The Relationship of Occupational Health Nurses' Experiences with Associated Departments in Relation to Project Development of Mental Health Care for Primary Preventive Treatment

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Abstract

Purpose: The purpose of this study was to clarify the relationship and experiences of occupational health nurses (OHNs) and related departments in project development of mental health care for primary treatment in the Japanese occupational health setting. **Method:** A total of 235 OHNs who are members of the Japan Academy of Occupational Health Nursing were sent an anonymous self-administered questionnaire survey. The questionnaire included items on the following: the OHN's background, whether the OHN had experience in project development, the communication between the associated departments, the Japanese version of the Work Engagement Scale (UWES-J), occupational assessments, workplace assessments, and the Transtheoretical Model (TTM) for health promotion in companies and the OHN's working environment. We performed logistic regression analysis to examine the relationship between experience and these harmonious relationships with other associated departments. **Result:** Responses from 61 OHNs (valid response rate: 25.9%) were analyzed. The mean number of years of service as an OHN was 18.9, and 82% of respondents had experience in project development. The logistic analysis further revealed that OHNs who had experience in project development of mental health care usually had a harmonious relationship with other associated departments. **Conclusion:** To promote mental health care for workers, OHNs have the capability to create individual and workplace assessments, enhance their work engagement, and make further

improvements to their working environment.

Keywords

1. Introduction

Because the workplace contains causes of stress which the workers themselves cannot eliminate on their own, mental health measures (hereafter, "MH measures") are important as a means of primary prevention [1]. While it is easy to objectively identify absenteeism, in which workers are absent from work or take leave due to poor health or related factors, it is difficult to identify the economic loss resulting from presenteeism—reduced productivity resulting from health problems when employees are at work [2]. However, the economic loss resulting from absenteeism and presenteeism is 1.4 times higher (loss of approximately 300,000 yen per person) in higher risk groups than in lower risk groups [3], and there is large economic loss in a workplace where there are persons with mental health problems in a state of presenteeism. As a result, it is important for Occupational Health Nurses to carry out operationalization of workplace MH measures intended for primary prevention. The term "operationalization" is frequently used when describing the process of planning, implementing, and evaluating projects. For example, in order to resolve health issues in an entire workplace, it is necessary to carry out operationalization that is consistent with the actual workplace conditions [3], and the necessity of improving operationalization and policy development capabilities has been pointed out in many guidelines [4] [5] [6].

Occupational health nurses improve the level of workplace health by identifying worker needs and workplace health issues through everyday individual support, and they plan projects in coordination with persons in related positions [7]. In this way, occupational health nurses take action, such as developing health policy, creating an environment to support health, and strengthening workplace activities [8], and are expected to operationalize occupational health education and other projects, including health-related events [9].

Previous studies have shown that operationalization capabilities increase with higher positions and more years on the job [10], and that experience in operationalization is required at all stages from new employment to time in management [11]. It is also clear that cooperation and collaboration with related persons is an important process in operationalization [12] [13], and that understanding everything from individual support to group problems is an important part of the thinking process [3]. In addition, the concept of work engagement (hereafter, "WE") is a mediating factor in deploying individual abilities to work [14].

The relationship between the high WE of occupational health nurses and the experience of entrepreneurs is not clear. However, workers with high WE have better work attitudes and performance [15] [16] [17], and creatively and actively carry out their responsibilities or go beyond them [18] [19] [20]. Studies of public health nurses in government agencies have reported that even more than their own experience in operationalization, experience participating in operationalization led by others, and reading professional journals related to public health, medicine, and welfare, contributed to operationalization experience [21]. Therefore, the high level of WE of occupational health nurses may affect the commercialization experience. These studies also reported that operationalization abilities were higher when there was more cooperation with related divisions [22]. In this way, for operationalization in a group or organization, everyday collaboration with other divisions is important even before a project is planned.

This study intends to identify the relationship between experience in project planning and collaboration with related divisions among occupational health nurses in regards to MH measures intended for primary prevention in the workplace.

2. Methods

2.1. Subject of Study

With the cooperation of the Japan Academy of Occupational Health Nursing, this study was conducted of 235 occupational health nurses who were full academy members (as of January 1, 2017). The Japan Academy of Occupational Health Nursing was founded in 2012, and is an academic association which aims to contribute to society by advancing occupational nursing as an academic field, and by developing advanced practical abilities and practices. The occupational health nurses who belong to this Academy were selected for this study because, all the members are registered as Occupational nursing researchers and occupational health nurses, and it is presumed that they are occupational health nurses with high activity awareness.

2.2. Definitions of Terms

Projects are defined as new or existing projects which were proposed by occupational health nurses to address needs [23]. Policies are defined as the planning and formulation, implementation, and evaluation of measures which are recognized by an occupational health nurse as necessary to resolve workplace health issues [24]. Collaboration with related divisions is defined as mutual communication intended to resolve workplace health issues based on objectives that are shared with other divisions [22]. Operationalization is defined as the series of processes involved when an occupational health nurse identifies employee and workplace needs, understands the necessity, and proposes, formulates, implements, and evaluates a project plan [3]. Experience in planning MH measure

projects includes experience with project planning in a central role and also experience in cooperating with project plans that were launched centered on another division [3] [21].

2.3. Survey Details

The objective variable was the presence or absence of experience in business planning for MH countermeasures, and the explanatory variable was cooperation with related departments.

To understand the characteristics of occupational health nurses we gathered information related to gender, age, years of experience as an occupational health nurse, working status, certifications, position, type of employment, and the Japanese Short Version of the Utrecht Work Engagement Scale (UWES-J). For measurement of WE, the UWES-J scale developed by Schaufeli *et al.* [16] and translated by Shimazu *et al.* [14] was used. The UWES-J scale is a scale with of a total of nine items composed of three subscales: vigor, dedication, and absorption. The response choices were seven options ranking frequency from 0 (never) to 6 (feel always), and the score range was from 0 to 54 points. A higher score indicates an enthusiastic approach to work, feelings of pride, and vitality with energy derived from work. Regarding whether or not an occupational health nurse has experience in project planning for MH measures, with reference to previous studies [11] [21] [22] [24], the subjects were asked about experience in project planning for MH measures which they themselves led and also about participation in project planning led by others. To understand the characteristics concerning the workplace situation, subjects were asked about the division where they belonged, the number of employees, whether or not there was a clear safety and health policy, and whether or not there were opportunities to propose project plans for MH measures. They were asked 10 questions concerning the matters which they believed necessary in project planning for MH measures, and were also asked about difficulties related to project planning for MH measures. Regarding collaboration with related divisions, they were asked to answer five questions related to constructing friendly relationships with related divisions, confirming the necessity and direction of project plans with related divisions, identifying the distribution of responsibilities for smoothly carrying out project plans, selecting the personnel or divisions where collaboration is necessary for project plans, and creating teams with related divisions in order to plan projects. They were asked to answer these questions with four levels of frequency: "never", "rarely", "sometimes" or "always". To understand the characteristics with reference to the contents of individual interviews with 13 active occupational health nurses and previous studies [25] [26], 12 questions analyzing individual support and four questions analyzing group support were created. Subjects were asked to answer these questions with four levels of frequency: "never", "rarely", "sometimes" or "always" and the answers were collected in binary data for analysis. When responding to the questionnaire form, respondents who were not

currently working in an occupational health workplace were asked to respond concerning the workplace where they had worked for the longest time in the past. In order to identify the actual conditions of occupational health nurse experience in project planning—something which had not been identified before, this study analyzed both respondents who were currently working and respondents who had experience working in the past.

2.4. Analysis Methods

Regarding experience in project planning for MH measures, respondents were divided into a group with experience and a group without experience. Fisher's direct probability method was used to compare the two groups. To study the relationship between experience in project planning and collaboration with related divisions, single variable logistic analysis was performed using whether or not the respondent had project planning experience as the objective variable, five questions concerning collaboration with related divisions as the explanatory variables and age and number of years' experience as an occupational health nurse as the moderator variables. Collaboration with related departments is based on previous research [27]. Analysis used SPSS Statistics, Ver. 23.0 and the significance level was set at less than 5%.

2.5. Ethical Consideration

This study was approved in advance by the Research Safety and Ethics Committee at the university where this researcher is employed (approved no. 16067, December 2016). The research Cooperation were informed in writing of the research purpose and methods, that participation was voluntary, and that all collected data would be used only for research purposes and would be kept confidential. The questionnaire was an anonymous, self-administered type and was accompanied by a research cooperation request letter which explained that no disadvantage would result from refusing to cooperate in the study. Return of the questionnaire form was deemed to represent consent to cooperation in the study.

The investigators employed the latest security software to prevent data breaches, and all computers and documents were stored in secure areas.

3. Results

3.1. Overview of Analysis Subjects (Table 1)

Of the 235 investigation subjects, responses were received from 63 (response rate 26.8%). Two respondents did not answer over fifty percent of the questions, yielding 61 valid responses as the analysis subjects (valid response rate 25.9%). The respondents were asked to look back on the past at the time of the survey by the occupational health nurses. Regarding project planning for MH measures, 50 (82.0%) persons responded that they had experience, and 11 (18.0%) responded that they did not.

Table 1. Characteristics and workplace conditions of individual occupational health nurses (N = 61).

Variable		N	%
Individual characteristics			
Gender	Female	44	72.1
	Male	2	3.3
	No answer	15	24.6
Age	25 - 29	2	3.3
	30 - 39	11	18.0
	40 - 49	22	36.1
	50 - 59	15	24.6
	60 or older	11	18.0
Years of experience	Average years (standard deviation)	18.9 (18.23)	
Working status	Currently working	41	67.2
	Worked in past	20	32.8
Certifications	Public health nurse a)	52	85.2
	Nurse Only a)	61	100
Position	Staff b)	34	55.7
	Other than staff b)	27	43.7
Type of employment	Full-time employee c)	53	86.9
	Other than full-time employee c)	8	13.1
UWES-J score	Median value (interquartile range)	31.0 (27.0 - 40.0)	
Vigor	Median value (interquartile range)	3.3 (2.8 - 4.3)	
Dedication	Median value (interquartile range)	4.0 (3.3 - 5.0)	
Absorption	Median value (interquartile range)	3.0 (2.3 - 4.5)	
Experience in project planning for MH measures	Yes	50	82.0
	No	11	18.0
Workplace conditions			
Assigned division	Assigned to workplace	45	73.8
	Assigned to organization other than workplace	15	24.6
	No answer	1	1.6
Number of employees	50 or more	6	9.8
	201 or more	8	13.1
	501 or more	13	21.3
	1001 or more	11	18.0
	2001 or more	2	3.3
	3001 or more	21	34.4
Identification of safety and health policy	Identified	47	77.0
	Unidentified	14	23.0
Opportunities to propose project plans for MH measures	Yes	52	80.3
	No	9	19.7

a) Multiple responses; b) Other than staff is a general term comprising chief grades, subsection manager grades, and section manager grades; c) Other than full-time employee is a general term comprising part-time employees, temporary staff, and others.

3.2. Comparison Based on Whether or Not Respondents Had Experience in Project Planning for MH Measures (Table 2)

The average UWES-J score of the group with experience was 32.9, and the overall UWES-J score ($p < 0.05$) was significantly higher for the group with experience (33.5) than the group without experience. The percentage having opportunities to propose project plans for MH measures ($p < 0.001$) was significantly higher for the group with experience than the group without experience. Regarding the six items: considering the necessary resources and methods ($p < 0.05$), identifying the timing for implementation ($p < 0.001$), evaluating the contents of the implemented plan ($p < 0.05$), estimating the required resources ($p < 0.01$), collecting information regarding knowledge from past successful projects ($p < 0.05$), and having no past involvement in operationalization ($p < 0.05$), the results were significantly higher in the group with experience. The group with experience also had significantly higher results in relation to the five items: constructing friendly relationships with related divisions ($p < 0.01$), confirming the necessity and direction of project plans with related divisions ($p < 0.01$), identifying the distribution of responsibilities for smoothly carrying out project plans ($p < 0.001$), selecting the personnel or divisions where collaboration is necessary for project plans ($p < 0.001$), and creating teams with related divisions in order to plan projects ($p < 0.01$). In the frequency of analysis for group support, the percentage was significantly higher in the group with experience than the group without experience for four items: contents of health consultations or health guidance ($p < 0.05$), results of interviews with persons showing high stress at stress checks ($p < 0.01$), group analysis of stress checks ($p < 0.01$), and absences from work due to personal illness or injury ($p < 0.05$).

Table 2. Comparison of subjects with and without experience in project planning for MH measures (N = 61).

		Project planning experience				
Variable		*Group with experience (n = 50)*		*Group without experience (n = 11)*		*p value*
		N	*%*	*N*	*%*	
Workplace conditions						
Opportunities to propose project plans for MH measures d)	Yes	46	92	3	27.3	<0.001
Matters believed necessary in project planning for MH measures a)						
Predicting health issues and considering necessity	Yes	37	75.5	6	54.5	0.15
Identifying problem awareness among related persons	Yes	35	71.4	7	63.6	0.43
Considering the required resources and methods	Yes	35	71.4	4	36.4	<0.05
Identifying the timing for implementation	Yes	35	71.4	1	9.1	<0.001
Considering the positioning of project plans	Yes	31	63.3	5	45.5	0.22
Evaluating the contents of the implemented plan	Yes	32	65.3	3	27.3	<0.05
Estimating the required resources	Yes	31	63.3	2	18.2	<0.01
Analyzing individual cases	Yes	29	59.2	3	27.3	0.05

Continued

Collecting information regarding knowledge from past successful projects	Yes	29	59.2	2	18.2	<0.05
Having no past involvement in operationalization	Yes	2	18.2	0	0.0	<0.05
Difficulties related to project planning for MH measures a)						
Too busy	Yes	16	32.0	3	27.3	0.53
Lack of clear positioning for responsible duties	Yes	8	16.0	8	72.7	<0.001
Insufficient budget	Yes	14	28.0	2	18.2	0.40
Difference in thinking among superiors, Occupational physicians, and occupational mental health physicians	Yes	10	20.0	6	54.5	<0.05
Insufficient operational experience or knowledge	Yes	11	22.0	4	36.4	0.26
Differences from workplace policies	Yes	7	14.0	5	45.5	<0.05
Resistance from other personnel due to increased workload	Yes	10	20.0	1	9.1	0.36
Difficulty of reaching consensus with related organizations	Yes	8	16.0	2	18.2	0.58
Insufficient understanding of the work of an occupational health nurse	Yes	7	14.0	3	27.3	0.25
Difficulty in obtaining understanding of project plans for MH measures	Yes	3	6.0	1	9.1	0.55
Frequency of collaboration with related divisions						
Constructing friendly relationships with related divisions	Always/sometimes	46	95.8	6	54.5	<0.01
Confirming the necessity and direction of project plans with related divisions	Always/sometimes	40	83.3	4	36.4	<0.01
Identifying the distribution of responsibilities for smoothly carrying out project plans	Always/sometimes	39	81.3	4	36.4	<0.01
Selecting the personnel or divisions where collaboration is necessary for project plans	Always/sometimes	38	79.2	2	18.2	<0.001
Creating teams with related divisions in order to plan projects	Always/sometimes	33	68.8	2	18.2	<0.01
Frequency of analysis for individual support						
Effects on the working lives of subjects	Always/sometimes	48	96.0	7	63.6	<0.01
Symptoms manifesting in the subjects' physical health	Always/sometimes	47	95.9	7	63.6	<0.01
Symptoms manifesting in subject behavior	Always/sometimes	47	95.9	7	63.6	0.08
Outlook for the work which the subjects are tasked with	Always/sometimes	42	85.7	6	54.5	<0.05
Symptoms manifesting in the subjects' emotional state	Always/sometimes	46	93.9	7	63.6	<0.05
Effects on everyday living of subjects	Always/sometimes	46	93.9	7	63.6	<0.05
Personal relationships with superiors, coworkers, and subordinates who affect the subjects	Always/sometimes	47	95.9	5	45.5	<0.001
Workplace support for subjects	Always/sometimes	47	95.9	4	36.4	<0.001
Work factors affecting the subjects	Always/sometimes	44	89.8	6	54.5	<0.05
Organizational characteristics affecting the subjects	Always/sometimes	42	85.7	5	45.5	<0.01
Characteristics of the meaning of things for the subjects	Always/sometimes	38	77.6	6	54.5	0.12
Family circumstances affecting the subjects	Always/sometimes	38	77.6	5	45.5	<0.05
Frequency of analysis for group support						
Contents of health consultations or health guidance	Always/sometimes	45	90.0	7	63.6	<0.05
Results of interviews with persons showing high stress at stress checks	Always/sometimes	38	76.0	3	27.3	<0.01
Group analysis of stress checks	Always/sometimes	35	70.0	2	18.2	<0.01
Absences from work due to personal illness or injury	Always/sometimes	33	67.3	3	27.3	<0.05

a) Multiple responses; b) Other than staff is a general term comprising chief grades, subsection manager grades, and section manager grades; c) Mann-Whitney U test. For all others, Fisher's direct probability method, significance level 0.05% or less; d) Opportunities to propose project plans for MH measures: Frequent/sometimes = Yes, Rare/none = No.

3.3. Relationship between Experience in Project Planning for MH Measures and Collaboration with Related Divisions (Table 3)

Because it was presumed that there was a relationship between experience in project planning for MH measures and collaboration with related divisions, logistic regression analysis was performed using five items concerning collaboration with related divisions as the explanatory variables, also using age and number of years' experience as the moderator variables. The results showed correlation to constructing friendly relationships with related divisions (OR = 4.03, 95% CI = 1.01 - 22.88).

4. Discussion

Characteristics of occupational health nurses with experience in project planning for MH measures

The average number of years' experience among the occupational health nurses was 18.9 years, considered to indicate respondents with sufficient experience.

4.1. Characteristics and Everyday Work of Individual Occupational Health Nurses

In this study, Work Engagement was positioned as an individual characteristic of occupational health nurses, as Work Engagement is important for occupational health nurses to formulate needs based on the practice of occupational health activities. The average UWES-J score of the group of occupational health nurses with experience in this study was 32.9. This is higher than the average

Table 3. Relationship between experience in project planning and collaboration with related divisions (N = 59).

Variable	OR	95% CL	*p value*
Constructing friendly relationships with related divisions	4.83	[1.01 - 22.88]	<0.05
Confirming the necessity and direction of project plans with related divisions	2.14	[0.37 - 12.34]	0.39
Identifying the distribution of responsibilities for smoothly carrying out project plans	7.74	[0.87 - 68.74]	0.06
Selecting the personnel or divisions where collaboration is necessary for project plans	7.51	[0.78 - 71.89]	0.08
Creating teams with related divisions in order to plan projects	4.58	[0.78 - 20.32]	0.09

Logistic regression analysis (univariate): OR = Odds ratio, CL = Confidence interval. Explanatory variables: Experience in project planning (No experience = 0, Has experience = 1), constructing friendly relationships with related divisions, confirming the necessity and direction of project plans with related divisions, identifying the distribution of responsibilities for smoothly carrying out project plans, selecting the personnel or divisions where collaboration is necessary for project plans, creating teams with related divisions in order to plan projects (None, rarely, sometimes = 0, Always = 1). Moderator variables: Years of experience and age.

score of 28.6 in an investigation by Fukuoka *et al.* [28] of occupational health nurses and nurses working at welfare facilities, and also higher than the average score of 24.0 for government public health nurses in a study by Iguchi *et al.* [29]. It is clearly known that workers who have high WE also have a high level of commitment to the organization [14] and increasing the level of commitment enables a sense of belonging, as well as establishing and working to achieve shared goals [30]. As a result, it is believed necessary to focus on personal factors as one mediating factor when deploying the abilities of individual occupational health nurses to their work. At the same time, the skills and abilities of public health nurses related to policy development and acquired from policy development experience are connected to motivation and initiative [31]. Cautious interpretation is required because approximately 80% of the subjects in this study had experience in project planning, and therefore it is possible that project planning experience may have resulted in higher motivation, a sense of achievement, and a higher UWES-J score among the occupational health nurses.

Regarding everyday work, more than approximately 60% the subjects responded that there was frequent collaboration with related divisions and analysis for group support, while more than 70% responded that there was frequent analysis for individual support. As collaboration with related divisions for smooth operationalization by government public health nurses, important matters include obtaining the understanding and cooperation of related persons and working to reach a consensus, as well as obtaining the understanding of superiors and coworkers [13]. Although there are differences in the fields of activity between government public health and occupational health, collaboration with coworkers, superiors, and related persons is important in cooperative work relationships [22], and both fields share support skills for resolving group health issues. This is consistent with the results of this study.

It has been indicated that during the process of deploying policy development by public health nurses working in local governments, motivation is generated from the individual's own experiences in public health activities and by adopting the perspectives of the subjects [32]. It has also been reported that continuing to build up experience through everyday work leads to acquiring the knowledge and skills needed in order to create company and social resources [33]. As nurses who work with groups while also valuing individual support, it is known that both government public health nurses and occupational health nurses have the perspective of identifying group problems based on individuals [3]. This study also showed that a significantly high percentage of the occupational health nurses in the group with experience regularly carried out analysis for individual support, such as organizational characteristics affecting the subjects and workplace support for subjects. The above suggests that striving to improve expertise related to individual analysis and group analysis on an everyday basis is so important, in order to develop the perspective of identifying group problems based on individuals that is necessary for project planning.

4.2. Conditions of Workplaces Where Occupational Health Nurses Are Employed

Takashima *et al.* [32] reported that it is important to construct a system for co-operation by sharing information with persons involved in policy development. Project planning for MH measures intended for primary prevention are business activities that involve the entire workplace, and the construction of friendly relationships with related divisions is important. For this purpose, I believe that in order to construct friendly relationships with related divisions and to build relationships of trust, occupational health nurses should construct relationships where they deliberately make themselves visible on an everyday basis and exchange information about the current situation and issues at the company. However, it is also possible that project planning produced opportunities for collaborating with related divisions, and resulted in the construction of friendly relationships with related divisions. For this reason, while cautious interpretation is required, it is important for occupational nurses to collaborate with related departments when formulating mental health measure [27], and it is necessary to collaborate with related departments and carry out organization activities [34]. For this reason, I believe that it is important for occupational health nurses, regardless of position, to have opportunities to personally propose project plans for occupational health activities aimed at resolving questions and recognized health problems.

5. Limitations of This Study and Future Challenges

The limits of this study include the following. It is impossible to deny the possibility that with a response rate of 26.8% and the small number of subjects, responses were more likely to be received from occupational health nurses who were interested in project planning for MH measures. Because the subjects were persons with experience working as occupational health nurses, and persons who are not presently working in such a position were asked to respond concerning the workplace where they had worked for the longest time in the past, consideration must also be given to the effects of recall bias. In addition, even though this was a cross-sectional study and asked subjects whether they had experience, it may not be possible to state a direct cause-and-effect relationship. Multivariate analysis could not be performed and that there is a recall bias for those who are not currently working in the occupational health nursing profession. There is also the possibility that subjects who had project planning experience were not clearly identified. It is possible that collaboration with related divisions was strengthened by experience in project planning. However, I believe it is significant that this study was able to present the actual conditions of project planning by occupational health nurses—something which had not been identified before. In the future, in addition to expanding the subjects, it will be necessary to identify factors related to project planning experience in order to improve the practical abilities of occupational health nurses for resolving workplace health issues.

Acknowledgements

Disclosure

Approval of the research protocol: The study aims, and protocol were approved by the ethics board of Tokyo Metropolitan University (approved no. 16067, December 2016). Informed Consent: Informed consent was obtained through the questionnaire at the time the data were collected. Participants had the option of not responding to any part of the questionnaire at any time and discontinuing the survey at any point.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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