

Major structural factors of career orientation for public health nurses working in administrative agencies

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Abstract

To clarify major structural factors of the career orientation for public health nurses working in administrative agencies (admin-PHNs) as a previous stage of the development of a scale, we developed our original questionnaire based on the results of our previous qualitative interviews and performed a self-administered questionnaire survey by mail. The subjects were 750 admin-PHNs in Prefectures I and M, and 465 of them (60.4%) responded to the questionnaire. The number of effective responses was 422 (56.3%).

As a result of principle factor analysis by promax rotation, 5 interpretable factors were extracted ("orientation toward social recognition", "orientation toward community collaboration", "orientation toward management as a leader", "orientation toward stability/compatibility", and "orientation toward contribution/service"), and 18 items were selected. Both the reliability of the constitutional items of each factor ($\alpha = 0.635-0.792$) and that of the factors as a whole ($\alpha = 0.824$) were confirmed.

The 5 admin-PHNs' career orientations extracted were orientations that were considered only from choices that can be realized at present based on their previous activity as admin-PHNs and the activity attitudes of colleagues and superiors. Thus, the 5 career orientations for admin-PHNs allow them to reflect on their own career through conventional health activity. However, it is necessary for admin-PHNs to evaluate the future social situation and improve orientation contents so as to include not only the orientations extracted in this study but also those with future prospects for the ideal state of admin-PHNs expected by the community.

Key words

Career orientation, Public health nurse, Administrative agency,
Career development, Principle factor analysis

Introduction

The working environments of public health nurses in administrative agencies (admin-PHNs) have shown marked changes such as through the recent major reforms of community health medical welfare systems, the union of smaller municipalities, and the reorganization of public health centers. As a result, there is an increasing demand for admin-PHNs who are allocated as a single or a few admin-PHNs with wide range of responsibilities and perform more advanced professional activities as

admin-PHNs in collaboration with other occupations¹⁾. With this increasing demand, roles and functions required of admin-PHNs have shown a paradigm shift, and their fulfillment of public duties, enhancement of publicity, and accountability of such activities has been evaluated by society more strictly than before²⁾. In such a situation, there are many middle admin-PHNs who regard their job negatively and lack confidence³⁾.

Beginners of admin-PHNs placed in such working environments are in an even worse

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situation, which may make it difficult for them to adapt to the workplace and display their full potential for the following reasons. Due to the curriculum integration of PHN and hospital nurse resulting from an acute increase in nursing colleges, there is a dissociation between the practical competence concerning techniques and knowledge of public health nursing after graduation and the level of competence expected in a clinical setting⁴⁾. Systematic, continuous education programs or systems have not yet been established⁵⁾. New admin-PHNs are working without confidence at present^{1,6,7)}.

Therefore, an effective career development program and its organization for admin-PHNs are urgently necessary. The scales of organizations where admin-PHNs work have been increasing because of the union of smaller municipalities and the reorganization of public health centers. The way of their working is expected to change, resulting in career differentiation. Therefore, it will become more important for admin-PHNs to select by themselves career development programs consistent with their orientations and obtain the effects of highly-motivated learning. The career development of admin-PHNs aims at bringing benefits to both admin-PHNs themselves and communities in terms of improvement in the skills of admin-PHNs and the quality of community health activities⁸⁾. For this purpose, the career needs of the community parallel those of individual admin-PHNs. There have been studies by professional associations on practice competency and roles required of admin-PHNs^{9,10)}. However, even if various career development plans are proposed, effective career development can not be achieved unless individual admin-PHNs select and decide their own direction and career goals. Concerning the importance of clarifying career orientation, a previous study in company employees showed that the appropriate clarification of career orientation and the assignment of work consistent with this orientation increase the sense of achievement and job satisfaction, promote the effectiveness of human resource development in organizations¹¹⁾.

Representative studies on nursing careers have focused on career formation or development, such as in the career development model by Sovie¹²⁾ and a 5-stage clinical skill acquisition classification using the Dreyfus model by Benner¹³⁾. On the other hand, studies on career orientation^{14,15)} have often evaluated the present status of nurses by applying the results of studies in male company employees by Schein¹⁶⁾ or Hirano¹¹⁾. However, since the methods used in these studies did not reflect the work and roles characteristic of each professional ability, it may be difficult for nurses to have an image of career orientation. Therefore, in this study, career orientation characteristic of admin-PHNs was expressed using the results of our previous interviews with admin-PHNs¹⁷⁾ as question items. For the development of a quantitative scale allowing self-assessment, we consider that major factors should be specified to facilitate practical use.

The purpose of this study was to clarify major structural factors associated with the career orientation for admin-PHNs (admin-PHNs' career orientation) as a previous stage of the development of a scale.

Career in this study was defined as the self-realization process in which admin-PHNs improve their abilities through their total professional activity with consideration for the balance between the objective aspect such as occupational experience and records and their personal life as the subjective aspect. Admin-PHNs' career orientation was defined as the attitude toward their professional life including their own life to which they attach basic importance.

Methods

1. Subjects

A survey was performed in a total of 772 admin-PHNs in Prefectures I and M that gave their cooperation. As districts for the study, Prefecture I on the Japan Sea side and Prefecture M on the Pacific Ocean side were selected for the following reasons. First, the two districts were similar in terms of geography, with forests accounting for about 70% of the district, the population size, the

mean temperature, and rainfall, which retrieved from the homepage of Prefecture I and M. Second, the number of full-time public health nurses/100,000 population according to prefectures in the fiscal year 2003¹⁸⁾ was similar as the national mean. Third, the reduction rate of the number of municipalities¹⁹⁾ due to their unions was similar in Prefecture I and M. These similarities suggested no marked difference in the characteristics of the communities where admin-PHNs work or the adequacy of manpower.

We sent a form to the chiefs of the section in charge of admin-PHNs in each workplace and ask them to write the form how many questionnaires they distributed and to return it. After excluding nurses to whom questionnaires could not be distributed due to maternity leave or leave due to other reasons, 750 admin-PHNs were enrolled as the subjects of this study.

2. Data collection

Our original questionnaire was developed using the final code 45 items¹⁷⁾ concerning admin-PHNs' career orientation extracted by an interview survey as admin-PHNs' career orientation items. The question was "Do you consider this attitude important when working as an admin-PHN?" The admin-PHNs answered the question using a 5-point Likert scale from "Definitely yes" to "definitely no".

The questionnaire included the following items in addition to admin-PHNs' career orientation items: (1) basic attributes of the subjects such as age, gender, administrative agency the admin-PHN belongs to, and years of experience as an admin-PHN, (2) free description of matters other than the 45 career orientation items that are considered to be necessary.

A pretest was performed on 4 instructors teaching public health nursing and 7 admin-PHNs, and the degree of understanding of the study purpose, appropriateness of questionnaire items, and the survey time that does not excessively burden the subjects were confirmed.

Questionnaires were mailed to each workplace at the end of November, 2005 and directly returned to us by the individual subjects.

Depending on the collection status of questionnaires, a written request for cooperation in the survey was sent to each workplace.

3. Data analysis

For the analysis of responses, principle factor analysis, Pearson's $s\chi^2$ test, and a test of differences in the mean value were performed using SPSS for Windows 13.0. The correlation coefficient and Cronbach's coefficient α were calculated.

1) Criteria for ineffective responses

Responses were regarded as ineffective when answers to the questions in the face sheet, 45 items of admin-PHNs' career orientation fulfilled at least 1 of the following 4 criteria: (1) There was a check missing. (2) There was only 1 check collectively for 5 consecutive items or more. (3) The same number was checked for 15 consecutive items or more corresponding to 1 page. (4) There were two checks or more for 1 item.

2) Evaluation of analysis items

Since answers to the questions concerning the 45 items of admin-PHNs' career orientation were obtained by the 5-point method, a ceiling effect was considered to be present when the mean value + standard deviation was ≥ 5 , while a floor effect was considered to be present when the mean value - standard deviation was ≤ 1 ²⁰⁾. Since these effects indicate a marked bias in distribution, the items were excluded from analysis. Kaiser-Meyer-Olkin's measurement (KMO) was performed, and items showing a $KMO > 0.5$ were regarded as valid items for factor analysis²¹⁾. Analysis items were comprehensively determined by the above methods.

3) Extraction of factors and selection of items by principle factor analysis

Correlations between items of admin-PHNs' career orientation that were selected as analysis items were evaluated, and an absolute value of the correlation coefficient $r > 0.7$ was considered to indicate a marked correlation, $0.4 \leq r \leq 0.7$ to indicate a medium correlation, and $r < 0.4$ to indicate no correlation. In addition, Bartlett's test of sphericity was performed, and significance probability $\alpha > 0.05$ was considered to indicate an association between items²¹⁾. When there was a correlation between items based on these or the

test results, exploratory factor analysis was performed by promax rotation, which is used on the assumption that there is a correlation, and the principle factor method²⁰. Only when there was no correlation, factor analysis by varimax rotation was performed, and the cumulative factor contribution rate was calculated²⁰. Items showing a factor loading of < 0.4 or high loadings for multiple factors were eliminated, interpretable factors were extracted, and items were selected²⁵. The extracted factors were termed as factors constituting health nurses' career orientation. For each structural factor, Cronbach's coefficient α was calculated, and internal consistency was evaluated²⁰.

4) Free description concerning admin-PHNs' career orientation

Contents of the free description other than the

45 career orientation items that were considered to be necessary were summarized by the KJ method.

4. Ethical considerations

The questionnaire for the quantitative survey of this study was anonymous and contained no questions which allowed the identification of responders. The subjects voluntarily responded to the questionnaire. The collected questionnaires were numbered in the order of arrival. After data input, the questionnaires were kept in a locked cabinet for data protection.

Results

1. Subjects' attributes

Of the 750 subjects, 465 (60.4%) responded to the questionnaire, and the number of effective responses was 422 (56.3%).

Table 1 shows the attributes of the effective

Table 1. Attributes of subjects

	Prefecture I n (%)	Prefecture M n (%)	Total n (%)	Number (%) P-value
Number of subjects	347	403	750	
Responded to the questionnaire	226 (65.1)	239 (59.3)	465 (62.0)	
Effective responses	205 (59.1)	217 (53.8)	422 (56.3)	
Belong to administrative agency				
Prefecture	48 (23.4)	48 (22.1)	96 (22.7)	0.001 ** †
Municipalities	144 (70.2)	169 (77.9)	313 (74.2)	
Kernel city	13 (6.3)	0 (0.0)	13 (3.1)	
Gender				
Male	3 (1.5)	0 (0.0)	3 (0.7)	0.074
Female	202 (98.5)	217 (100.0)	419 (99.3)	
Age (years)	38.7±9.4	37.0±9.1	37.8±9.3	0.076
22-29	44 (21.5)	61 (28.1)	105 (24.9)	0.377
30-39	65 (31.7)	67 (30.9)	132 (31.3)	
40-49	65 (31.7)	64 (29.5)	129 (30.6)	
50 or more	31 (15.1)	25 (11.5)	56 (13.3)	
Experience as a public health nurse (years)	15.6±9.6	13.8±8.8	14.6±9.2	0.042 *
1-5	34 (16.6)	47 (21.7)	81 (19.2)	0.150
6-10	44 (21.5)	49 (22.6)	93 (22.0)	
11-20	56 (27.3)	67 (30.9)	123 (29.1)	
20 or more	71 (34.6)	54 (24.9)	125 (29.6)	
Managerial position				
Yes	84 (41.0)	86 (39.6)	170 (40.3)	0.812
No	121 (59.0)	131 (60.4)	252 (59.7)	
Manager class of itemized "Yes"				
Department or Section manager	4 (3.3)	8 (6.1)	12 (4.8)	0.588
Section assistant manager	14 (11.6)	11 (8.4)	25 (9.9)	
Subsection manager	55 (45.5)	55 (42.0)	110 (43.7)	
Others	11 (9.1)	12 (9.2)	23 (9.1)	

** : $p < 0.01$ * : $p < 0.05$

† Since there is no kernel city in Prefecture M, comparison between the two prefectures for only prefectures and municipalities showed no difference ($p=0.493$).

responders. The mean duration of experience as an administrative agency admin-PHN was 14.6 ± 9.2 years and significantly differed between Prefectures I and M ($p = 0.042$). The mean age was 37.8 ± 9.3 years and did not significantly differ between the two prefectures ($p = 0.076$).

2. Extraction of structural factors and selection of items for admin-PHNs' career orientation

Among the items of admin-PHNs' career orientation, [relationships of mutual trust with residents or people in related fields established through collaborative activities] showed a slight ceiling effect (mean + standard deviation = 5.1) (Table 2). However, irrespective of the presence or absence of this item, the KMO was high (0.904). Therefore, all the 45 items were adopted in factor analysis.

The correlation coefficients among the 45 items of admin-PHNs' career orientation were calculated, but no items showed a high correlation ($r > 0.7$), while 63 items (6.16%) showed a medium correlation ($0.4 \leq r \leq 0.7$). The highest correlation was observed between [being attracted and expected by residents and superiors as an admin-PHN] and [having influence on residents and staff members through my words and behavior] ($r = 0.58$), and the second highest correlation was observed between [future prospect and challenge toward definite goals and visions] and [practice of the specialty of admin-PHNs and demonstration of results] ($r = 0.57$). Analysis between 990 items showed significant correlation coefficients between 879 items (88.8%). Bartlett's test of sphericity showed $\chi^2 = 7187.914$ ($\alpha = 0.000$).

Therefore, factor analysis of all the 45 items was performed by the principle factor method using promax rotation, which is used on the assumption that there is a correlation between items. Factors showing a factor loading of < 0.4 or high loadings for multiple factors were eliminated, interpretable factors were extracted, and items were selected. As a result, five interpretable factors were extracted, and 18 items were selected (Table 3).

Cronbach's coefficient α for the 18 items of 5 factors as a whole was 0.824.

Hereafter, " " shows the term given for each

of the 5 admin-PHNs' career orientation factors, and [] shows each selected constitutional item.

Factor I consisted of 5 items, and $\alpha = 0.792$. Factor I was termed "orientation toward social recognition (S-Recognition)".

Factor II consisted of 5 items, and $\alpha = 0.717$. Factor II was termed "orientation toward community collaboration (C-Collaboration)".

Factor III consisted of 3 items, and $\alpha = 0.731$. Factor III was termed "orientation toward management as a leader (L-Management)".

Factor IV consisted of 3 items, and $\alpha = 0.693$. Factor IV was termed "orientation toward stability/compatibility (S/Compatibility)".

Factor V consisted of 2 items, and $\alpha = 0.671$. Factor V was termed "orientation toward contribution/service (C/Service)".

3. Free description contents concerning admin-PHNs' career orientation

Fifty-two subjects (11.2%) freely described matters other than the 45 items that were considered to be necessary, and 12 subjects (2.6%) described opinions on other matters.

The contents of free description were summarized by the KJ method, but many contents were included in the 45 items such as 'establishment of community by collaboration', 'self-enrichment' and others. The new items were 'self-health management' and others. In addition, there were opinions such as 'questions presenting residents in parallel to staff members are inappropriate', 'dissociation between orientation and reality, particularly at home', and others.

Discussion

1. Extracted structural factors and items

1) Contents of extracted factors

The results of this study showed "orientation toward community collaboration (C-Collaboration)" and "orientation toward social recognition (S-Recognition)" as characteristics of the career orientation for admin-PHNs. "Orientation toward community collaboration (C-Collaboration)" is considered to represent the attitude of admin-PHNs who are involved in the lives of people in the community under their jurisdiction, [supporting

Table 2. Distribution of the 45 items of Admin-PHNs' career orientation

n=422

The 45 items of Admin-PHNs' career orientation †	Contracted	Distribution of Likert scale point ‡					Likert scale point	
		1 n (%)	2 n (%)	3 n (%)	4 n (%)	5 n (%)	mean	standard deviation
1 Relationships of mutual trust with residents or people in related fields established through collaborative activities	Collaboration	0(0.0)	1(0.2)	32(7.6)	165(39.1)	224(53.1)	4.5	0.6
2 Helping others	Help others	0(0.0)	17(4.0)	114(27.0)	186(44.1)	105(24.9)	3.9	0.8
3 Explanation of results based on scientific evidence	Explanation	0(0.0)	19(4.5)	93(22.0)	204(48.3)	106(25.1)	3.9	0.8
4 Being asked for advice as an expert in a special field	Special expert	5(1.2)	57(13.5)	183(43.4)	135(32.0)	42(10.0)	3.4	0.9
5 Process of the establishment of organizations with residents and professionals with other occupations	Organization	0(0.0)	11(2.6)	94(22.3)	193(45.7)	124(29.4)	4.0	0.8
6 Work at my own pace	Own pace	32(7.6)	111(26.3)	155(36.7)	99(23.5)	25(5.9)	2.9	1.0
7 Helping people in trouble in one way or another	Help trouble	7(1.7)	66(15.6)	172(40.8)	147(34.8)	30(7.1)	3.3	0.9
8 Community approaches and population approaches	Population	0(0.0)	9(2.1)	168(39.8)	190(45.0)	55(13.0)	3.7	0.7
9 Continuation of work to support my life financially	Financially	14(3.3)	68(16.1)	151(35.8)	137(32.5)	52(12.3)	3.3	1.0
10 Doing my best for the community and residents	My best	3(0.7)	16(3.8)	122(28.9)	198(46.9)	83(19.7)	3.8	0.8
11 Work reflecting my own delivery/childcare experience	Own experience	43(10.2)	87(20.6)	183(43.4)	89(21.1)	20(4.7)	2.9	1.0
12 High social position as a specialist in community health	High social	48(11.4)	109(25.8)	185(43.8)	67(15.9)	13(3.1)	2.7	1.0
13 Behind-the-scenes supporter for residents	Supporter	3(0.7)	16(3.8)	93(22.0)	210(49.8)	100(23.7)	3.9	0.8
14 Decision and practice of activities by public health nurses ourselves	Self-Decision	14(3.3)	72(17.1)	186(44.1)	129(30.6)	21(5.0)	3.2	0.9
15 Comprehensive work focusing on a special field	Focusing special	12(2.8)	115(27.3)	209(49.5)	75(17.8)	11(2.6)	2.9	0.8
16 Establishment of systems to solve health problems in the community	System	2(0.5)	27(6.4)	121(28.7)	206(48.8)	66(15.6)	3.7	0.8
17 Assuming leadership among residents and staff members	Leadership	24(5.7)	141(33.4)	189(44.8)	59(14.0)	9(2.1)	2.7	0.8
18 Good teamwork	Teamwork	2(0.5)	7(1.7)	62(14.7)	219(51.9)	132(31.3)	4.1	0.7
19 Giving advice according to the situations of people who need advice	Giving advice	1(0.2)	7(1.7)	69(16.4)	223(52.8)	122(28.9)	4.1	0.7
20 Maintenance of balance with private life and its compatibility with work	Balance	2(0.5)	23(5.5)	112(26.5)	176(41.7)	109(25.8)	3.9	0.9
21 Close involvement with residents rather than taking managerial posts	Close residents	3(0.7)	13(3.1)	129(30.6)	187(44.3)	90(21.3)	3.8	0.8
22 Ability to persuade others based on reasoning	Persuade	7(1.7)	43(10.2)	148(35.1)	180(42.7)	44(10.4)	3.5	0.9
23 Contribution as an advocator for residents	Advocator	4(1.0)	47(11.1)	208(49.3)	137(32.5)	26(6.2)	3.3	0.8
24 Being attracted and expected by residents and superiors as an admin-PHN	Attention	28(6.6)	116(27.5)	202(47.9)	69(16.4)	7(1.7)	2.8	0.9
25 Having influence on residents and staff members through my words and behavior	Influence	24(5.7)	122(28.9)	201(47.6)	70(16.6)	5(1.2)	2.8	0.8
26 Playing roles expected by residents and superiors	Play role	4(0.9)	54(12.8)	204(48.3)	149(35.3)	11(2.6)	3.3	0.7
27 No worry of restructuring and slight anxiety about future	No worry	61(14.5)	127(30.1)	156(37.0)	58(13.7)	20(4.7)	2.6	1.0
28 Being relied on and asked for advice	Relied on	6(1.4)	37(8.8)	164(38.9)	169(40.0)	46(10.9)	3.5	0.9
29 Success of activities planned using my idea	Success idea	7(1.7)	35(8.3)	168(39.8)	176(41.7)	36(8.5)	3.5	0.8
30 Practice to support of each individual	Individual support	2(0.5)	42(10.0)	227(53.8)	133(31.5)	18(4.3)	3.3	0.7
31 Exercising my ability in the position, giving instructions to and managing staff members	Instruction	66(15.6)	125(29.2)	158(37.4)	58(13.7)	15(3.6)	2.6	1.0
32 Planning and practice of work that satisfies me	Satisfy plan	3(0.7)	46(10.9)	162(38.4)	168(39.8)	43(10.2)	3.5	0.8
33 Practice of public health nursing not limited to support of each individual	Public health	2(0.5)	21(5.0)	145(34.4)	196(46.4)	58(13.7)	3.7	0.8
34 Process of reaching agreements by adjustments and negotiations	Negotiation	4(0.9)	51(12.1)	160(38.0)	178(42.2)	29(6.9)	3.4	0.8
35 Position that allows me to act myself and cope with problems when necessary	Act myself	2(0.5)	18(4.3)	131(31.0)	219(51.9)	52(12.3)	3.7	0.8
36 Working on residents and staff members so that their power can be united and exercised	United power	0(0.0)	39(9.2)	146(34.6)	184(43.6)	53(12.6)	3.6	0.8
37 Presence of days on which I worry for a person and can not sleep	Not sleep	114(27.0)	174(41.2)	107(25.4)	26(6.2)	1(0.2)	2.1	0.9
38 Work based on connections and relationships with residents and staff members	Relationship	0(0.0)	13(3.1)	106(25.1)	217(51.4)	86(20.4)	3.9	0.8
39 Accuracy management and quality management in community health	Quality management	13(3.1)	80(19.0)	201(47.6)	102(24.2)	26(6.2)	3.1	0.9
40 Trust in the ability of people who seek consultation and enhancement of their ability	Enhancement	0(0.0)	5(1.2)	97(23.0)	210(49.8)	110(26.1)	4.0	0.7
41 Creation of things and changing them toward goals	Creation	1(0.2)	27(6.4)	169(40.0)	180(42.7)	45(10.7)	3.6	0.8
42 Enrichment of my own experience in life	Enrichment my life	6(1.4)	26(6.2)	136(32.2)	175(41.5)	79(18.7)	3.7	0.9
43 Future prospect and challenge toward definite goals and visions	Prospect	2(0.5)	26(6.2)	149(35.3)	188(44.5)	57(13.5)	3.6	0.8
44 Practice of the specialty of admin-PHNs and demonstration of results	Demonstration results	3(0.7)	34(8.1)	169(40.0)	163(38.6)	53(12.6)	3.5	0.8
45 Being proud of my work as a public health nurse	Being proud	3(0.7)	21(5.0)	112(26.5)	163(38.6)	123(29.1)	3.9	0.9

† Concerning the 45 items of health nurses' career orientation, "Do you consider this item important as my career orientation?"

‡ A 5-point Likert scale from "Definitely yes" to "Definitely no" was used.

Table 3. Structural factors for admin-PHNs' career orientation

Structural factors and selection of items for admin-PHNs' career orientation			I	II	III	IV	V	Cronbach's coefficient α	
Structural factors	Selection of items	Contracted							
I Orientation toward social recognition (S-Recognition)	24	Being attracted and expected by residents and superiors as an admin-PHN	Attention	0.845	-0.054	-0.036	-0.054	0.030	0.792
	25	Having influence on residents and staff members through my words and behavior	Influence	0.801	-0.032	-0.016	-0.041	-0.076	
	26	Playing roles expected by residents and superiors	Play-Role	0.598	0.054	0.004	0.034	0.089	
	12	High social position as a specialist in community health	High-Social	0.517	-0.025	0.127	0.034	-0.002	
	29	Success of activities planned using my idea	Success-idea	0.494	0.066	-0.040	0.080	0.087	
II Orientation toward community collaboration (C-Collaboration)	5	Process of the establishment of organizations with residents and professionals with other occupations	P-Organization	0.005	0.596	0.181	-0.061	-0.075	0.717
	38	Work based on connections and relationships with residents and staff members	Relationship	0.016	0.583	0.037	0.019	-0.013	
	13	Behind-the-scenes supporter for residents	Supporter	0.084	0.581	-0.109	-0.035	-0.011	
	1	Relationships of mutual trust with residents or people in related fields established through collaborative activities	Collaboration	-0.080	0.574	0.062	0.026	0.036	
	8	Community approaches and population approaches	Population	-0.030	0.494	0.182	-0.062	0.008	
III Orientation toward management as a leader (L-Management)	39	Accuracy management and quality management in community health	Quality-M	-0.096	0.189	0.688	0.020	0.005	0.731
	31	Exercising my ability in the position, giving instructions to and managing staff members	Instruction	0.073	-0.039	0.675	0.042	0.018	
	34	Process of reaching agreements by adjustments and negotiations	Negotiation	0.197	0.248	0.459	-0.005	-0.093	
IV Orientation toward stability/compatibility (S/Compatibility)	27	No worry of restructuring and slight anxiety about future	No worry	0.089	-0.134	0.154	0.672	-0.026	0.635
	9	Continuation of work to support my life financially	Financially	-0.100	-0.122	0.072	0.632	-0.036	
	20	Maintenance of balance with private life and its compatibility with work	Balance	0.048	0.185	-0.189	0.598	-0.053	
V Orientation toward contribution/service (C/Service)	7	Helping people in trouble in one way or another	Help-trable	-0.017	-0.114	0.120	-0.008	0.844	0.671
	2	Helping others	Help-others	0.105	0.184	-0.055	-0.072	0.564	
								0.824	

Factor extraction method: principle factor analysis
 Rotation method: Promax rotation with Kaiser's normalization
 Values indicate factor loadings

residents behind the scenes], [based on connections and relationships] through a [process of the establishment of organizations with residents and professionals with other occupations]. Based on this attitude, their activity is connected to [community approaches and population approaches], which is specific to admin-PHNs.

“Orientation toward social recognition (S-Recognition)” may show that the value of admin-PHNs can be recognized by nurses themselves and others by [recognition of their high social position as specialists in community health] due to activities [planned using their ideas] for the maintenance and promotion of the health of residents in the community.

In addition, “orientation toward contribution/service (C/Service)” characterized by [wish to

help others] may suggest that the spirit of contribution/service for the subjects of care as a basic attitude of general nurses has also been developed in admin-PHNs.

“Orientation toward management as a leader (L-Management)” is one of orientations that may be present not only in admin-PHNs but also workers in organizations^{11,14-16}. However, the most characteristic result in this study was that this orientation was extracted from items representing management as a leader in admin-PHNs' activity regions not limited to administrative organs but including community health.

“Orientation toward stability/compatibility (S/Compatibility)”, which is a career orientation toward the compatibility of work and enjoyment of private life, may be also present not only in PHNs

but also in other workers^{11,14,16}). However, this orientation is considered to be important to females, who constitute the majority of PHNs, to work.

Compared with the career orientation for male employees in companies in previous studies^{11,16}, the 5 admin-PHNs' career orientations extracted in this study did not include contents corresponding to <technical/functional competence career orientation>, <autonomy/independence career orientation>, or <pure challenge career orientation>. The 5 admin-PHNs' career orientations extracted were orientations that were considered only from choices that can be realized at present based on their previous activity as admin-PHNs and the activity attitudes of colleagues and superiors. This may be because admin-PHNs perform activities based on laws and according to notifications of the Ministry of Health, Labour and Welfare and instructions by the nation. This aspect may have caused their instruction-waiting attitude and did not lead to orientation toward autonomy/independence or entrepreneurialism, toward the development of their career by challenging, or toward highly skilled experts in a particular field. Thus, the 5 career orientations for admin-PHNs allow them to reflect on their own career through conventional health activity. However, it is necessary for admin-PHNs to evaluate the future social situation and improve orientation contents so as to include not only the orientations extracted in this study but also those with future prospects for the ideal state of admin-PHNs expected by the community.

2) Reliability and validity

The appropriate number of items rated using the Likert scale is considered to be 10–20²². Therefore, the 18 extracted items in the 5 factors in this study are appropriate in number and can be simply used for the development of a scale allowing self-assessment.

As shown in Table 3, the loadings in factor analysis were high, and differences from loadings of other factors were very marked. Therefore, items for the identification of factors could be selected, and items could be readily differentiated.

In addition, the reliability coefficient α ,

indicating the constitution of factors as a whole, was 0.824. Since Carmines & Zeller²³ reported that $\alpha \geq 0.80$ is necessary for widely used scales, the internal consistency of these factors is considered to be high.

The reliability coefficient α for each factor was 0.635–0.792, which is appropriate because Bernadette²³ reported that $\alpha = 0.70$ is adequate, and maybe even $\alpha = 0.60$ is adequate for the comparison of scores within an affiliation group. However, they also reported that $\alpha \geq 0.90$ is necessary when results are used as data for important decisions or judgment on individuals, while $\alpha \geq 0.95$ may raise a concern that many similar question items were produced²³.

Thus, though the coefficient α was not ≥ 0.90 , and further improvement is necessary, these career orientation factors may have adequate internal consistency because they are used only for the assessment of career orientation by admin-PHNs themselves and not for important decisions or judgments on individuals such as personnel restructuring or efficiency rating.

3) Factor extraction process

However, caution is necessary concerning the following points to interpret the results of correlation coefficients among the 45 items of admin-PHNs' career orientation in the process of factor extraction.

First, even when r was ≤ 0.2 , the correlation coefficient was significant, and a significant difference between items was observed between about 90% of the items. This may be due to the large number of subjects for analysis ($n = 422$).

Second, since correlations were evaluated among 990 items, the interpretation of their correlation coefficients was difficult. All the 45 items were adopted as items of factor analysis because of the following reasons. There was a medium correlation ($0.4 \leq r \leq 0.7$) between less than 10% but no marked correlation ($r > 0.7$), and the highest r was 0.58. In addition, the ceiling effect was observed only in 1 item ([collaboration with residents]), but no difference was observed in KMO between the presence and absence of this item. Moreover, since exploratory factor analysis

was performed by promax rotation that is used on the assumption that there is a correlation, the validity of analytic methods and their results may have increased.

Third, these questionnaires using qualitative results have both advantages and disadvantages. It would be ideal if the 45 items used in the questionnaire were independent items without correlations. However, only 11 (24.4%) of the 45 items were not correlated with any other item ($r < 0.4$). In addition, 11 (24.4%) of the 45 items showed medium correlations ($0.4 \leq r \leq 0.7$) with 5 items or more. These results suggest that items for qualitative results had meanings, activities, and roles overlapping with those of other items, and that their categorization was inadequate. On the other hand, the advantage of the questionnaire using qualitative results may be that admin-PHNs can easily imagine their own career orientation because the contents do not represent conventional general carrier orientation mainly for males in companies^{11,16)} but represent activities and roles characteristic of admin-PHNs.

2. Proposals for the future

The duration of experience as admin-PHNs was significantly higher in Prefecture I than in Prefecture M, but age did not differ between the two prefectures. However, since this study shows the results of subjects as a whole, we intend to perform further analysis of differences in and characteristics of subjects' affiliation and community.

In addition, there is a possibility that the 45 items of admin-PHNs' career orientation contained inadequate expressions and the contents of these items were inadequate. In free descriptions, some subjects suggested that questions presenting 'residents' in parallel to 'staff members' are inappropriate. There is also a possibility that the employed items contained extensive expressions representing general admin-PHNs activity. In the future, a scale should be developed after revisions using expressions that allow common understanding and represent limited activities and roles characteristic of admin-PHNs.

Conclusion

To clarify major structural factors of the career orientation for admin-PHNs, we developed our original questionnaire based on the results of our previous qualitative interviews and performed a self-administered questionnaire survey by mail. The subjects were 750 health nurses working in administrative agencies in Prefectures I and M, and 465 of them (60.4%) responded to the questionnaire. The number of effective responses was 422 (56.3%).

As a result of principle factor analysis by promax rotation, 5 interpretable factors were extracted ("orientation toward social recognition", "orientation toward community collaboration", "orientation toward management as a leader", "orientation toward stability/compatibility", and "orientation toward contribution/ service"), and 18 items were selected. Both the reliability of the constitutional items of each factor ($\alpha = 0.635 - 0.792$) and that of the factors as a whole ($\alpha = 0.824$) were confirmed.

The 5 career orientations for admin-PHNs enable these nurses to reflect on their career, but should be further evaluated when they are used for decisions concerning the future career direction.

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行政分野で働く保健師のキャリア志向に関する主要な構成因子

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要 旨

行政分野で働く保健師（行政保健師）のキャリア志向に関する尺度開発を目指した前段階として、主要な構成因子を明確にすることを目的とし、先行研究の質的面接結果を基に自作の調査票を作成して調査を行った。I 県とM 県の行政保健師750名を対象として郵送による自記式調査を行ったところ、回収数は465（回収率60.4%）、有効回答数は422（有効回答率56.3%）であった。

プロマックス回転による主因子分析の結果より、『社会的承認志向』、『地域協働志向』、『リーダー的管理志向』、『安定両立志向』、『奉仕貢献志向』といった5因子18項目が抽出された。各因子の構成項目（ $\alpha = 0.635 \sim 0.792$ ）および因子全体の構成（ $\alpha = 0.824$ ）ともに信頼性は確保された。

本研究結果である5つの行政保健師のキャリア志向は、現状における実現可能な選択肢からのみ考えられた顕在的な志向たちが選定されており、従来からの保健師活動を通じた自らのキャリアを内省することはできるが、本研究結果で抽出された志向だけでなく、これから先の社会情勢を見極め、地域住民から期待される保健師のあり方を見つめた将来展望のある志向も含めた内容にしていく必要がある。