

Development of the Role Performance Scale for Middle-aged Generalist Nurses in Japan

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Doctoral Dissertation

Development of the Role Performance Scale for Middle-aged Generalist Nurses in Japan

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Development of the Role Performance Scale for Middle-aged Generalist Nurses in Japan

Abstract

Aim: The aim of this study was to develop a self-assessment tool, the Role Performance Scale for Middle-aged Generalist Nurses in Japan and confirm its reliability and validity.

Methods: Scale items were extracted from interviews, and item and scale-level validity were rated by nursing management researchers and middle-aged generalist nurses. The resulting 36-item questionnaire was administered to clinical generalist nurses (middle-aged nurses, $n = 837$; young nurses, $n = 800$) in Japan. Exploratory and confirmatory factor analyses were performed, and the tool's internal consistency and construct validity were analyzed.

Results: Valid responses obtained from 504 middle-aged and 311 young generalist nurses were included in the analysis. The final scale was composed of 25 items, which were divided into five factors: "backing up head nurses," "instructing young nurses on practices as an informal mentor," "providing young nurses with mental support," "providing empathic support to patients and their families," and "coordinating team medical care." In the confirmatory factor analysis, the indices of fitness supported these results. The Cronbach's alpha coefficient was .94 for the total scale and ranged from .72 to .91 for the five factors. The five factors explained a cumulative variance of 65.4%.

Conclusions: The five-factor, 25-item Role Performance Scale for Middle-aged Generalist Nurses in Japan was confirmed to have sufficient reliability and validity. Middle-aged generalist nurses can use this tool to self-assess their nursing behavior. In addition, head nurses can use it to assess the role performance of middle-aged generalist nurses and aid in their continual education.

Keywords: factor analysis, generalist nurses, middle age, roles, scale development

1 Introduction

As the global population rapidly ages, more people than ever are in need of nursing care. The global population aged ≥ 60 numbered 962 million in 2017, and the number of older adults is expected to double again by 2050, reaching nearly 2.1 billion. The number of persons aged ≥ 80 is projected to increase more than threefold between 2017 and 2050, rising from 137 million to 425 million. (United Nations, 2017)

Nursing workers in many countries are also aging; 40–50% of nurses in the US, Canada, and Australia were aged over 50 in 2015 (Ryan, Bergin, & Wells, 2017). Japan has the same tendency—in 2018, there were approximately 1.22 million nurses, with those aged 40–59 years accounting for 47% of this population (Ministry of Health, Labour and Welfare, 2018). As the older adult population in need of nursing grows, it is important to maintain the nursing workforce.

Nurses' clinical competence is vital for ensuring safe, high-quality care; its continuous assessment, therefore, is of major concern (Finnbakk, Wangenstein, Skovdahl, & Fagerström, 2015). Since the proportion of managers and professionals in nursing organizations is almost constant, it is inevitable that the proportion of middle-aged and older adult generalists will continue to increase. Therefore, the practices of middle-aged generalists have a great impact on maintaining nursing quality. It can be said that the role of middle-aged nurses will become even greater.

To meet the growing demand for care in this era of nursing shortage, middle-aged nurses must remain in the workforce for longer; for this, their needs must be met (Hatcher et al., 2006; Restuccia, 2007; Ryan et al., 2017). Measures are needed to prevent experienced nurses from delaying retirement or leaving the profession early (Fitzgerald, 2007). In addition, nursing managers must understand the relationship between age and continued professional development (Pool, Poell, & ten Cate, 2013), balance the needs of nurses of

various ages (Lammintakanen & Kivinen, 2012), and strategically ensure nursing quality (Pool, Poell, Berings, & ten Cate, 2015).

According to Sherman, Chiang-Hanisho, and Koszalinski (2013), three things are important to minimize labor shortages and meet the growing demand for healthcare in the aging population—keeping aging nurses in the workforce, building a healthy environment for the aging workforce, and planning future successions.

To ensure that aging nurses remain in the workforce, they must be recognized and appreciated for their contributions in stressful situations (Hatcher et al., 2006). Nurse job satisfaction affects individual motivation and nurse performance (Indah, Sunardi, & Respati, 2020).

Apart from clinical skills and practical experiences, which are critical to ensure high levels of patient safety, experienced nurses generally have a strong relationship with patients and families. They are also a valuable source of knowledge and wisdom for new registered nurses (Bishop, 2013; Collins-McNeil, Sharpe, & Benbow, 2012). A nursing career can last for more than 40 years, during which continuing professional development is essential. Nevertheless, little is known about nurses' continuing professional development strategies in different age groups (Pool et al., 2015).

The position of the “generalist nurse” in Japan corresponds to that of the “registered nurse” as articulated by the International Council of Nurses (ICN, 2009). Indicators of nursing ability include the “ICN Competence Framework” (ICN, 2009). However, it is common to all nurses and does not reflect age or experience.

While there are several measures for assessing generalists' nursing abilities (Akamine, Uza, Shinjo, & Nakamori, 2013; Liu, Kunaiktikul, Senaratana, Tonmukayakul, & Eriksen, 2007; Meretoja, Isoaho, & Leino-Kilpi, 2004; Sagherian, Steege, Geiger-Brown, &

Harrington, 2018), they are not specific to the middle-aged group. Thus, there is a need for a scale to assess the performance of middle-aged generalists.

Fackler (2019) determined older nurses' changed roles by conducting focus group interviews with experienced nurses > 50 years. The three roles identified were teaching patients and families, acting as patient advocates, and mentoring the next generation of nurses. Hatcher et al. (2006) also identified 14 innovative roles for aging nurses. However, in both studies, the roles were not evaluated.

Thus, in the present study, we aimed to develop a scale that evaluates the performance of roles that can only be fulfilled by middle-aged generalists with abundant nursing experience, and to examine its reliability and validity.

2 Methods

2.1 Design

This study was conducted in three stages (Fig. 1).

- 1) Semi-structured interviews were conducted with middle-aged generalists and head nurses, the role behaviors of middle-aged generalists were extracted, and a draft scale was prepared.
- 2) The content validity of the items in the draft scale were examined and expressions were refined, targeting nursing management researchers and middle-aged generalists.
- 3) A nationwide questionnaire survey targeting generalists working in hospitals with ≥ 200 beds was conducted, and the reliability and validity of the scale were examined.

2.2 Draft Scale Creation Process

2.2.1 Item selection. The role behaviors expected of middle-aged generalists were identified using an interview-based inductive qualitative approach. Top nurse managers in four hospitals with ≥ 200 beds across Fukuoka Prefecture were asked to suggest suitable middle-aged generalists and head nurses who could participate in the study. The subjects of

the survey were middle-aged generalists who continued their duties while fulfilling their expected roles and head nurses with past or present experience in managing middle-aged generalists. The perspectives of both groups were taken into consideration in order to gain a comprehensive understanding of practical requirements regarding nursing roles.

Documentation describing the study, its objectives, and its outline was provided to potential participants, and they were informed that their participation was voluntary and that they could withdraw at any time. Ultimately, seven generalists and seven head nurses were interviewed after providing written informed consent.

Participants were interviewed based on a written script in a semi-structured format from June to July 2016. Middle-aged generalists were asked about the accomplishments and abilities they attributed to their position in their organization and about how they conceptualized their professional roles. Head nurses were asked about the roles they expect middle-aged generalists to play and about their memorable actions in the past.

With participants' consent, the interviews were recorded using a pocket recording device and were later transcribed. Parts of the transcript that touched on the roles of middle-aged generalists were extracted and coded, taking into account their context to avoid losing important semantic content. Codes thought to reflect similar semantic content were grouped into categories. Qualitative induction was used to make code and category names suitably abstract, based on the similarity and relatedness of the content. Data were analyzed by several researchers in multiple rounds, who repeatedly returned to the transcript data and refined the language of scale items.

2.2.2 Content validity testing. Five nursing administration researchers and 10 middle-aged generalists were enlisted to rate the content and face validity of the 36-item draft scale. Indexes of content validity were calculated at both the item level (I-CVI) and scale level (S-CVI). Individual I-CVIs ranged from .87 to 1.00, and the mean S-CVI was .92. I-

CVIs $\geq .8$ and S-CVIs $\geq .9$ are generally considered to indicate suitable content validity (Polit & Beck, 2017). All items and the overall scale met these criteria. As a result of the raters' remarks about face validity, the language of some items was refined to make them easier for respondents to understand.

2.3 Survey Participants

Research participation requests were sent to the top nurse managers of 320 hospitals with ≥ 200 beds across Japan; these hospitals were selected by stratified random sampling. In total, 71 directors agreed to participate, and the survey was distributed to 837 middle-aged nurses and 800 young generalist nurses at their institutions. In Japan, male nurses account for only about 7% of all nurses. Therefore, the survey was limited to female nurses, who form the majority.

To determine the sample size, we used "Scale Development" (DeVellis, 2017), a statistical calculation tool (Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007), and a power analysis software program (G*Power 3.1). Based on the results, we determined that we needed to obtain data from 400 people. Since the response rate was assumed to be 50%, the scale was mailed to 800 people.

We defined "middle-aged generalists" as female nurses aged 40–59 who were directly involved in patient care (not managers or specialists) and who had ≥ 10 years of experience. We defined "young generalists" as nurses aged < 40 , with 3–9 years of experience.

2.4 Survey Method

Self-administered anonymous questionnaires were delivered to participants and returned via mail from December 2017 to March 2018.

2.5 Survey Items

The survey consisted of three parts:

- 1) Participant and institutional characteristics (age, educational background, years of nursing

experience, marital status, hospital affiliation, number of beds in the hospital).

2) The 36-item draft Role Performance Scale for Middle-aged Generalist Nurses (RSMGN).

Each item was scored using a five-point Likert-type scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

3) Quality of Nurses' Occupational Experience Scale (QNOES: six factors, 30 items). The QNOES is an existing scale with demonstrated reliability and validity, developed to measure the quality of occupational experiences accumulated by nurses in the course of their careers (Suzuki, Sadahiro, Kameoka, & Funashima, 2004). This scale was used as an external standard to evaluate criterion-related validity. How well a middle-aged generalist fulfills the nursing role is assumed to be influenced by the experience accumulated in their personal and professional lives.

2.6 Data Analysis

The data were analyzed using IBM SPSS Statistics version 25 and IBM SPSS Amos 25 (IBM SPSS Japan, Tokyo, Japan). The significance level was set at $p < .05$ (two-tailed).

Each RSMGN item was tested for ceiling and floor effects, and inter-item correlations were calculated. Data were also subjected to an item-total (I-T) and good-poor (G-P) analysis. Next, an exploratory factor analysis was conducted using principal axis factoring with promax rotation, followed by a confirmatory factor analysis using a covariance structure analysis.

To assess the fit of the whole RSMGN, the following indices were used: goodness of fit index (GFI), adjusted GFI (AGFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA). To assess the fit of the partial model, we used the path coefficient for each item ($p < .001$).

For criterion validity, the RSMGN and QNOES were examined using Spearman's correlation analysis of factor and scale-level scores. Known-groups validity was examined by

comparing factor and scale-level scores for the RSMGN between middle-aged and young generalists using the Mann-Whitney U-test. Reliability was verified using Cronbach's alpha coefficients for the whole scale and for each factor.

2.7 Ethical Considerations

This study was approved by the Ethics Committee of the International University of Health and Welfare (approval number: 17-Ifh-32). Participants were given written information that included an overview of the study objectives. They were informed that they were free to drop out at any time and that their privacy was guaranteed. They were also given an explanation of how their data would be handled and disposed of and informed that some findings would be presented at public forums (e.g., at conferences). The researchers also provided their contact information to participants. All data collected were kept anonymous and confidential.

3 Results

3.1 Participant Characteristics

Table 1 presents the participants' characteristics. The questionnaire was administered to 837 middle-aged generalists, 559 of whom responded. Five-hundred and four middle-aged generalists completed the questionnaire (effective response rate: 60.2%); their mean age was 47.0 ± 5.1 years, and their average career length was 23.5 ± 6.1 years.

In addition, questionnaires were administered to 800 young generalists, 331 of whom responded. Three-hundred and eleven young generalists completed the questionnaire (effective response rate: 38.9%); they had a mean age of 28.4 ± 3.2 years and an average career length of 6.2 ± 2.1 years.

3.2 Item Analysis

Table 2 shows the results of the item analysis for the 36 items of the first version of

the RSMGN, which was only administered to middle-aged nurses. The mean individual item scores ranged from 3.12 to 4.13 (standard deviation 0.55–0.92). No ceiling or floor effects were detected. Significant inter-item correlations (IICs) were observed between all items ($p < .01$). We reviewed item pairs with $IIC \geq .7$ but decided to leave all of them in since they were clearly different in terms of semantic content. In the I-T analysis, individual item-scale correlations ranged from .73 to .41 ($p < .01$). In the G-P analysis, participants were divided into an upper and lower group using the average total score (129.64 points) as the cutoff. Scores for all items were higher for the upper group ($p < .01$).

3.3 Factor Analysis

An item analysis was performed on the 36 items of the proposed scale, but no items were deleted. Therefore, an exploratory factor analysis was performed on all 36 items using the main factor method and promax rotation (Table 3). The following results were obtained according to the conditions for factor selection.

- 1) The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.95. Based on eigenvalues of ≥ 1 and the scree criterion, the number of factors was five.
- 2) Item 30 was deleted because of low communality (as low as 0.27).
- 3) Items with a loading value of ≥ 0.4 were retained. Nine items (8, 9, 16, 17, 19, 21, 27, 29, and 31) were deleted because their factor loadings were < 0.4 .
- 4) Item 25 was deleted because its factor loading was 0.44 for the fourth factor, 0.53 for the fifth factor, and ≥ 0.4 for both factors.

Based on the above results, 11 items (8, 9, 16, 17, 19, 21, 25, 27, 29, 30, and 31) were deleted and, ultimately, five factors and 25 items were adopted for the RSMGN. These five factors covered the following roles: 1) backing up head nurses (helping head nurses by acting as a liaison between them and other staff), 2) instructing young nurses on practices as an informal mentor (providing guidance and professional insight to young nurses at a level

commensurate with the latter's experience and abilities), 3) providing young nurses with mental support (acting as confidants for young nurses, listening and responding to their feelings, and communicating the value of their shared profession), 4) providing empathic support for patients and their families (frequently communicating with patients and their families to try to discern their true feelings), and 5) coordinating team medical care (ensuring interprofessional cooperation in patient care). The contributions of factors 1–5 were 41.19%, 7.70%, 6.81%, 5.91%, and 3.79%, respectively, and the cumulative contribution was 65.38% (Table 3).

3.4 Reliability of the RSMGN

The Cronbach's alpha coefficient was .94 at the scale level and .91, .88, .86, .85, and .72 for Factors 1–5, respectively (Table 3).

3.5 Validity of the RSMGN

3.5.1 Criterion validity. Table 4 shows the results of criterion validity testing. Criterion validity was evaluated by examining how well the total RSMGN score and the score of each factor correlated with the total QNOES score. Spearman's rank correlation coefficient for the total score was .58, and the values for Factors 1–5 were .55, .40, .45, .38, and .52, respectively ($p < .01$).

3.5.2 Known-groups validity. Table 5 shows the results of known-groups validity testing of the RSMGN. Middle-aged generalists showed significantly higher RSMGN scores on both the entire scale and each of the five factors compared to younger nurses (Factors 1, 2, 5: $p < 0.001$; Factors 3, 4: $p < 0.5$; Mann-Whitney U-test: $p < .05$).

3.5.3 Goodness of fit indicators. Figure 2 shows the goodness of fit indicators for the RSMGN model. Calculated using confirmatory factor analysis, these were GFI = 0.907, AGFI = 0.886, CFI = 0.945, and RMSEA = 0.054.

A path diagram of the latent variables, with a factor loading on each item from each of

the four factors, showed values of 0.57–0.90. The correlation coefficients between the factors were 0.47–0.70, with the link between.

4 Discussion

Given the lack of scales to evaluate middle-aged generalists' role performance in Japan, the development of the RSMGN is important. Middle-aged generalists can use the RSMGN as a self-assessment tool, while head nurses can use it to assess the role performance of middle-aged generalists' and aid in their education.

4.1 Scale Reliability

The Cronbach's alpha coefficient is a measure of internal consistency reliability. The RSMGN showed an overall Cronbach's alpha coefficient of .94, indicating reliability. The Cronbach's alpha coefficient for each individual factor was $> .7$; therefore, the RSMGN again was found to be reliable (Plichta & Kelvin, 2013).

Items on a scale should be moderately correlated with each other, and each should correlate with the total score (Streiner, Norman, & Cairney, 2015). In this study, moderate correlations were observed between all items in the IIC, and the score of each item was related to the total score. Thus, the internal consistency and, therefore, high reliability of the RSMGN, was confirmed.

4.2 Scale Validity

We examined content validity during scale creation. The language and meaning of each question were reviewed several times during the item selection stage. Five expert nursing management researchers and 10 middle-aged generalists provided objective evidence of each item's suitability.

Factor analysis is an essential tool in scale development (DeVellis, 2017). We considered the factorial validity of the scale using exploratory factor analysis. Extracted

factors comprised the roles of backing up head nurses, instructing young nurses on practices as an informal mentor, providing young nurses with mental support, providing empathic support to patients and their families, and coordinating team medical care.

Through the goodness of fit analysis, we concluded that the model had good explanatory power, with GFI = 0.907 and AGFI = 0.886. Both of these easily meet the standard criteria for goodness of fit (GFI > 0.9, AGFI > 0.8). The RMSEA (0.054) and CFI (0.945) were also well out of the range of cutoff values for bad fit (RMSEA > 0.1, CFI < 0.9). Therefore, our model had no problems with factor suitability. These procedures ensured the validity of the RSMGN. Each of these factors (roles) is discussed below.

4.2.1 Factor 1—backing up head nurses. Middle-aged generalists back up the head nurse, acting as a coordinator between the head nurse and other nurses. Middle-aged generalists are close in age to head nurses and have similar nursing experiences, so they can intuitively understand the head nurse's perspective. In addition, because they are at the same position as other staff nurses, they can gather the views of younger nurses. These roles are only possible for middle-aged generalists because of their insight into human relationships resulting from their broad life experience. Followership and leadership play complementary roles in nursing management; it is as important to be an effective follower as it is to be an effective leader. Good followers help leaders by promptly reporting problems and suggesting solutions (Weiss, Tappen, & Grimley, 2019). Suzue (2017) cites "quiet coordination" and "widespread support" as head nurses' expectations from middle-aged generalists. It is expected that middle-aged generalists will support not only staff nurses but also the head nurse. Of the five factors extracted in this study, the role of backing up the head nurse is the most characteristic of middle-aged nurses. It is important for head nurses and middle-aged generalists to maintain good relationships as leaders and followers.

4.2.2 Factor 2—instructing young nurses on practices as an informal mentor.

Middle-aged generalists teach nursing practices to young nurses by sharing their own nursing philosophy while keeping in mind the experience and abilities of young nurses. Mentoring programs can utilize various formats. Formal mentoring involves assigning a specific mentor to a mentee (Peno, Silva Mangiante, & Kenahan, 2016). While formal programs are effective, much of the daily learning at all levels occurs in a more informal context (Meier, 2013).

Owing to the current state of healthcare, informal mentoring relationships are much needed at all levels of nursing. Informal mentoring occurs every day and most often goes unidentified (Peno et al., 2016; Bette, 2012). Many times, informal mentoring relationships provide information and support, guide careers, enhance skills, and increase knowledge (Meier, 2013). The work of middle-aged generalists here is to provide on-the-job training tailored to young nurses' experience and skill levels. A mentor who can identify and quantify the different levels of a nurse's development will have greater success in the informal mentoring relationship.

4.2.3 Factor 3—providing young nurses with mental support. Middle-aged generalist nurses are consulted by young nurses and provide mental support. They also help them share their feelings and understand the value of nursing. The transition from a student nurse to a staff nurse in the professional setting entails a host of challenges and is laden with anxiety, uncertainty, and a lack of confidence (Baumberger-Henry, 2013). Within the nursing profession, mentoring is a key component of the nurturing process, wherein a more experienced person supports another person's professional growth and career development (Hodgson & Scanlan, 2013). Middle-aged generalists are not the bosses of young nurses and therefore have no valuation or management responsibilities; thus, it is easy consult them on various matters. Middle-aged nurses are one among many informal mentors. Thus, although there was a significant difference between young and middle-aged nurses on this factor, it was small.

4.2.4 Factor 4—providing empathic support for patients and their families.

Middle-aged generalists support patients and their families using the empathetic attitude and communication skills they have cultivated through years of life and nursing experience. To identify patients' needs, nurses should be able to fully understand their feelings, opinions, and conditions; this requires empathic knowledge and skills (Kahrman et al., 2016).

It is argued that empathy is indispensable to effective nursing practice (Brunero, Lamont, & Coates, 2010; Fernandez & Zahavi, 2020; Yang, Zhu, Xia, Li, & Zhang, 2020). The empathy of nurses, who make up the frontline in patient care, merits particular attention (Kuo, Cheng, Chen, Livneh, & Tsai, 2011).

The contemporary concept of empathy is multidimensional and consists of affective, cognitive, and behavioral aspects (Fernandez & Zahavi, 2020; Mercer & Reynolds, 2002). Providing empathic support to patients and their families is the essence of nursing, common to all nursing professionals. Therefore, although there was a significant difference between young and middle-aged nurses, it was a small one. According to Kahrman et al. (2016), "Getting empathic skills is not an easy process, but it may be facilitated by rich life experiences."

Therefore, we believe that middle-aged generalists, who have a wealth of life experience, play an important role in providing empathic support to patients and their families.

4.2.5 Factor 5—coordinating team medical care. Middle-aged generalists play the role of coordinator in relation to patients, families, and nurses. The Framework for Action on Interprofessional Education & Collaborative Practice (WHO, 2010) describes interprofessional collaboration as a situation wherein "multiple health workers from different professional backgrounds work together with patients, families, caregivers, and communities to deliver the highest quality care."

Collaboration and teamwork encourage interprofessional collegial relationships that promote safe patient care. Key nursing organizations and criteria such as the International Organization for Migration, Quality and Safety Education for Nurses, and the American Nurses Credentialing Center Magnet Recognition address the need for collaboration and teamwork. Nurses act as the key players in ensuring interprofessional communication and collaboration in patient care delivery (Weiss et al., 2019). Nurses have the most contact with patients and their families, placing them in the best position to observe and provide important information.

The responsibility of coordinating and delivering patient care is an important part of the role of the professional nurse (Weiss et al., 2019). To build bridges between patients and medical staff and help different disciplines collaborate, nurses must be able to assess patient information and mediate effectively between different groups based on an understanding of their colleagues' skills. To that end, middle-aged generalists' many years of experience and coordination and communication skills are very helpful.

Although there were significant differences in the scores of all RSMGN factors between middle-aged and young nurses, the differences between Factors 3 and 4 were small. Nurses regularly interact with various people, and the effects of informal mentoring are widespread. With regard to Factor 3, we believe that what middle-aged nurses offer falls within the sphere of the influence of various people, including family, friends, and other colleagues, who surround young nurses. This is considered to have contributed to the small difference. In addition, Factor 4 is based on empathy, which forms the core of nursing. As its importance is well understood, the difference was small.

The total RSMGN score showed a moderate correlation (.58) with the total QNOES score, providing evidence of the former's criterion-related validity. Known-groups validity was also high, with middle-aged generalists scoring significantly higher on all individual

factors as well as the whole scale in comparison to their less experienced counterparts.

Taken together, the findings suggest that the reliability and validity of the RSMGN were verified.

Furthermore, we compared the roles of middle-aged nurses as clarified in previous studies and the role of RSMGN. Hirai (2004) outlined several roles that organizations demand middle-aged generalists fulfill, including serving as role models for nursing practice, liaising between head and staff nurses, and serving as leaders who support the growth of others. Our five factors correspond well with these roles, providing further support for the validity of the RSMGN. Factor 1 fits with the aspect of liaising between head and staff nurses; Factors 2 and 3 fit with the aspect of serving as leaders who support growth; and Factors 4 and 5 fit with the role model aspect.

Furthermore, the three roles of nurses (teaching patients and families, acting as patient advocates, and mentoring the next generation of nurses) determined by Fackler (2019) correspond to Factors 2–5.

Next, we compared the RSMGN with Akamine et al.'s (2013) Competence Scale for Senior Clinical Nurses (CS-SCN). The CS-SCN contains 22 items across five factors: 1) role accomplishment, 2) self-management, 3) research, 4) practice and coordination, and 5) work implementation. While the RSMGN did not reflect Factors 3 and 4, "providing advice within the team" in Factor 1- Item 6 corresponded to Factor 2 of the RSMGN.

"Coordination with superiors, colleagues, and junior nurses" in Factor 4- Item 15 corresponded to Factor 1 of the RSMGN. "Coordination with other medical teams" in Factor 4- Item 13 corresponded to Factor 5 of the RSMGN. In addition, "the appropriate response to patients" in Factor 5– Item 20 was considered to correspond to Factor 4 in the RSMGN. The contents of Factor 3 of the RSMGN were not reflected in the CS-SCN. Item 1 of the CS-SCN ("Can recognize one's role in the organization and can execute work tasks") covers the topic of roles,

but these are likely to differ depending on age and experience. In the RSMGN, the roles of middle-aged and older nurses can be evaluated in terms of concrete actions.

Many nursing practice ability scales are based on the ICN Competency Framework. Factors 2, 4, and 5—key principles of care, therapeutic communication and relationship, and interprofessional healthcare, respectively. However, backing up head nurses (Factor 1) and providing young nurses with mental support (Factor 3) are not covered.

From the above, it was confirmed that the RSMGN is different from existing tools, and it was proved that it is a scale that can measure more specific behavior.

Finally, in Japan, about 20% of the hospitals are public, 70% are private, and 10% are classified as “others” (Ministry of Health, Labour and Welfare, 2018). The distributions of hospitals to which the participants in this survey belonged were different.

However, Japan has implemented the “national insurance” system, which allows everyone to receive uniform medical and nursing care. Therefore, it is considered that there is no difference in middle-aged nurses’ roles depending on the hospitals to which they belong.

4.3 Limitations

The RSMGN was developed through the involvement of exclusively Japanese nurses. Thus, it is necessary to investigate whether this scale can be used in other countries. Furthermore, we only surveyed middle-aged generalists working at Japanese hospitals with > 200 beds. Future studies should investigate the applicability of the RSMGN among nurses working in smaller hospitals. Moreover, the five factors of the RSMGN did not have the same number of items, with Factors 1–5 including six, seven, five, four, and three items, respectively. In the future, it will be necessary to consider the number of items and aim for a well-balanced structure.

5 Conclusion

The RSMGN, a scale to measure and evaluate the role performance for middle-aged generalist nurses, was developed. The five-factor, 25-item RSMGN developed in this study was confirmed to have sufficient reliability and validity across a variety of metrics. Since the global issue of an aging nursing workforce occurs in Japan, it is necessary to strengthen the workforce of middle-aged nurses by ensuring that they recognize their roles and fully utilize their abilities acquired through their work experience. To maintain an adequate quality of nursing, it is important to clearly indicate the expected role of middle-aged nurses and to evaluate their practice.

Middle-aged generalists can use the RSMGN as a self-assessment tool to evaluate their nursing behaviors, while head nurses can use it to assess the role performance of middle-aged generalists and aid in their education.

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Conflict of interest

The authors declare no conflict of interest in association with the present study.

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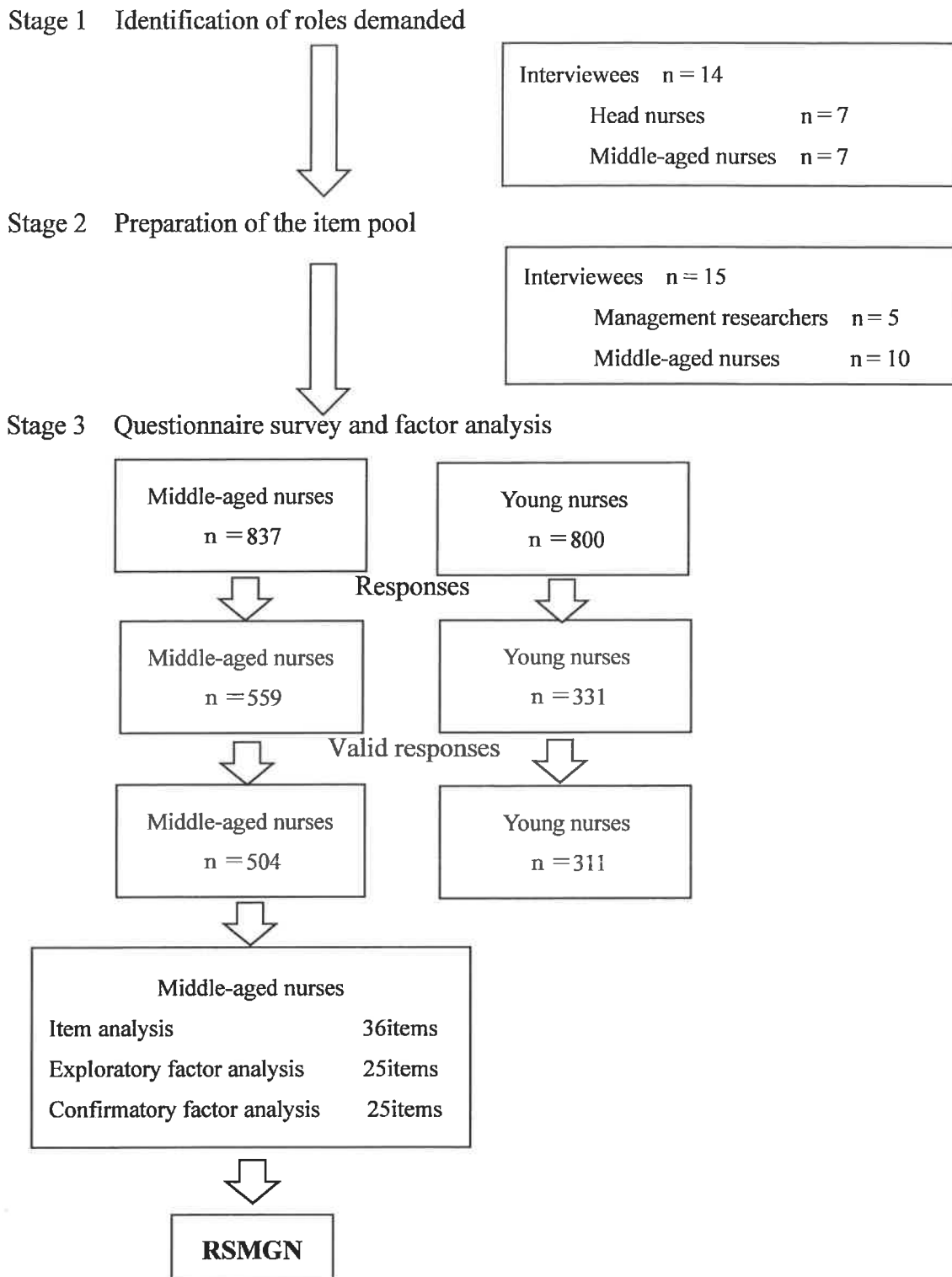


Fig 1. Flow chart of study participants

Note: RSMGN (Role Performance Scale for Middle-aged Generalist Nurses)

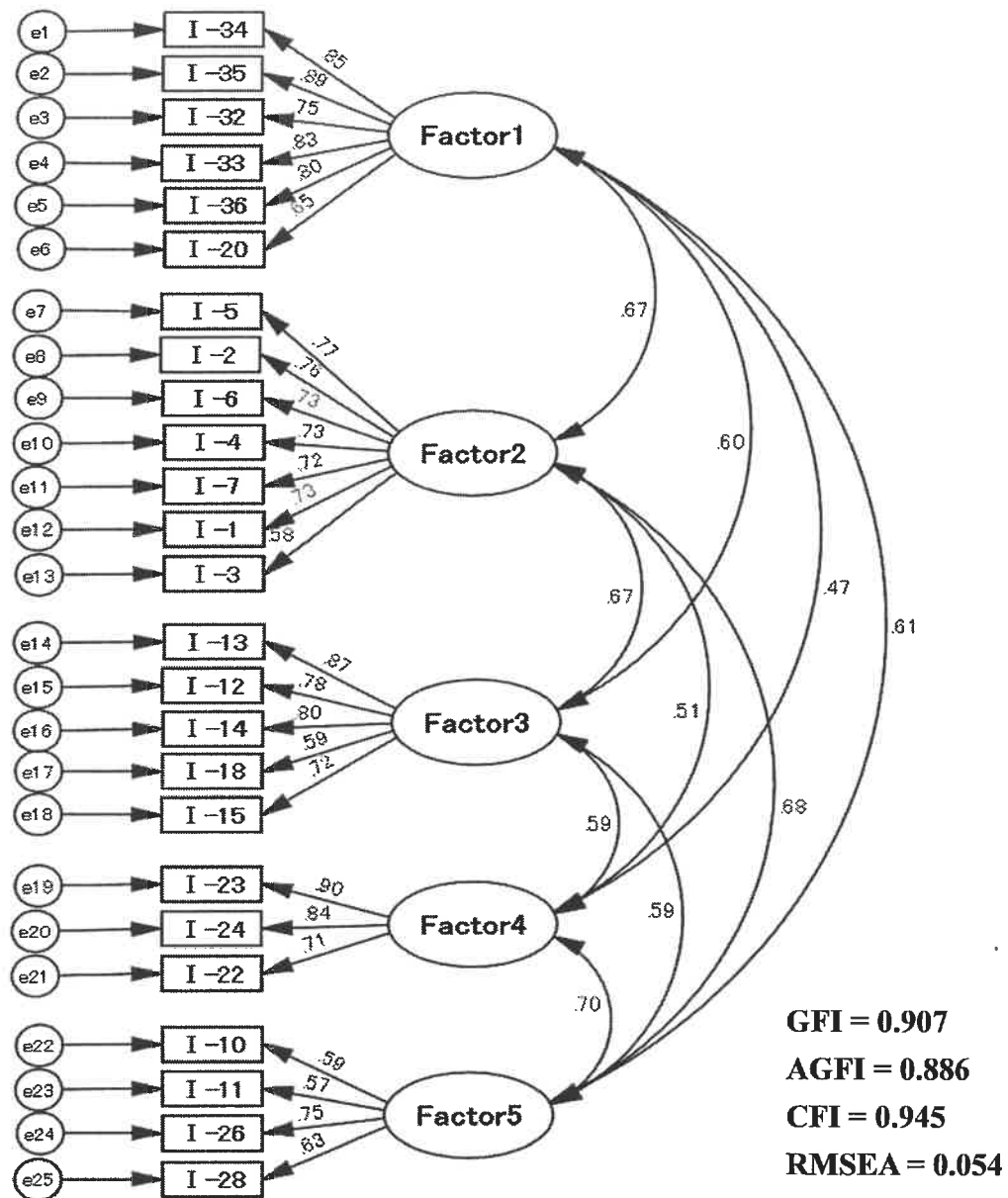


Figure 2. Confirmatory factor analysis of the RSMGN

Abbreviations: GFI, goodness of fit index; AGFI, adjusted goodness of fit index; CFI, comparative fit index; RMSEA, root mean square error of approximation.

Path coefficient for each item.

Factor 1: Backing up head nurses

Factor 2: Instructing young nurses on practices as an informal mentor

Factor 3: Providing young nurses with mental support

Factor 4: Providing empathic support for patients and their families

Factor 5: Coordinating team medical care

Table 1. Participant attributes

| Item | Middle-aged generalists | | Young generalists | |
|--|-------------------------|-------|-------------------|-------|
| | n | % | n | % |
| Gender | | | | |
| Women | 504 | 100.0 | 311 | 100.0 |
| Men | 0 | 0.0 | 0 | 0.0 |
| Age | | | | |
| 23–29 | | | 212 | 68.2 |
| 30–39 | | | 99 | 31.8 |
| 40–49 | 352 | 69.8 | | |
| 50–59 | 152 | 30.2 | | |
| Nursing experience (in years) | | | | |
| 2–9 | | | 311 | 100.0 |
| 10–19 | 125 | 24.8 | | |
| 20–29 | 278 | 55.2 | | |
| 30–39 | 101 | 20.0 | | |
| Educational background | | | | |
| Technical college (3-year) | 343 | 68.1 | 169 | 54.4 |
| Junior college (3-year) | 46 | 9.1 | 9 | 2.9 |
| University | 8 | 1.6 | 104 | 33.4 |
| Graduate school | 4 | 0.8 | 0 | 0 |
| Other | 103 | 20.4 | 29 | 9.3 |
| Marital status | | | | |
| Married | 323 | 64.1 | 114 | 36.7 |
| Single | 124 | 24.6 | 191 | 61.4 |
| Divorced | 57 | 11.3 | 6 | 1.9 |
| Hospital affiliation | | | | |
| National public university corporation | 44 | 8.7 | 44 | 14.1 |
| National hospital organization | 112 | 22.2 | 81 | 26.0 |
| Prefectural, municipal | 133 | 26.4 | 87 | 28.1 |
| Private educational corporation | 26 | 5.2 | 15 | 4.8 |
| Medical corporation | 110 | 21.9 | 51 | 16.4 |
| Other | 79 | 15.7 | 33 | 10.6 |
| Number of beds | | | | |
| 200–300 | 102 | 20.2 | 66 | 21.2 |
| 301–500 | 174 | 34.5 | 101 | 32.5 |
| 501–800 | 183 | 36.3 | 116 | 37.3 |
| 801–1000 | 44 | 8.7 | 27 | 8.7 |
| > 1000 | 1 | 0.2 | 1 | 0.3 |
| Item | Middle-aged generalists | | Young generalists | |
| | M | SD | M | SD |
| Age | 47 | 5.1 | 28.4 | 3.2 |
| Nursing experience (in years) | 23.5 | 6.1 | 6.2 | 2.1 |

M, mean; SD, standard deviation

Table 2. RSMGN score distributions and item-level analysis (N = 504)

| | | Mean | SD | Ceiling effect | Floor effect | I-T analysis | IIC |
|----|---|------|------|-------------------|-----------------|-----------------|-----------|
| 1 | I actively train young nurses to improve their nursing skills. | 3.60 | 0.79 | 4.39 | 2.81 | 0.65 | 0.16–0.67 |
| 2 | When teaching young nurses, I tailor my instruction to match their experience and skill level. | 3.86 | 0.66 | 4.52 | 3.2 | 0.63 | 0.18–0.67 |
| 3 | I don't make blind assumptions about care and treatment methods; together with young nurses, I consider the options based on our view of the situation. | 3.81 | 0.7 | 4.51 | 3.11 | 0.51 | 0.20–0.48 |
| 4 | I consciously choose where and when I conduct certain procedures to maximize the experience gained by young nurses. | 3.72 | 0.77 | 4.49 | 2.95 | 0.63 | 0.16–0.65 |
| 5 | I keep a close eye on young nurses' practices and give them feedback. | 3.84 | 0.71 | 4.55 | 3.13 | 0.65 | 0.20–0.65 |
| 6 | I educate young nurses based on my professional insight as a nurse, cultivated through my own experience. | 3.66 | 0.75 | 4.41 | 2.91 | 0.64 | 0.20–0.60 |
| 7 | I act as a role model, helping young nurses develop the nursing skills and care practices I have learned through experience. | 3.60 | 0.78 | 4.38 | 2.82 | 0.66 | 0.24–0.60 |
| 8 | I engage with staff during my routine duties with a view to increasing their ethical sensitivity. | 3.53 | 0.75 | 4.27 | 2.78 | 0.6 | 0.25–0.43 |
| 9 | I am always trying to learn about patients and conditions in my ward. | 3.94 | 0.75 | 4.69 | 3.19 | 0.59 | 0.20–0.49 |
| 10 | I act quickly to deal with changes in patient status with the help of other staff. | 4.13 | 0.55 | 4.68 | 3.58 | 0.52 | 0.17–0.49 |
| 11 | I provide patients with suitable care in collaboration with specialists (e.g., expert nurses, certified nurses). | 3.84 | 0.81 | 4.65 | 3.03 | 0.5 | 0.15–0.42 |
| 12 | By actively reaching out to them, I have created an environment in which young nurses feel they can easily approach me for advice. | 3.73 | 0.77 | 4.5 | 2.96 | 0.65 | 0.28–0.71 |
| 13 | I act as a confidante to young nurses and listen and respond to their feelings. | 3.55 | 0.76 | 4.31 | 2.79 | 0.68 | 0.21–0.71 |
| 14 | I try to keep young nurses motivated by acknowledging their hard work. | 3.68 | 0.73 | 4.41 | 2.95 | 0.68 | 0.28–0.70 |

| | | | | | | | |
|----|---|------|------|------|------|------|-----------|
| 15 | I communicate the rewards and benefits of being a nurse to my young colleagues. | 3.23 | 0.81 | 4.04 | 2.42 | 0.69 | 0.21–0.59 |
| 16 | I keep a close eye on other nurses to ensure they do not give excessive instruction to their peers. | 3.17 | 0.78 | 3.95 | 2.39 | 0.64 | 0.24–0.58 |
| 17 | I take care to ensure that no single nurse is responsible for any particular patient's problems. | 3.59 | 0.72 | 4.31 | 2.87 | 0.68 | 0.27–0.58 |
| 18 | I give advice to young nurses on non-work-related matters as a kind of "life coach." | 3.53 | 0.78 | 4.3 | 2.75 | 0.54 | 0.19–0.52 |
| 19 | I mediate staff relationships to lighten the mood in the ward. | 3.12 | 0.92 | 4.04 | 2.2 | 0.65 | 0.22–0.50 |
| 20 | I support head nurses by indicating that I understand their policies and actions related to ward operations. | 3.35 | 0.77 | 4.12 | 2.58 | 0.62 | 0.20–0.57 |
| 21 | I position myself between staff and "difficult" patients to mediate their relationships. | 3.45 | 0.79 | 4.24 | 2.66 | 0.72 | 0.27–0.52 |
| 22 | I speak with patients candidly to identify their true feelings. | 3.51 | 0.75 | 4.26 | 2.76 | 0.59 | 0.21–0.65 |
| 23 | I create opportunities to communicate with patients and their families and listen closely to what they have to say. | 3.71 | 0.79 | 4.5 | 2.92 | 0.65 | 0.22–0.76 |
| 24 | I provide emotional care to patients' families as well because I believe it is part of a nurse's role. | 3.75 | 0.79 | 4.54 | 2.96 | 0.63 | 0.22–0.76 |
| 25 | I inform nursing staff of the thoughts and feelings of patients and their families in a timely manner to ensure care is provided effectively. | 3.83 | 0.67 | 4.5 | 3.16 | 0.63 | 0.23–0.69 |
| 26 | I communicate well with other professionals, helping to coordinate work. | 3.86 | 0.63 | 4.48 | 3.23 | 0.64 | 0.25–0.62 |
| 27 | Based on a foundation of trust, when required, I feel I can share my opinions with other professionals to provide safe medical care. | 3.76 | 0.69 | 4.44 | 3.07 | 0.65 | 0.19–0.62 |
| 28 | I understand and respect patients' lives and lifestyles. | 3.92 | 0.60 | 4.52 | 3.32 | 0.57 | 0.24–0.51 |
| 29 | I present myself to junior nurses as being receptive to new information and constantly learning. | 3.51 | 0.72 | 4.23 | 2.79 | 0.63 | 0.26–0.48 |
| 30 | I can control my emotions when handling highly stressful situations. | 3.63 | 0.77 | 4.39 | 2.86 | 0.41 | 0.16–0.37 |
| 31 | I present myself to others as a nurse who works tirelessly to support patients. | 3.60 | 0.73 | 4.33 | 2.88 | 0.6 | 0.23–0.49 |

| | | | | | | | |
|----|--|------|------|------|------|------|-----------|
| 32 | I discuss ward operations and goals with head nurses. | 3.25 | 0.88 | 4.13 | 2.37 | 0.64 | 0.22–0.66 |
| 33 | I solicit opinions from staff and, as their representative, make proposals to head nurses about how to improve our work. | 3.34 | 0.89 | 4.23 | 2.45 | 0.71 | 0.19–0.74 |
| 34 | I inform head nurses about ward operations when they might not be aware. | 3.32 | 0.90 | 4.22 | 2.42 | 0.68 | 0.17–0.77 |
| 35 | I inform head nurses when staff have grown professionally when they might not be aware. | 3.42 | 0.87 | 4.29 | 2.55 | 0.73 | 0.23–0.77 |
| 36 | I relay head nurses' words and intentions to junior nurses in an easy-to-understand way. | 3.34 | 0.84 | 4.18 | 2.5 | 0.72 | 0.26–0.72 |

Note: RSMGN (Role Performance Scale for Middle-aged Generalist Nurses); SD (standard deviation); I-T (item-total); IIC (inter-item correlations)

Table 3. RSMGN principal factor analysis using data from middle-aged nurses ($N = 504$)

| | Factor | | | | | |
|--|-------------|-------------|-------------|-------|-------|-------------|
| | 1 | 2 | 3 | 4 | 5 | Communality |
| Factor 1: Backing up head nurses (Cronbach's $\alpha = .91$) | | | | | | |
| 34. I inform head nurses about ward operations when they might not be aware. | 0.89 | 0.02 | -0.08 | -0.08 | 0.09 | 0.76 |
| 35. I inform head nurses when staff have grown professionally when they might not be aware. | 0.87 | 0.07 | 0.02 | -0.05 | -0.02 | 0.80 |
| 32. I discuss ward operations and goals with head nurses. | 0.86 | -0.03 | 0.02 | -0.13 | 0.05 | 0.67 |
| 33. I solicit opinions from staff and, as their representative, make proposals to head nurses about how to improve our work. | 0.84 | 0.03 | -0.07 | 0.10 | -0.01 | 0.75 |
| 36. I relay head nurses' words and intentions to junior nurses in an easy-to-understand way. | 0.74 | 0.05 | 0.12 | -0.03 | 0.01 | 0.69 |
| 20. I support head nurses by indicating that I understand their policies and actions related to ward operations. | 0.69 | -0.05 | 0.09 | 0.07 | -0.04 | 0.53 |
| Factor 2: Instructing young nurses on practices as an informal mentor (Cronbach's $\alpha = .88$) | | | | | | |
| 5. I keep a close eye on young nurses' practices and give them feedback. | 0.03 | 0.80 | 0.06 | -0.01 | -0.07 | 0.67 |
| 2. When teaching young nurses, I tailor my instruction to match their experience and skill level. | 0.02 | 0.79 | -0.00 | -0.08 | 0.09 | 0.66 |
| 6. I educate young nurses based on my professional insight as a nurse cultivated through my own experiences. | 0.07 | 0.77 | -0.15 | 0.17 | -0.05 | 0.63 |
| 4. I consciously choose where and when I perform certain procedures to maximize the experience gained by young nurses. | 0.04 | 0.75 | -0.06 | 0.06 | 0.02 | 0.60 |
| 7. I act as a role model, helping young nurses develop the nursing skills and care practices I have learned through experience. | 0.02 | 0.74 | -0.06 | 0.12 | -0.01 | 0.61 |
| 1. I actively train young nurses to improve their nursing skills. | 0.15 | 0.64 | 0.13 | -0.02 | -0.07 | 0.59 |
| 3. I don't make blind assumptions about care and treatment methods; together with young nurses, I consider the options based on our view of the situation. | -0.19 | 0.64 | 0.20 | -0.13 | 0.14 | 0.48 |
| Factor 3: Providing young nurses with mental support (Cronbach's $\alpha = .86$) | | | | | | |
| 13. I act as a confidante for young nurses and listen and respond to their feelings. | -0.03 | 0.11 | 0.88 | 0.00 | -0.09 | 0.80 |
| 12. By actively reaching out to them, I have created an environment in which young nurses feel they can easily approach me for advice. | -0.09 | 0.04 | 0.85 | -0.06 | 0.10 | 0.71 |
| 14. I try to keep young nurses motivated by acknowledging their hard work. | -0.05 | 0.05 | 0.80 | -0.03 | 0.13 | 0.71 |

| | | | | | | |
|---|----------|-------|-------------|-------------|-------------|------|
| 18. I give advice to young nurses on non-work-related matters as a kind of “life coach.” | 0.26 | -0.15 | 0.69 | 0.03 | -0.16 | 0.54 |
| 15. I communicate the rewards and benefits of being a nurse to my young colleagues. | 0.10 | -0.03 | 0.59 | 0.26 | -0.03 | 0.61 |
| Factor 4: Providing empathic support for patients and their families (Cronbach's α = .85) | | | | | | |
| 23. I create opportunities to communicate with patients and their families and listen closely to what they have to say. | -0.02 | 0.01 | 0.00 | 0.91 | -0.00 | 0.82 |
| 24. I provide emotional care to patients' families as well because I believe it is part of a nurse's role. | -0.08 | 0.04 | 0.02 | 0.85 | 0.06 | 0.76 |
| 22. I speak with patients candidly to identify their true feelings. | -0.04 | 0.05 | 0.01 | 0.84 | -0.05 | 0.68 |
| Factor 5: Coordinating team medical care (Cronbach's α = .72) | | | | | | |
| 10. I act quickly to deal with changes in patient status with the help of staff. | -0.04 | 0.13 | 0.02 | -0.15 | 0.79 | 0.62 |
| 11. I provide patients with suitable care in collaboration with specialists (e.g., expert nurses, certified nurses). | 0.02 | 0.01 | -0.06 | 0.01 | 0.75 | 0.55 |
| 26. I communicate well with other professionals, helping to coordinate work. | 0.16 | -0.04 | -0.03 | 0.18 | 0.64 | 0.63 |
| 28. I recognize and respect patients' lives and lifestyles. | 0.05 | -0.14 | 0.08 | 0.31 | 0.50 | 0.51 |
| Factor loadings (%) | 41.18 | 7.69 | 6.81 | 5.91 | 3.79 | |
| Cumulative loading (%) | | 48.86 | 55.66 | 61.58 | 65.38 | |
| Cronbach's α (full scale) = .94 | | | | | | |
| Inter-factor correlations | Factor 1 | 0.60 | 0.57 | 0.43 | 0.50 | |
| | Factor 2 | | 0.59 | 0.46 | 0.56 | |
| | Factor 3 | | | 0.53 | 0.48 | |
| | Factor 4 | | | | 0.56 | |
| | Factor 5 | | | | | |
| Principal axis factoring with promax rotation | | | | | | |

Note: RSMGN: Role Performance Scale for Middle-aged Generalist Nurses; *N*: number

Table 4. RSMGN-QNOES correlation analysis

| QNOES | RSMGN (total score) | RSMGN (N=504) | | | | |
|---------------------|---------------------|------------------------|---|--|--|--------------------------------|
| | | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 |
| | | Backing up head nurses | Instructing young nurses on practices as an informal mentor | Providing young nurses with mental support | Providing empathic support for patients and their families | Coordinating team medical care |
| QNOES (total score) | .581** | .548** | .402** | .448** | .378** | .524** |

1) Spearman's correlation analysis

2) ** $p < .01$

Note: RSMGN: Role Performance Scale for Middle-aged Generalist Nurses; QNOES: Quality of Nurses' Occupational Experience Scale

Table 5. Comparison of factor and scale-level RSMGN scores between middle-aged and young generalist nurses

| | Middle-aged generalists | Young generalists | |
|-------------|-------------------------|-------------------|----------|
| RSMGN | <i>N</i> = 504 | <i>N</i> = 311 | <i>p</i> |
| | mean ± <i>SD</i> | mean ± <i>SD</i> | |
| Factor 1 | 20.02 ± 4.30 | 16.70 ± 4.53 | *** |
| Factor 2 | 26.09 ± 3.94 | 24.61 ± 4.91 | *** |
| Factor 3 | 17.30 ± 3.19 | 16.57 ± 3.88 | * |
| Factor 4 | 10.96 ± 2.05 | 10.57 ± 2.14 | * |
| Factor 5 | 15.74 ± 1.93 | 15.21 ± 1.89 | *** |
| Whole scale | 90.11 ± 12.33 | 83.67 ± 13.00 | *** |

1) Mann-Whitney *U*-test

2) **p* < .05 ***p* < .01 ****p* < .001

Note: RSMGN: Role Performance Scale for Middle-aged Generalist Nurses; *N*: number; *SD*: standard deviation

Factor 1: Backing up head nurses

Factor 2: Instructing young nurses on practices as an informal mentor

Factor 3: Providing young nurses with mental support

Factor 4: Providing empathic support for patients and their families

Factor 5: Coordinating team medical care