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Field report

Factors affecting the future employment of new graduate nurses as home-visiting nurses: a cross-sectional study in Japan

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Abstract

Objective: In Japan, home-visiting nurse (HVN) stations are at the frontline of providing home-based medical care and end-of-life care. The nursing authorities aim to establish an education program that allows new graduate nurses to become home-visiting nurses. However, previous studies have indicated gaps in education between new graduates recently employed as HVNs and experienced home-visiting nurses. The present study further investigates the factors influencing the recruitment of new graduates as home-visiting nurses.

Methods: Self-administered questionnaires were sent to 2,000 HVN stations randomly selected from the 5,565 registered home-visiting nurse stations throughout Japan. The survey covered three main areas, namely, those concerning the respondent (6 items), the home-visiting nurse station (8 items), and the nursing services provided (12 items).

Results: Four of the 26 items were statistically significant, and only one of these was determined by multivariate logistic regression analysis to be an independent factor for accepting new graduates as home-visiting nurses. This factor was undergraduate home-visiting nurse training for student nurses (OR=1.916, CI=1.124–3.267).

Conclusion: To increase the recruitment of new graduates as home-visiting nurses, these findings suggest that nursing schools nationwide and home-visiting nurse stations should further cooperate with the specific aim of increasing the provision of practical training at home-visiting nurse stations for pre-graduation student nurses.

Key words: home care, home-visiting nurse, new graduates, Japan

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Introduction

Japan has the highest proportion of elderly people in the world, with a growing number receiving long-term care in their own homes. Increasing the number of clinics and home-visiting nurse (HVN) stations is essential for adequate home medical care. However, despite the recent rise in this number of institutions, increasing the number of nursing staff is now the biggest issue faced by Japan in this area[1–3]. The Japanese Nursing Association is making efforts to promote nurse retention and support for job transfer/placement assistance (such as the re-employment of nurses who had earlier decided to leave the profession for personal reasons such as child-care or moving residence etc.) to secure more nurses in the field of home medical care[4]. In the past, experienced hospital nurses have transferred to the emerging field of HVN. The average age of HVNs is 47.0 years old[5], which is well above the average age of a hospital nurse. There is therefore some concern that the HVN field may shrink if more young graduate nurses are not introduced. To address this, many nursing associations at the local prefectural level are looking at the possibility of employing new graduates directly as HVNs.

Previous studies have suggested that working at an HVN station is not a realistic option for any new graduate because specialized and extensive experience is needed to work as an HVN[6, 7]. Therefore, we conducted a qualitative study asking skilled HVNs to describe the characteristics

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required to perform their duties effectively. Our study results identified the following two major categories for the qualities required for new graduates to work as HVNs: 1) basic knowledge and skills equivalent those required for the national exam for registered nurses, and 2) the appropriate attitude as members of society[8].

We have also previously conducted a qualitative study to explore the actual conditions in practice by identifying the difficulties and challenges reported first-hand directly by new graduates working as HVNs[9].

Finally, here we report our new findings after investigating the HVNs' opinions and actual conditions at HVN stations to identify and define the factors influencing the acceptance and recruitment of new graduate working as HVNs.

Methods

Sample selection

A cross-sectional study was conducted from August to September 2019 in Japan. We used the stratified sampling method to randomly select 2,000 of the 5,565 registered HVN stations nationwide, representing 30.7–43.4% of the total number of HVN stations in each of the seven regional districts of Japan, as follows: Hokkaido (124/286), Tohoku (118/335), Kanto (578/1,843), Chubu (305/837), Kinki (441/1,437), Chugoku/Shikoku (173/508), and Kyushu/Okinawa (261/733) (Figure 1).

Of the 2,000 HVN stations selected, the records of 74 had incomplete addresses, and the questionnaire survey was consequently sent out by letter post to a total of 1,926 HVN stations. Among the 328 responses received (response rate 17.0%), 326 contained valid answers, which were then subjected to statistical analysis.

This study survey included an introductory cover letter that clearly stated the study purpose, the right to refuse to participate, the strict privacy protection, and the safeguarding of the data, with the exception of publication of statistically analyzed anonymized data. Returning an answered questionnaire was, therefore, considered consent. This survey protocol was approved by the ethics committee of Kio University, Nara, Japan (approval number: H30-21).

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Measurements

As no validated research tools existed to achieve the objectives of our study, the questionnaire was developed based on 26 factors related to the possibility of accepting new graduates as HVNs from previous reports[10–12]. Subjects were asked to assign a score ranging from 1 (highly disagree) to 5 (highly agree). The questionnaire was piloted and revealed high internal reliability with a Cronbach's alpha of 0.85.

Statistical analysis

We conducted item analysis followed by Chi-squared test or t-test, dividing between acceptance (score 4 or 5) and non-acceptance (score 1, 2, or 3) of new graduates in HVN station. The multicollinearity of the 26 items was confirmed by linear regression analysis, and the results are shown in Table 1. Since the variance inflation values (VIF) values of the 26 items ranged from 1.3 to 8.7, it was determined that there was no multicollinearity, and all 26 items were adopted as independent variables. We then selected items with a P-value <0.05 as independent variables for multivariate logistic regression. Statistical analysis was performed using SPSS 22.0 J software for Windows.

Results

Table 1 presents the basic characteristics of the participants. As shown in Table 1, for the 326 HVN facilities in the final sample, the mean age of the HVN station manager was 51.7 years, and the mean number of nurses in the office was 7.0. The acceptance group consisted of 32.8% of the participants, while the non-acceptance group consisted of 67.2%.

Table 2 shows the correlation between the possible acceptance of new graduates as HVNs and their desired basic characteristics. There was a statistically significant difference in four of the 26 items in the χ^2 test: 1) *Attached other facility* (P=0.016): the HVN stations which are attached to some other facility such as a large hospital responded that they would accept new graduates in their own HVN station, more so than those that did not have an attached facility, and 2) *Providing practical training for pre-graduation student nurses* (P=0.001): the HVN stations that did provide practical training for pre-graduation student nurses responded they were more likely to accept new graduates in their own HVN station than those that did not host pre-graduate student training, and 3) *Accepting medical care in your HVN station – tracheal intubation* (P=0.022): the HVN stations that provided medical *care involving the use of tracheal intubation w*ere more likely to accept new graduates than those that did not, and 4) *Accepting medical care in your HVN station – home ventilator therapy* (P=0.043): the HVN stations that provided care involving home ventilator therapy were more likely to accept new graduates than those that did not.

Table 3 shows the findings from the multivariate logis-

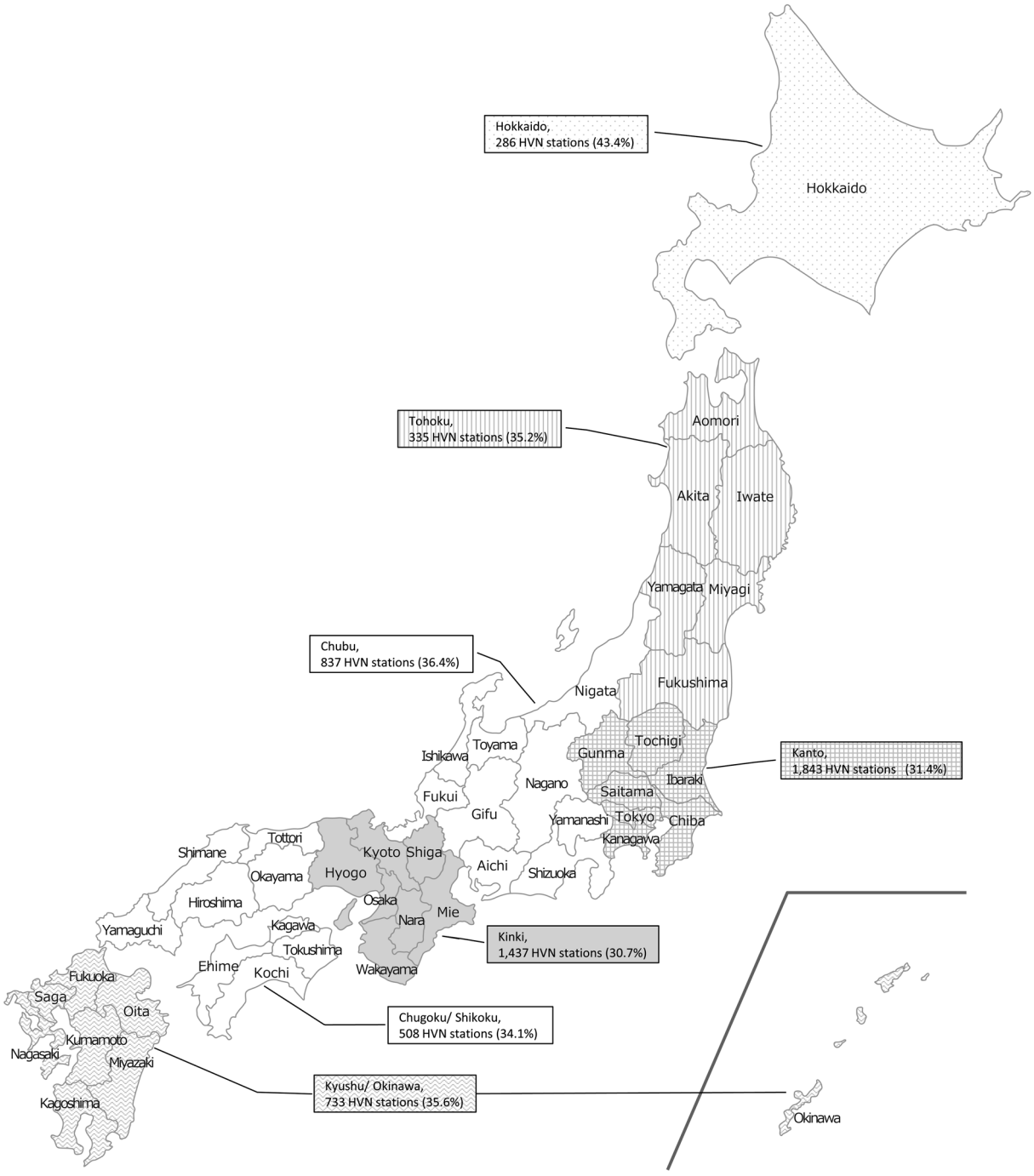

Figure 1 Home-Visiting Nurses (HVN) Stations in Japan and Questionnaire Distribution Rate.
Widely used seven regional divisions of Japan: Hokkaido, Tohoku, Kanto, Chubu, Kinki, Chugoku/Shikoku, and Kyushu/Okinawa. (): distribution rate.

tic regression analysis. Only one item, *Providing practical training for student nurses,* was correlated with accepting new graduates to be HVNs (OR=1.916, CI=1.124–3.267); those HVN stations that provided training to pre-graduation student nurses were 1.9 times more likely to accept new graduates as HVNs than those that did not.

Discussion

We identified the items influencing the possibility and practicality of accepting new graduates as HVNs. Those HVN stations that provided training to pre-graduation student nurses were almost twice as likely to accept new gradu-

Table 1. Basic characteristics (N=326)

		n	%	Mean (SD)	Median	VIF*
Characteristics of the respondent factors						
Age / yrs		318		51.7 (7.9)	52.0	6.0
Sex	Male	21	6.5			1.5
	Female	303	93.5			
License acquisition age for nurse / years old		323		23.4 (5.4)	21.0	4.2
Experience as hospital nurse / yrs		275		13.9 (8.8)	13.0	6.0
Experience as visiting nurse / yrs		317		11.3 (10.0)	10.0	2.2
Total number of working hours / week		278		74.0 (418.3)	40.0	1.3
Possible acceptance of new graduates as visiting nurse		326				
Acceptance Group	highly agree	20	6.1			
	agree	87	26.7			
Non-Acceptance Group	neutral	104	31.9			
	disagree	91	27.9			
	highly disagree	24	7.4			
Home-visiting nurse station factors						
Location of station		326				1.3
	Hokkaido	18	5.5			
	Tohoku	18	5.5			
	Kanto	88	27.0			
	Chubu	46	14.1			
	Kinki	77	23.6			
	Chugoku/Shikoku	35	10.7			
	Kyushu/Okinawa	44	13.5			
Attached other facility		322				1.3
	Yes	244	75.8			
	No	78	24.2			
Total nurses in office		326		7.0 (3.9)	6.0	3.2
Total staff in office		326		10.7 (8.0)	8.0	3.2
Total home visits in practice / month		202		184.3 (339.3)	35.0	1.3
Total patients at end of life at home seen / month				0.6 (1.3)	0.0	1.3
Accept and provide training for hospital nurses		313				1.8
	Yes	122	39.0			
	No	191	61.0			
Would agree to provide training to student-nurses		321				2.1
	Yes	188	58.6			
	No	133	41.4			
Range of medical care provided by your office						
Tracheal tube		263	80.7			3.4
Home ventilator therapy		216	66.3			2.1
Home oxygen therapy		304	93.3			3.7
Home parenteral nutrition		268	82.2			2.1
Decubitas		307	94.2			5.6
Drip infusion / Injection		304	93.3			3.1
Applying urinary catheter		303	92.9			2.8
Stoma		300	92.0			8.7
Tube feeding		301	92.3			5.5
Narcotic pain management		279	85.6			2.7
Pediatric home nursing		147	45.1			1.9
End of life at home		293	89.9			5.5

*: Variance Inflation Factor by linear regression analysis.

Table 2. The relationship between possibility of acceptance of new graduates in home-visiting nurse (HVN) stations and basic characteristics (N=326)

		Acceptance Group n=107		Non-Acceptance Group n=219		χ^2	*P*-value
		n	Mean (SD)	n	Mean (SD)		
Characteristics of the respondent factors							
1. Age / yrs			51.7 (8.3)		51.7 (7.7)		0.965
2. Sex	Male	6		15		0.151	0.698
	Female	99		204			
3. License acquisition age for nurse / years old			24.2 (5.8)		23.1 (5.2)		0.102
4. Experience as hospital nurse / yrs			13.1 (8.4)		14.3 (9.0)		0.330
5. Experience as visiting nurse / yrs			12.1 (7.5)		11.0 (8.1)		0.214
6. Total number of working hours / week			45.5 (24.7)		88.4 (512.3)		0.420
Home-visiting nurse station factors							
7. Location of station	Hokkaido	8		10		5.721	0.455
	Tohoku	5		13			
	Kanto	29		59			
	Chubu	11		35			
	Kansai	22		55			
	Chugoku/Shikoku	14		21			
	Kyushu/Okinawa	18		26			
8. Attached other facility	Yes	89		155		5.769	0.016
	No	17		61			
9. Total nurses in office			7.6 (4.1)		6.7 (3.8)		0.078
10. Total staff in office			11.3 (7.2)		10.4 (7.9)		0.320
11. Total home visits in practice / month			144.4 (238.0)		209.1 (388.9)		0.340
12. Total patients at end of life at home seen / month			0.71 (1.6)		0.50 (1.0)		0.246
13. Accept and provide training for hospital nurses	Yes	44		78		1.558	0.212
	No	56		135			
14. Would agree to provide training to student-nurses	Yes	75		113		11.637	0.001
	No	29		104			
Range of medical care provided by your office							
15. Tracheal tube	Yes	94		169		5.260	0.022
	No	13		50			
16. Home ventilator therapy	Yes	79		137		4.087	0.043
	No	28		82			
17. Home oxygen therapy	Yes	99		205		0.134	0.714
	No	8		14			
18. Home parenteral nutrition	Yes	91		177		0.877	0.349
	No	16		42			
19. Decubitas	Yes	100		207		0.148	0.701
	No	7		12			
20. Drip infusion / Injection	Yes	102		202		0.148	0.701
	No	5		17			
21. Applying urinary catheter	Yes	99		204		0.043	0.835
	No	8		15			
22. Stoma	Yes	97		203		0.408	0.523
	No	10		16			
23. Tube feeding	Yes	99		202		0.008	0.927
	No	8		17			
24. Narcotic pain management	Yes	94		185		0.664	0.415
	No	13		34			
25. Pediatric home nursing	Yes	53		94		1.269	0.260
	No	54		125			
26. End of life at home	Yes	98		195		1.269	0.260
	No	9		24			

*χ^2 test/t-test.

Table 3. Acceptance of new graduates as home-visiting nurses (HVNs) and multivariate logistic regression (N=326)

		Odds-ratio	95% CI	*P*-value
8. Attached other facility	Yes	1.762	0.953–3.261	0.071
	No			
14. Would provide practical training to student-nurses	Yes	1.916	1.124–3.267	0.017
	No			
15. Tracheal tube	Yes	1.344	0.565–3.197	0.504
	No			
16. Home ventilator therapy	Yes	1.270	0.638–2.528	0.496
	No			

Dependent variables: acceptance of new graduates as visiting nurses 0 (Non-Acceptance Group) vs. 1 (Acceptance Group). Independent variables: all four variables 0 (No), 1 (Yes).

ates as HVNs than those that did not.

The National Association for Home-Visiting Nurse Service has reported that new graduates are being hired by (a) 'HVN stations that are attached to some other facility, such as a hospital', and by (b) 'HVN stations already having a large number of HVNs' and depending on the (c) 'type of medical care' offered[10]. Another study has reported that (d) 'HVN stations which already provided the HVN training for hospital nurses tended to be willing to accept new graduates'[11].The present study's findings were consistent with these other reports on one point only, namely that (a) 'the HVN station was attached to some other facility, such as a hospital'. However, our findings are not consistent with those of other reports concerning (b) 'the type of medical care', (c) having 'a large number of HVNs', and (d) 'provided HVN training for hospital nurses'.

At the design stage of our present study, we considered that it might be difficult to accept new graduates into an HVN station that provided medical care involving home ventilator therapy and/or pediatric home nursing. However, our findings indicate the opposite. We believe that the previous report[10] was not based on scientific research methods. Another study reported that the characteristics required for new graduate HVNs were 1) relevant basic knowledge, 2) relevant skills, and 3) consideration of the patient and his/her family members[8]. The findings of the present study are consistent with those findings. In order to accept new graduates as HVNs, it is necessary to promote cooperation between nursing schools and HVN stations so that pre-graduation student nurses can increase their practical training at HVN stations.

This study found no statistically significant difference between the size of the HVN station and the acceptance of new graduates. However, other reports have suggested that it is difficult to hire new graduates at small HVN stations that do not have in-house training for new employees[10], and our previous studies found that new graduate HVNs experienced difficulties in applying what they had learned in nursing school into practice in the home medical area[9]. The present study's findings suggest a gap between the education received at nursing schools and the real-world challenges which new graduates could face as HVNs. A number of older reports have suggested virtual-reality simulation training[13] or high-fidelity simulation[14] to help bridge the gap between nursing education and HVN practice.

The limitations of this study are as follows: First, the response rate was fairly low at 17.0%. Second, this study was conducted only on HVNs. Third, this study did not examine the criterion validity. The results of this study may not be generalizable to other settings. It is suggested that future studies should examine a larger number of subjects.

Conclusion

We have identified the factors influencing the possibility of accepting new graduates as HVNs. The HVN stations that provided training to student nurses were 1.9 times more likely to accept new graduates as HVNs than those that did not.

In conclusion, to increase the number of new graduate nurses wanting to become HVNs and being accepted as HVNs, these findings indicate that it is necessary to promote the cooperation between HVN stations and nursing schools to increase practical HVN training for pre-graduation student nurses.

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