



Original article

Predictors associated with the mental health of Japanese male registered nurses: focusing on environments with many female registered nurses and female patients' refusal to accept nursing services from male registered nurses

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Abstract

Objective: To study the improvement of the mental health of Japanese male registered nurses, we investigated the predictors associated with the Japanese version of the 12-item General Health Questionnaire (GHQ-12). For those predictors, we focused on environments with many female registered nurses and female patients' refusal to accept nursing services from male registered nurses.

Materials and Methods: This study was conducted in 93 hospitals in the Aichi, Gifu, and Mie prefectures of Japan. The analyzed subjects were 1,216 full-time male registered nurses. The average age (standard deviation) was 34.5 (9.2) years. Multiple logistic regression analysis was conducted. A GHQ-12 score of ≤ 3 indicated good mental health, and a score of ≥ 4 indicated poor mental health. "Mental health" was a dependent variable. The independent variables were: "Age", "Male registered nurses as important partners on the job", "Female registered nurses' good manners toward male registered nurses", "Fairness regarding male registered nurses' promotions", and "Female patients' refusal to accept nursing services from male registered nurses".

Results: There were 728 (59.9%) full-time male registered nurses with good mental health and 488 (40.1%) with poor mental health. The mental health of the male registered nurses who had negative feelings regarding, "Male registered nurses as important partners on the job" was significantly worse, and that of those who had negative feelings regarding, "Female registered nurses' good manners toward male registered nurses" was also significantly worse.

Conclusion: Female registered nurses must recognize that their attitudes toward male registered nurses influence the mental health of male registered nurses. Hospital managers should provide male registered nurses who cannot establish appropriate relations with female registered nurses with consultation opportunities. Such organizational action by managers is necessary.

Key words: general health questionnaire (GHQ), female registered nurse, male registered nurse, nursing management, work environment

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Introduction

In Japan and other countries, nursing has historically been recognized as a female profession and has predomi-

nantly been comprised of females^{1, 2}. Thus, males in the nursing profession are a minority.

There is a report in which the degree of acceptance of male registered nurses by female registered nurses was investigated from outside Japan³. The results of that study indicated that there were some female registered nurses who accepted male registered nurses, whereas there were also some female registered nurses who were unwilling to do so. If there are female registered nurses who are unwilling to accept male registered nurses, then male registered nurses may feel it difficult to work with them.

There were interview surveys of male registered nurses in Japan^{4, 5}. Takahashi *et al.* reported that male registered

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nurses have difficulty in forming appropriate relationships with female registered nurses⁴). Moreover, they also reported that male registered nurses experience anxiety regarding their future career development. Similarly, Kitabayashi *et al.* reported that male registered nurses have difficulty maintaining appropriate relationships with female registered nurses⁵). Male registered nurses often find it difficult to work in an environment with many female registered nurses and, consequently, their mental health may suffer.

In interview surveys in Japan, male registered nurses also experienced the refusal of female patients to accept their nursing services^{4, 5}). Moreover, according to an interview survey of male registered nurses in another country, because male registered nurses were mistakenly accused of using physical touch inappropriately with female patients, they work in fear of being accused of such behavior⁶). It is extremely important that male registered nurses consider female patients' sense of shame and aversion regarding their nursing services. However, when male registered nurses have such experiences with female patients, it could cause negative feelings and increase their mental health issues. If so, consideration of male registered nurses' mental health must be addressed.

The General Health Questionnaire (GHQ) is used as a screening device to detect psychiatric disorders⁷⁻¹¹). There have been numerous studies utilizing the GHQ for registered nurses in Japan and other countries¹²⁻¹⁶). For example, Elovainio *et al.* measured the GHQ score to investigate registered nurses' psychological distress, and reported that shiftwork was significantly associated with their GHQ score¹²). In another study, Saito *et al.* investigated the association between Japanese public health nurses' work environment and their GHQ score¹³). The results revealed that, "Contribution to society", "Workload", and "Organizational public health initiative" were significant variables for public health nurses' GHQ score. However, to our knowledge, there have been no reports on how items regarding "Environments with a large number of female registered nurses" and "Female patients' refusal to accept nursing services from male registered nurses" influence Japanese male registered nurses' GHQ score.

In the present study, to study the improvement of the mental health of Japanese male registered nurses, we investigated the predictors associated with the Japanese version of the 12-item GHQ (GHQ-12). For those predictors, we focused on environments with many female registered nurses and the experience of female patients' refusal to accept nursing services from Japanese male registered nurses. If male registered nurses have negative feelings regarding those issues, it may lead to their poor mental health. Therefore, we investigated the associations between such risk factors and their mental health.

Materials and Methods

Participating hospitals and study subjects

This study was conducted in 93 hospitals in the Aichi, Gifu, and Mie prefectures of Japan. The subjects of this study were 1,768 Japanese male registered nurses who work in these hospitals.

Distribution and return of questionnaires

We asked the nursing directors of all the participating hospitals to distribute the anonymous self-administered questionnaires (original version in Japanese, see Appendix 1), explanatory documents in Japanese of this study, and the return envelopes to the study subjects. We also asked them to set up collection boxes in their hospitals. To ensure that truthful answers were given, we asked the subjects to return their completed questionnaires in the collection boxes in sealed envelopes. The questionnaire distribution and return was conducted from September 2019 through February 2020.

Questionnaire items

The questionnaire items were classified into the following parts: (1) The Japanese version of the 12-item General Health Questionnaire (GHQ-12)¹¹), (2) The Public Health Research Foundation: Stress Check List¹⁷), (3) "Environments with many female registered nurses" and "Female patients' refusal to accept nursing services from male registered nurses", and (4) subjects' characteristics. The Public Health Research Foundation: Stress Check List was not necessary for the purpose of this study. Therefore, we did not analyze those items.

The GHQ has 4 versions of questionnaires: the GHQ-60, the GHQ-30, the GHQ-28, and the GHQ-12⁷⁻¹¹). In the present study, the Japanese version of the GHQ-12 was used to investigate the mental health of the male registered nurses.

The first author of the present study reported various nursing-related studies in the department of nursing of various hospitals¹⁸⁻²⁷). When those studies were conducted, male registered nurses were in the minority in those hospitals. However, the first author had opportunities to discuss various problems regarding the work environments in the nursing departments of those hospitals with male and female registered nurses working there. Those male registered nurses told the first author that because appropriate relationships with female registered nurses are very important, they feel stressed when they are unable to build appropriate relationships. Moreover, they worried that their nursing services may be refused by some female patients and about future career paths. According to interview surveys of male registered nurses in Japan^{4, 5}), the results of those previous studies were similar to the first author's experiences.

Therefore, we produced the original 4 items regarding,

“Environments with many female registered nurses” and “Female patients’ refusal to accept nursing services from male registered nurses” with reference to interview surveys of Japanese male registered nurses^{4,5}. These 4 items were: “Male registered nurses as important partners on the job”, “Female registered nurses’ good manners toward male registered nurses”, “Fairness regarding male registered nurses’ promotions”, and “Female patients’ refusal to accept nursing services from male registered nurses”. The items were rated on a 7-point scale: “Definitely agree”, “Mostly agree”, “Somewhat agree”, “Neither agree nor disagree”, “Somewhat disagree”, “Mostly disagree”, and “Definitely disagree”.

The items of subjects’ characteristics were, “Age” and “Employment status” (full-time worker/part-time worker).

Statistical analyses

We used the “GHQ scoring method (0-0-1-1)”. Therefore, the range of total scores of the GHQ-12 could be from a minimum of 0 to a maximum of 12. The cutoff point of 3/4 was used. Thus, a score of ≤ 3 indicated good mental health, and a score of ≥ 4 indicated poor mental health.

Univariate and multiple logistic regression analyses were conducted. The variable of the GHQ-12 score was a dependent variable. The independent variables were: “Age”, “Male registered nurses as important partners on the job”, “Female registered nurses’ good manners toward male registered nurses”, “Fairness regarding male registered nurses’ promotions”, and “Female patients’ refusal to accept nursing services from male registered nurses”.

Regarding “Male registered nurses as important partners on the job”, “Female registered nurses’ good manners toward male registered nurses”, “Fairness regarding male registered nurses’ promotions”, and “Female patients’ refusal to accept nursing services from male registered nurses”, we hypothesized that male registered nurses who had negative feelings regarding those items incurred risks causing poor mental health, compared with those who did not have such negative feelings.

Therefore, regarding “Male registered nurses as important partners on the job”, “Female registered nurses’ good manners toward male registered nurses”, and “Fairness regarding male registered nurses’ promotions”, because subjects answering, “Somewhat disagree”, “Mostly disagree”, and “Definitely disagree” were negative feelings, they were classified as risk groups. Because subjects answering, “Definitely agree”, “Mostly agree”, “Somewhat agree”, “Neither agree nor disagree” were not negative feelings, those answers were classified as the no-risk groups. Those 3 items were used as dichotomous variables.

On the other hand, regarding “Female patients’ refusal to accept nursing services from male registered nurses”, because subjects answering, “Definitely agree”, “Mostly

agree”, and “Somewhat agree” were negative feelings, they were classified in the risk group. Because subjects answering, “Neither agree nor disagree”, “Somewhat disagree”, “Mostly disagree”, and “Definitely disagree” were not negative feelings, they were classified in the no-risk group. This item was also used as a dichotomous variable.

By conducting univariate analyses, we examined the crude associations between the independent variables and the GHQ-12 score. We subsequently conducted multiple analysis for the adjusted model. All independent variables were included in this adjusted model.

IBM SPSS Statistics (Version 25.0) was used for all the analyses.

Analyzed subjects

From the 1,768 study subjects, 1,280 completed questionnaires were collected for a return ratio of 72.4%. The questionnaires which had one or more missing values in the items used in this study were excluded from our analyses. Consequently, there were 1,216 returned questionnaires from full-time registered nurses and only 9 from part-time registered nurses. However, because there were so few part-time registered nurses, we excluded them from the analyses. Therefore, the subjects analyzed in the present study were 1,216 full-time male registered nurses.

Ethics

This study was conducted with approval from the Ethics Committee of Yokkaichi Nursing and Medical Care University (No. 140).

Results

A GHQ-12 score of ≤ 3 indicated good mental health, and a score of ≥ 4 indicated poor mental health. There were 728 (59.9%) male registered nurses with good mental health and 488 (40.1%) with poor mental health.

The distributions of age are shown in Table 1. There was 35.4% in the 20 to 29-year category, 35.2% in the 30 to 39-year category, 22.5% in the 40 to 49-year category, 6.0% in the 50 to 59-year category, and 1.0% in the ≥ 60 -year category. The age range was from 20 to 67 years. The average

Table 1 Distributions of age

Age	n	%
20–29	430	35.4
30–39	428	35.2
40–49	273	22.5
50–59	73	6.0
≥ 60	12	1.0
Total	1,216	100.0

age (standard deviation) was 34.5 (9.2) years.

The distributions of predictive variables are shown in Tables 2 and 3. Regarding “Male registered nurses as important partners on the job”, 111 responded, “Definitely agree”, 254 “Mostly agree”, 326 “Somewhat agree”, 340 “Neither agree nor disagree”, 64 “Somewhat disagree”, 78 “Mostly disagree”, and 43 “Definitely disagree” as shown in Table 2. Therefore, there were 185 in the risk group as shown in Table 3. In the same way, regarding “Female registered nurses’ good manners toward male registered nurses”, 65 responded, “Definitely agree”, 190 “Mostly agree”, 203 “Somewhat agree”, 457 “Neither agree nor disagree”, 110 “Somewhat disagree”, 124 “Mostly disagree”, and 67 “Definitely disagree”. Therefore, there were 301 in the risk group. Regarding “Fairness regarding male registered nurses’ promotions”, 138 responded, “Definitely agree”, 176 “Mostly agree”, 136 “Somewhat agree”, 465 “Neither agree nor disagree”, 77 “Somewhat disagree”, 110 “Mostly disagree”, and

114 “Definitely disagree”. Therefore, there were 301 in the risk group. Regarding “Female patients’ refusal to accept nursing services from male registered nurses”, 35 responded, “Definitely agree”, 45 “Mostly agree”, 360 “Somewhat agree”, 330 “Neither agree nor disagree”, 115 “Somewhat disagree”, 231 “Mostly disagree”, and 100 “Definitely disagree”. Therefore, there were 440 in the risk group.

Table 4 shows the factors associated with the results of the univariate and multiple logistic regression analyses. Univariate logistic regression analyses showed that, “Male registered nurses as important partners on the job (odds ratio 2.280 [95% confidence interval 1.659–3.132])”, “Female registered nurses’ good manners toward male registered nurses (2.031 [1.560–2.643])”, and “Fairness regarding male registered nurses’ promotions (1.495 [1.150–1.945])” were significant. However, multiple logistic regression analysis showed that, “Male registered nurses as important partners on the job (1.792 [1.275–2.518])” and “Female registered

Table 2 Distributions of the variables

Variable	n	%
Male nurses as important partners on the job		
Definitely agree	111	9.1
Mostly agree	254	20.9
Somewhat agree	326	26.8
Neither agree nor disagree	340	28.0
Somewhat disagree	64	5.3
Mostly disagree	78	6.4
Definitely disagree	43	3.5
Female registered nurses’ good manners toward male registered nurses		
Definitely agree	65	5.3
Mostly agree	190	15.6
Somewhat agree	203	16.7
Neither agree nor disagree	457	37.6
Somewhat disagree	110	9.0
Mostly disagree	124	10.2
Definitely disagree	67	5.5
Fairness regarding male registered nurses’ promotions		
Definitely agree	138	11.3
Mostly agree	176	14.5
Somewhat agree	136	11.2
Neither agree nor disagree	465	38.2
Somewhat disagree	77	6.3
Mostly disagree	110	9.0
Definitely disagree	114	9.4
Female patients’ refusal to accept nursing services from male registered nurses		
Definitely agree	35	2.9
Mostly agree	45	3.7
Somewhat agree	360	29.6
Neither agree nor disagree	330	27.1
Somewhat disagree	115	9.5
Mostly disagree	231	19.0
Definitely disagree	100	8.2
Total	1,216	100.0

Table 3 Distributions of the dichotomous variables

Dichotomous variable	n	%
Male registered nurses as important partners on the job		
Risk group	185	15.2
No-risk group	1,031	84.8
Female registered nurses' good manners toward male registered nurses		
Risk group	301	24.8
No-risk group	915	75.2
Fairness regarding male registered nurses' promotions		
Risk group	301	24.8
No-risk group	915	75.2
Female patients' refusal to accept nursing services from male registered nurses		
Risk group	440	36.2
No-risk group	776	63.8
Total	1,216	100.0

Regarding “Male registered nurses as important partners on the job”, “Female registered nurses’ good manners toward male registered nurses”, and “Fairness regarding male registered nurses’ promotions”, subjects answering, “Somewhat disagree”, “Mostly disagree”, and “Definitely disagree” were classified in the risk groups. Subjects answering, “Definitely agree”, “Mostly agree”, “Somewhat agree”, “Neither agree nor disagree” were classified in the no-risk groups. Regarding “Female patients’ refusal to accept nursing services from male registered nurses”, subjects answering, “Definitely agree”, “Mostly agree”, and “Somewhat agree” were classified in the risk group. Subjects answering, “Neither agree nor disagree”, “Somewhat disagree”, “Mostly disagree”, and “Definitely disagree” were classified in the no-risk groups. See Table 2.

Table 4 Factors associated with the 12-item General Health Questionnaire score

Variable	Crude		Multiple logistic	
	Odds ratio	95% CI	Odds ratio	95% CI
Age	0.994	0.982–1.007	0.997	0.984–1.010
Male registered nurses as important partners on the job	2.280	1.659–3.132	1.792	1.275–2.518
Female registered nurses’ good manners toward male registered nurses	2.031	1.560–2.643	1.683	1.271–2.229
Fairness regarding male registered nurses’ promotions	1.495	1.150–1.945	1.221	0.926–1.611
Female patients’ refusal to accept nursing services from male registered nurses	1.166	0.919–1.480	1.116	0.875–1.425

95% CI: 95% confidence interval.

Univariate and multiple logistic regression analyses were conducted. To calculate the odds ratio and 95% confidence interval, the codes below were used. Regarding the Japanese version of the 12-item General Health Questionnaire, bad mental health was 1 and good mental health was 0. Age was used as a continuous variable. Regarding “Male registered nurses as important partners on the job”, “Female registered nurses’ good manners toward male registered nurses”, “Fairness regarding male registered nurses’ promotions”, and “Female patients’ refusal to accept nursing services from male registered nurses”, the risk group of each variable was 1, and the no-risk group of each variable was 0.

nurses’ good manners toward male registered nurses (1.683 [1.271–2.229])” were significantly associated with the GHQ-12 score.

Discussion

“Male registered nurses as important partners on the job” and “Female registered nurses’ good manners toward male registered nurses” were significantly associated with male registered nurses’ mental health. According to interview surveys of male registered nurses in Japan, male regis-

tered nurses have difficulty in forming appropriate relationships with female registered nurses^{4,5}. The results of these previous studies were similar to those in the present study.

If male registered nurses are not recognized by female registered nurses as important partners on the job, they are not able to appreciate the value of their work. If that occurs, their intrinsic motivation to work as registered nurses would be diminished and their mental health would become worse. Moreover, if male registered nurses are continuously treated with bad manners by female registered nurses, who comprise the majority, the male registered nurses’ mental

health would become worse. Female registered nurses must recognize that their attitudes toward male registered nurses influence male registered nurses' mental health.

According to the literature regarding conflict management in organizations, people's behaviors are classified into: "Collaborating", "Avoiding", "Compromising", "Accommodating", and "Competing".²⁸⁾ Among them, "Collaborating" is the best way to settle conflicts in the long run. It merges different perspectives toward crucial issues and promotes cooperation among the parties. We think that this concept is useful to discuss the results of this study. Hospital managers should try to encourage collaboration between male and female registered nurses.

Male registered nurses are in the minority in nursing departments in hospitals. Therefore, it may be difficult for them to integrate their perspectives regarding female registered nurses into the workplace. Hospital managers should provide opportunities for consultations with male registered nurses who cannot establish appropriate relations with female registered nurses. They should take male registered nurses' feelings into consideration and merge male and female registered nurses' perspectives. This helps strengthen cooperation.

Although the discussions of our results are spread thinly, we believe that it is necessary to provide education in ethics for the registered nurses. Saito *et al.* reported the development of educational programs to treat others with decency and respect in their medical school²⁹⁾. Adequate education is required for male and female registered nurses to behave with courtesy and treat each other with respect. We consider it valuable to develop such educational programs for registered nurses.

The first limitation of this study was that random sampling was not employed. Thus, the generalization of the results were limited. The second limitation was that we used anonymous self-administered questionnaires. Therefore, there was a possibility that respondents provided us with inaccurate answers. The third limitation was that because a cross-sectional design was used, we could not identify causal relationships.

Regarding the needed sample size for conducting multiple logistic regression analysis, for every independent variable in the statistical model, at least 10 outcomes are needed.³⁰⁾ Therefore, because male registered nurses were in the minority, we were concerned that we could obtain a large enough sample size. Moreover, we were also concerned that if there were too few male registered nurses who had good mental health or too few who had poor mental health, we could not make the statistical model. Considering those reasons, when we formed our hypothesis, we considered the bare minimum of independent variables.

However, it will be necessary to form new hypotheses with various risk factors associated with male registered

nurses' mental health. For example, in some countries, there may be a gender bias that stereotypes male registered nurses as being gay^{31, 32)}. In Japan, we believe that there is no such gender bias against male registered nurses. However, according to an interview survey of male registered nurses in Japan⁵⁾, Japanese male registered nurses felt societal prejudice. Public images and social status of male registered nurses could differ from country to country. It is necessary to investigate what Japanese male registered nurses think about the public image and social status of their own occupation. It will also be necessary to investigate the associations between their attitudes and their mental health.

According to frontline registered nurses working in nursing departments in Japanese hospitals, full-time registered nurses usually work the night shift frequently. However, the frequency of the night shifts may be associated with the GHQ score. Therefore, we intend to investigate the frequency of male registered nurses working night shifts in future studies. Additionally, it will be necessary to investigate the items regarding the subjects' characteristics, such as the male-female ratio in the nursing departments in hospitals, marital status, clinical departments (e.g., psychology and pediatrics), educational backgrounds, and long working hours, and to examine the associations between those characteristics and the GHQ score.

Fujikawa *et al.* reported that Japanese male registered nurses felt that they were expected to perform various roles in the nursing department in hospitals³³⁾. For example, they felt expectations to develop a relationship of trust with patients and medical staffs and to demonstrate leadership in the nursing department. They also felt expectations that they had to deal with patients' restlessness, sudden changes in the patients' conditions, and de-escalate violent situations caused by patients. They may object to the excessive degree of these expectations. However, if they do not feel that these expectations are excessive, accepting such roles may improve their work motivation. Even though male registered nurses are in the minority, we believe that they have challenging but rewarding jobs. Therefore, in future studies, we will also investigate the male-specific predictors associated with their work motivation.

Conclusion

The mental health of the male registered nurses who did not feel recognized as important partners on the job by female registered nurses and who felt that female registered nurses' manners toward them were bad was significantly worse. Female registered nurses must know that their attitudes toward male registered nurses influence their mental health. In addition, hospital managers should provide opportunities for consultations with male registered nurses who cannot establish appropriate relations with female reg-

istered nurses. They should merge male and female registered nurses' perspectives. By such organizational action by managers, their collaboration will be strengthened.

Conflicts of interest: The authors declare that they have no conflicts of interest.

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Appendix 1. Environments with many female registered nurses and female patients' refusal to accept nursing services from male registered nurses(Original version in Japanese)

1. Male registered nurses as important partners on the job
1. I think that I am generally recognized as an important partner on the job by female registered nurses.
2. Female registered nurses' good manners toward male registered nurses
2. I think that female registered nurses generally have good manners toward male registered nurses.
3. Fairness regarding male registered nurses' promotions
3. I think that male registered nurses' promotions are fair compared to those of female registered nurses.
4. Female patients' refusal to accept nursing services from male registered nurses
4. I think that my nursing services are often refused by female patients.