therefore, the unit-level scores may not be sufficiently representative. Third, in this study, nurses included registered nurses and assistant nurses, and NAs included certified care workers and unlicensed NAs; therefore, the differences in the perceptions of the NA role and the frequency of information-sharing behaviors based on their qualifications may have influenced the results. Finally, we captured only one aspect of the communication behavior of NAs (i.e., the frequency of behavior). The elements of communication include frequency of behavior, accuracy of information, and timing [22]. It is necessary to conduct further studies that capture communication from multiple aspects.

Conclusions

In units where nurses have high expectations from NAs, NAs frequently engaged in asking and linguistic responses with the nurses. Thus, nurses' expectations from NAs were important for improving information-sharing by NAs. Furthermore, the effects of nurses' expectations from NAs were mediated by the NAs' self-perceived roles. Increasing awareness of NA roles by nurses and NAs may be an effective educational intervention to improve information-sharing between nurses and NAs.

Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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