

Report

Study on the necessity of radiation risk communicator training seminars: Survey of local government employees around nuclear power plants

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Abstract: Radiation risk communication has been one of the support programs provided to the residents living near the Fukushima Daiichi Nuclear Power Plant since immediately after the accident. This program has been under development, and seminars to train radiation risk communicators for local government officials around nuclear power plants have been held in the past, but there have been few nationwide surveys on the desired training content and how to hold such seminars for possible participation. A nationwide questionnaire survey was administered to local government employees around nuclear power plants in order to clarify the content that participants preferred for seminars and how to hold them. In the future, seminars can be held according to participants' needs. 1,089 copies were mailed to the sections on nuclear countermeasures, school education, and health and wellness at 121 local government facilities. The results revealed an overall willingness to participate in the seminar, although awareness of radiation risk communication opportunities varied among organizations. Participants wanted to learn not only about radiation knowledge but also about radiation risk communication through lectures and exercises. Approximately 60% of the participants thought that knowledge about radiation was necessary for radiation risk communicators, and around 50% thought that knowledge about risk communication was necessary. Regarding format, participants preferred a one-day weekday seminar. Participants were aware that they could participate in the seminar as part of their job, and that their workplace would provide transportation expenses. The results of this survey can serve as a basis for considering the contents and methods of holding seminars for training radiation risk communicators.

Keywords: radiation risk communication, nuclear power plant accident, human resource development, local government officials

1. Introduction

It has been approximately 10 years since the accident at the Fukushima Daiichi Nuclear Power Station, but there are still areas where it is difficult to return. There are approximately 35,000 evacuees nationwide, including residents who choose to continue to remain evacuees, and approximately 24,000 remain outside the prefecture¹). Radiation risk communication is one of the forms of support provided to residents immediately after a disaster. Experts have reported various evaluations of the state of the situation immediately after the accident²), finding that trust in scientists, businesses, and the country has been greatly shaken³). The relevant ministries and agencies of the Ministry of Reconstruction, Ministry of Consumers, Ministry of Education, Culture, Sports, Science, and Technology (MEXT), Ministry of Health, Labor, and Welfare, and the Ministry of the Environment have recognized the importance of radiation risk communication and made efforts to this end. In 2014, as a "Measures Package for Radiation Risk Communication for Return," related ministries and agencies announced the direction of cooperation and support⁴), and it has been continued in a different form. Such radiation risk communication is still under development, and it is

necessary to strengthen detailed radiation risk communication in response to individual anxieties by understanding the feelings that change according to changes in the lives of residents and the progress in decommissioning nuclear power plants⁵). In Fukushima Prefecture, the training of radiation counselors by nurses and public health nurses continues⁶), and the deadline for the end of this training is unpredictable.

With the passage of time after the accident, interest in the earthquake has declined in Fukushima Prefecture and people from the same prefecture⁷), and the awareness of the danger of nuclear power plant accidents and radiation risks has diminished⁸). Even if radiation information is disclosed after the accident and it is said that there is no danger, if the residents cannot understand the disclosed information such as risks, they will not be positively convinced just by receiving it as information. However, regarding the health risks caused by radiation, because it is difficult and unclear to accumulate the data on which it is based, there are various methods of explanation and ways to accept them, and there are reports that it is difficult to persuade with a uniform manual explanation⁹). In addition, radiation risk communication is conducted among residents, businesses, administrative staff, and the facilitator and interpreter, who is an expert in support

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communication, but as the people in each position are not so qualified¹⁰⁾ and the explanations are must also be diverse.

The practical activities of radiation risk communication have been scattered, even though awareness of the danger of nuclear power plant accidents and radiation risks inside and outside Fukushima Prefecture has faded^{11,12)}. In addition, opportunities for training, such as training sessions for local government employees¹³⁾ and faculty and staff¹²⁾ have increased. Local government employees around the nuclear power plant recognized the need to prepare for emergencies and the potential to become risk communicators but reported a lack of knowledge about radiation risk communication¹⁴⁾. Considering that education on such communication is desired, the training contents and methods for one local government employee were examined and implemented, the image of radiation has changed, and the understanding of radiation risk communication has improved¹⁵⁾. In the future, training from normal times will be necessary, especially in local governments where nuclear power plants are located nationwide. However, there have been few nationwide surveys on the content of training and how to hold seminars that local government employees around nuclear power plants want to participate in. Therefore, this study clarifies these aspects, making it possible to hold such training according to participants' demands. It is expected that this will contribute to the promotion of understanding of the radiation risk communication of local government employees and the improvement of the practical ability of radiation risk communication.

2. Definition of terms

Risk communication is conducted between residents, businesses, and government employees. Facilitators and expert interpreters support communication. However, there are no qualifications for each position¹⁰⁾. In addition, mutual trust is the foundation for establishing risk communication. Without trust, regardless of how much the speakers say what they think is right, the respondents will not understand their true intentions¹⁶⁾.

Therefore, radiation risk communication and radiation risk communicators in this study are defined as follows: Radiation risk communication refers to the sharing of information and communication through dialogue and the exchange of opinions among parties concerned about radiation-related risks. Through such communication, a mutual understanding of risks is deepened and relationships of trust are built. Radiation risk communicators provide risk communication to residents and other stakeholders, regardless of whether during a radiological emergency or a normal situation. No qualifications are required to be a radiation risk communicator, nor is there a specific profession or company to be a radiation risk communicator.

3. Method

3.1 Study design

A cross-sectional observational study was conducted.

3.2 Participant

The following three divisions were selected for possible involvement in radiation risk communication nationwide: nuclear

power measures, school education, and health. Each of three employees from each division of nuclear power measures, school education, and health in local governments nationwide were included in this study. For the selection of municipal offices, 121 locations within Urgent Protective action planning Zone (UPZ area), such as sheltering in place in the event of an accident at a nuclear power plant and an emergency, were selected. Fukushima Prefecture was excluded from this study because various efforts related to radiation risk communication have been reported, and learning needs may be different from those in other prefectures. Moreover, municipal offices located within the UPZ areas of nuclear power plants under construction were excluded. A total of 1,089 questionnaires were sent to the heads of divisions in the local government around each nuclear power plant for distribution to the participants.

3.3 Survey method and contents

The survey was conducted between June and July 2020.

A request document and questionnaire were mailed to the director of each facility, and the collaborators were requested to distribute them.

An anonymous web-based self-input questionnaire survey was conducted, and a request for research cooperation was entered, stating that consent was given by answering the survey. The definitions of each term in this study were explained to respondents using an explanatory document to obtain responses based on a shared understanding of radiation risk communication and radiation risk communicators.

For the content of the survey, a questionnaire was prepared with reference to a survey^{14,15)} of local government employees within the UPZ area.

The participants were asked to indicate their age, gender, department, and qualifications, as well as "yes," "no," and "don't know" for the following items (1) to (4): (1) desire to participate in a risk communicator training seminar, (2) the need for risk communicators, (3) the possibility of participating as a job and whether travel expenses will be provided, and (4) opportunities to conduct risk communication at work or on their own. (5) Regarding the knowledge required of risk communicators, participants were asked to select up to three items from the following categories: knowledge about radiation, knowledge about radiation protection, knowledge about risk communication, and examples of responses to risk communication. Participants were asked to select from a list of options whether they wanted one or more of the following seminar contents: lectures on radiation, exercises on radiation, lectures on risk communication, and exercises on risk communication. (6) The days of the week and frequency of the courses that participants were able to attend were chosen from a list of options.

3.4 Analysis

After basic tabulation, cross-tabulations were conducted according to the attributes of the participants' department and qualifications, and significance difference tests were conducted using the χ^2 test and residual analysis ($p < .05$). For the χ^2 test, when responses with an expected value less than 5 accounted for more than 25% of the total, small numbers of responses were

combined or deleted. SPSS Ver. 27 was used for the analysis.

3.5 Ethical consideration

The purpose, method, significance, confidentiality, voluntary nature of research cooperation, publication of results, and so on, were explained to the participants in a written request, and their consent was deemed to be obtained by responding to the web-based questionnaire. This study was approved by the Ethics Committee of the Graduate School of Health Sciences of Hirosaki University (Reference Number: 2019-056).

4. Results

4.1 Demographics of the participants

A total of 1,089 questionnaires were sent, and 149 were collected (13.7% collection rate), which were included in the analysis.

The gender and age of the participants are reported in Table 1. Participants' age ranged from 20 to 60 years, with most in their 40s and 50s, together accounting for 90 (60.4%) of the total. In terms of gender, 94 (63.1%) were male and 55 (37.0%) were female.

The departments and qualifications of participants are listed in Table 1. A total of 56 participants (37.6%) belonged to the nuclear countermeasures section, 52 (34.9%) to the health and health-related issues section, and 41 (27.5%) to the school education section. A total of 35 (23.5%) were public health nurses, 12 (8.1%) had teaching licenses, and 5 (3.4%) were disaster prevention specialists. All public health nurses were affiliated with health and health-related departments.

Table 1 Demographics of the participants

(n = 149) (Unit: persons)

	Characteristic	n	%
Sex	Men	94	63.1
	Women	55	36.9
Age (years)	20s	29	19.5
	30s	27	18.1
	40s	54	36.2
	50s	36	24.2
	60s	3	2.0
Division	Health	52	34.9
	School education	41	27.5
	Nuclear power measures	56	37.6
Job position	Public health nurses	35	23.5
	Others	114	76.5

4.2 Basic aggregate results of needs for seminars

The need for participation in seminars, seminar content, and seminar formats, such as lectures and exercises, is presented in Table 2. A total of 50.3% of the participants wanted to participate, 16.1% did not want to, and 33.6% were unsure. Regarding the topics to be covered in the seminar, 76.5% chose "both radiation and risk communication," 13.4% "risk communication only," and 8.1% "radiation only." Regarding the type of seminar, more than half (56.4%) selected "both lectures and exercises," 37.6% selected "lectures only," and 4.0% selected "exercises only".

Table 2 Needs for seminars

(n = 149) (Unit: persons)

Question item	Choices	n	%
Hope to participate in risk communication training	Hope	75	50.3
	Don't hope	24	16.1
	Unknown	50	33.6
Required training content	Radiation	12	8.1
	Risk communication	20	13.4
	Radiation and Risk communication	114	76.5
	Other	3	2.0
Required form of training	Lecture	56	37.6
	Exercise	6	4.0
	Lecture and Exercise	84	56.4
	Other	3	2.0
Required number of days	Half day	65	43.6
	One day	76	51.0
	Two days	8	5.4
Required days of the week	Weekdays	132	88.6
	Saturday or Sunday	17	11.4
Training form for ease of participation	Complete at one time	97	65.1
	Complete at one time with follow up	20	13.4
	Step up	27	18.1
	Other	5	3.4
Participate as a business trip	As a business trip	75	50.3
	As other	7	4.7
	Unknown	67	45.0
Payment of transportation expenses	Available	85	57.0
	Unavailable	13	8.7
	Unknown	51	34.2

Table 2 reports the results on conditions for attending the seminar. A total of 51.0% of the participants preferred a one-day seminar, 43.6% a half-day seminar, and 95.6% a seminar of one day or less. 88.6% of the participants preferred weekdays. 65.1% of the participants wanted to hold the seminar once, and 31.5% wanted to hold the seminar more than once.

The results of the availability for participating in the seminar as part of work and whether travel expenses are paid are also reported in Table 2. Approximately half of the participants (50.3%) were able to participate in the seminar as part of a business trip, while 4.7% were unable to do so. Of the participants, 57.0% answered that travel expenses would be covered and 8.7% indicated that they would not be covered.

4.3 Basic aggregate results of risk communication opportunities and perceptions of risk communicators

The opportunities to implement risk communication and perceptions of the need for risk communicators are presented in Table 3. Regarding the opportunity to conduct risk communication, 34.2% of the participants recognized the possibility of doing so in their own workplace, 26.8% recognized

Table 3 Opportunities to implement and knowledge that participants consider necessary for risk communicators
(n = 149) (Unit: persons)

Question item	Choices	n	%
Opportunity to conduct risk communication at work	Have the opportunity	51	34.2
	Don't have the opportunity	17	11.4
	Unknown	81	54.4
Opportunity to conduct risk communication by themselves	Have the opportunity	40	26.8
	Don't have the opportunity	40	26.8
	Unknown	69	46.3
Necessity of risk communicator	Necessary	87	58.4
	Unnecessary	56	37.6
	Unknown	6	4.0
Knowledge required of a risk communicator: Basic knowledge about radiation	Necessary	125	83.9
	Unanswered	24	16.1
Knowledge required of a risk communicator: Knowledge of radiation protection	Necessary	101	67.8
	Unanswered	48	32.2
Knowledge required of a risk communicator: Knowledge of risk communication	Necessary	98	65.8
	Unanswered	51	34.2
Knowledge required of a risk communicator: Correspondence example of risk communication	Necessary	83	55.7
	Unanswered	66	44.3

the possibility of doing so by themselves, and approximately half recognized that the opportunity to conduct risk communication was unknown. Of the participants, 58.4% indicated that they needed a risk communicator and 37.6% indicated that they did not.

Table 3 shows the knowledge that participants consider necessary for risk communicators. Approximately 60% of the participants wanted knowledge about radiation and around 50% wanted knowledge about risk communication.

4.4 Basic tabulation results on the need for risk communication as perceived by participants who did not know whether they would attend the seminar

The needs of the 50 participants (33.6%, hope to participate in risk communication training in Table 2) who were not sure if they would attend the seminar are reported in Table 4. A total of 78.0% of the participants preferred both radiation and risk communication as seminar content. Regarding the availability of opportunities to conduct risk communication, 16.0% recognized

that their workplace (section) may conduct risk communication, 12.0% recognized that they themselves may conduct risk communication, and more than 70% were uncertain about the opportunities to conduct risk communication. In addition, 42.0% recognized the need for a risk communicator.

Table 4 Responses of those who answered Unknown
(n = 50) (Unit: persons)

Question item	Choices	n	%
Required training content	Radiation	5	10.0
	Risk communication	4	8.0
	Radiation and Risk communication	39	78.0
	Other	2	4.0
Required form of training	Lecture	21	42.0
	Exercise	1	2.0
	Lecture and Exercise	26	52.0
	Other	2	4.0
Opportunity to conduct risk communication at work	Have the opportunity	8	16.0
	Don't have the opportunity	3	6.0
	Unknown	39	78.0
Opportunity to conduct risk communication by themselves	Have the opportunity	6	12.0
	Don't have the opportunity	8	16.0
	Unknown	36	72.0
Necessity of risk communicator	Necessary	21	42.0
	Unnecessary	29	58.0

4.5 Seminar needs by qualification and by section

Regarding the seminar content, 34 (97.1%) of the 35 public health nurses and 100 (87.7%) of the 114 non-health nurses requested risk communication.

The results of the analysis of seminar needs by qualification and section are presented in Tables 5 and 6, respectively. Regarding the format of the seminar, significantly more of those who belonged to the school education section requested only lectures and significantly fewer requested both lectures and exercises ($\chi^2 = 8.13$, $df = 5$, $p = .02$). Significantly more public health nurses preferred both lectures and exercises ($\chi^2 = 6.35$, $df = 3$, $p = .01$).

Regarding the method of holding the course, significantly fewer of the participants belonging to the health section wanted to complete the course in one session and significantly more wanted to complete it in one session with a follow-up session. Significantly more belonging to the section related to school education wanted a single session, and significantly fewer desired multiple sessions. Significantly more of those belonging to the section on nuclear countermeasures wanted to hold the meeting more than once ($\chi^2 = 16.38$, $df = 8$, $p = .01$). Significantly fewer of the public health nurses preferred a single session and significantly more preferred a single session with follow-up ($\chi^2 = 17.40$, $df = 8$, $p = .000$).

Regarding the days of the week when they were more likely to attend; significantly fewer participants in the school education

sector preferred weekdays and significantly more preferred weekends ($\chi^2 = 6.70$, $df = 5$, $p = .04$).

Significantly fewer participants belonging to the health section were aware of the possibility of attending a seminar as a business trip, and significantly more were uncertain. Participants belonging to the nuclear preparedness section were significantly more likely to recognize the possibility of attending a seminar as a business trip, and significantly fewer were uncertain ($\chi^2 = 7.86$, $df = 5$, $p = .02$).

With regard to conducting risk communication on their own, significantly fewer participants in the school education sector perceived that they had the opportunity to engage in risk communication, and significantly more participants perceived that they did not. For the item on nuclear preparedness, significantly more participants perceived that they had the opportunity and significantly fewer perceived that they did not ($\chi^2 = 11.70$, $df = 8$, $p = .02$).

Table 5 Needs for training by qualification (Unit: persons)

Question item	Choices	Job position						p
		Public health nurses			Others			
		n	res	%	n	res	%	
Required form of training (n = 140)	Lecture	7	-2.52	21.2	49	2.52	45.8	**
	Lecture and Exercise	26	2.52	78.8	58	-2.52	54.2	
Training form for easy participation (n = 144)	Complete it all at once	16	-2.89	47.1	81	2.89	73.6	**
	Once and follow up	12	4.13	35.3	8	-4.13	7.3	
	Step up	6	-0.19	17.6	21	0.19	19.1	

χ^2 test, Residuals are adjusted standardized residuals

* $p < .05$ ** $p < .01$

Table 6 Needs for training by division (Unit: persons)

Question item	Choices	Division									p
		Health			School education			Nuclear power measure			
		n	%	res	n	%	res	n	%	res	
Required form of training (n = 140)	Lecture	15	31.9	-1.39	23	59.0	2.85	18	33.3	-1.28	*
	Lecture and Exercise	32	68.1	1.39	16	41.0	-2.85	36	66.7	1.28	
Training form for easy participation (n = 144)	Once	34	87.2	-2.12	35	63.6	3.09	28	56.0	-0.75	*
	Once and follow up	2	5.1	3.06	5	9.1	-1.85	13	26.0	-1.31	
	Step up	3	7.7	0.17	15	27.3	-2.07	9	18.0	2.06	
Required the day of the week (n = 149)	Weekday	47	90.4	0.50	32	78.0	-2.49	53	94.6	1.80	*
	Weekend	5	9.6	-0.50	9	22.0	2.49	3	5.4	-1.80	
Opportunity to conduct risk communication at work (n = 142)	Have the opportunity	19	38.8	-2.43	19	51.4	-0.21	37	66.1	2.55	*
	Don't have the opportunity	30	61.2	2.43	18	48.6	0.21	19	33.9	-2.55	
Opportunity to conduct risk communication by themselves (n = 149)	Have the opportunity	12	23.1	-0.76	6	14.6	-2.07	22	39.3	2.66	*
	Don't have the opportunity	14	26.9	0.02	17	41.5	2.48	9	16.1	-2.30	
	Unknown	26	50.0	0.66	18	43.9	-0.36	25	44.6	-0.32	

χ^2 test, Residuals are adjusted standardized residuals

* $p < .05$

5. Discussion

5.1 Needs related to seminar organization and content

Approximately half of the participants wanted to participate in a risk communicator training seminar, 80% wanted to learn about both radiation and risk communication, and 40% recognized that they needed a risk communicator. Similarly, a survey of local government officials in the vicinity of nuclear power plants published in 2016 found that about half wanted to gain

knowledge about risk communication¹⁴). It has been four years since the survey in the previous study¹⁴), and it is reported that it is difficult to secure and maintain skills because municipal employees are transferred every certain number of years regardless of their positions, except for qualified personnel such as public health nurses, teachers' license holders, and employees of sections related to nuclear power measures¹⁷). As in the previous study, more than half wanted to study risk communication. Thus, it is suggested that there is a need for risk

communicator training seminars for municipal employees in the UPZ area.

On the other hand, about 30% of the participants were uncertain about their desire to participate in the seminar, and about 70% perceived the opportunity to implement risk communication as uncertain. In implementing risk communication, municipal employees would participate in an administrative capacity, and although they believe that they will also play the role of facilitator in the future, none are qualified¹⁰⁾, and their roles may not be divided. It may thus be difficult for them to imagine opportunities to conduct risk communication because municipal employees are transferred every certain number of years regardless of their positions, except for qualified personnel such as public health nurses, teachers, and employees of sections related to nuclear power. However, approximately half of the participants recognized the need for risk communicators, and approximately 80% desired both radiation and risk communication as seminar content. This suggests that even if they are uncertain about their desire to attend the seminar or the opportunity to do so, they may recognize the need to learn about risk communication.

Regarding the opportunity to conduct risk communication, significantly more participants belonging to the section related to nuclear power measures recognized that they had the opportunity to do so. Although residents, companies, and administrators are not considered to have any specific qualifications for their positions in the section¹⁰⁾, it is possible that they imagined more opportunities to conduct risk communication than in other sections because they are in charge of radiation-related tasks due to the characteristics of their section.

Significantly more staff members of the school education section recognized that they had few opportunities to engage in risk communication by themselves. In the risk communication promotion measures published by the Risk Communication on Science and Technology for Safety and Security and Social Collaboration of MEXT, it is stipulated that teachers conduct risk communication on earthquakes and tsunamis as part of disaster prevention education¹⁸⁾, and it is possible that they do not imagine risk communication on radiation. However, according to the Reconstruction Agency's strategy to dispel rumors and strengthen risk communication, it is necessary for educators to understand correct knowledge and dispel misconceptions to promote an understanding of radiation among students¹⁹⁾. Risk communication is also covered in teacher licensing courses^{20),21)}, and it is expected that risk communication about radiation will be conducted in schools in the future. Therefore, it is possible that the school education section, which participates in the education of parents and local residents and responds to their diverse opinions, will also be required to address the issue of risk communication in the future.

Regarding the division of health, there was no significant difference in the opportunity to conduct risk communication. However, almost all the public health nurses who belonged to all the health and health-related divisions wanted to hold seminars on risk communication. Such nurses have continued to work for the health of local residents, and immediately after the earthquake

and during the recovery process, they were similarly involved in rebuilding the health status and lives of local residents affected by the nuclear power plant accident²²⁾. However, in 2014, 14% of the surveyed public health nurses within UPZ areas participated in risk communication training²³⁾, and it is possible that they desired to participate in the seminar because they considered it necessary for their future duties.

It was highlighted that a certain level of need was indicated for risk communicator training seminars since the nuclear power plant accident, and the fading of crisis awareness of radiation risks has faded⁷⁾, and despite the possibility that some sections and qualifications may not be able to imagine opportunities to implement risk communication. The fact that local government officials who take administrative positions in risk communication still have such needs is important because risk communication is required not only in times of disaster but also in normal times¹⁹⁾, and it is necessary to respond to these needs by holding risk communication training seminars. Considering the content of the seminar, the following points should be considered. When considering the content of the seminar, it is necessary to incorporate content that imagines opportunities to conduct risk communication according to the section and qualifications of the participants.

5.2 Needs related to seminar format

Approximately 50% of the participants requested not only lectures but also exercises. According to a previous study, half of the local government officials had experience in conducting risk communication¹¹⁾, and it is possible that they experienced difficulties in gaining an understanding of local government officials through uniform manual explanation¹⁾ and wanted practical learning. The fact that exercises were incorporated into the training programs for human resource development at the Nuclear Human Resource Development Center²⁴⁾, prefectures²⁵⁾, and other levels of administration, suggests that exercises are necessary for seminars on risk communication.

By qualification, public health nurses significantly preferred lectures and exercise. Such nurses have been engaged in practical activities for the health of local residents, and it is possible that they desired a seminar because it is a prerequisite for the development of their practical skills.

For occupations other than public health nurses, the adjusted residual analysis revealed that only lectures were significantly desired. However, the actual number of participants was similar for both lectures and lectures and exercises. Although the number of those who wanted to receive training was smaller than that of public health nurses who significantly wanted to receive training, we believe a certain number of staff members want skills in addition to knowledge, as is the case with public health nurses. Regarding those who requested only lectures, about half were uncertain about the opportunities to conduct risk communication and the necessity of risk communicators, and it is possible that they expected lectures to start with training in risk communication.

5.3 Needs related to how seminars are held

Regarding the method of holding the seminar, about 70%

wanted it to be completed in one session, and about 90% in half to one day. Given the problems reported by municipal employees regarding external training, such as lack of time, personnel, and budget²⁶⁾, it is possible that municipal employees desired a seminar that could be completed in one day or less, considering its impact on their workplaces and jobs.

In terms of the day of the week, approximately 90% of the participants preferred weekdays, while those in the school education section significantly preferred Saturdays and Sundays. However, only 22.0% of the employees in the school education section preferred to hold seminars on Saturdays and Sundays, suggesting that employees in all sections may have preferred to hold seminars on weekdays. Since the participants of this survey were municipal employees and it can be assumed that they work on weekdays and take weekends off, they would like seminars to be held on weekdays so that they could participate in them as part of their work. However, because problems such as lack of time, manpower, and budget have been highlighted for external training of municipal employees²⁶⁾, it is possible that even if seminars were held on weekdays, few people would be able to attend. Regarding participation in seminars, approximately half of the participants were aware that their workplaces allowed them to participate in business trips and provided transportation expenses. Therefore, we believe that it is possible to hold seminars on weekdays to meet these needs.

The fact that a certain number of participants wished to participate in the seminar as part of their work and expected to obtain an understanding from their workplaces regarding their participation suggests that municipal officials in the UPZ areas recognize risk communication as part of their own work. It can also be assumed that they are considering participating with the assumption that they will conduct risk communication from an administrative standpoint. When holding a seminar, it is also necessary to consider covering risk communications from an administrative perspective.

6. Limitation

The heads of divisions in local governments around nuclear power plants were sent questionnaires and were requested to distribute them to participants in this study. The questionnaires were not probably reached to all participants. In addition, participants may not have answered the questions because they were asked to respond using the internet. Therefore, the collection rate might have been lower than otherwise. However, the findings of this study are valuable because few reports have investigated and analyzed the need for radiation risk communicator training seminars among local government employees around nuclear power plants nationwide.

7. Concluding Remarks

There is a demand for seminars on radiation and risk communication for employees working in municipalities in the UPZ area. Seminars need to include not only lectures, but also exercises, and it is necessary to consider how to develop seminars according to the type of work. When holding seminars, it is necessary to consider how to do so, taking the fact that there is a

need to hold them on weekdays within one day into account. The results of this survey may serve as reference material when considering the content, form, and method of holding seminars.

8. Conflicts of Interest

This study was funded by the Division of Radiation Risk Communication Education, Committee for Promotion of Human Resource Development in Radiation Exposure Medicine, Hirotsuki University Graduate School of Health Sciences.

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【報告】

放射線リスク・コミュニケーター 育成セミナーの必要性に関する研究 -原子力発電所周辺自治体職員への調査-

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要旨: 福島第一原子力発電所の事故後, 住民に対して被災直後から行われてきた支援のひとつである放射線リスク・コミュニケーションは発展途上にあるといわれている。セミナー等が開催されているものの, 原子力発電所周辺の自治体職員に望まれる研修内容や開催方法に関する全国的な調査は少ない。そこで今後の育成セミナーの開催に向けて, 対象者の望む研修内容や開催方法に関する全国的な質問紙調査を実施した。地方自治体 121 施設における原子力対策に関する課, 学校教育に関する課, 保健・健康に関する課へ 3 部ずつ合計 1,089 部の質問紙調査票を郵送し, 回収した 149 部を分析対象とした。放射線リスク・コミュニケーションを実施する機会があるという認識は所属ごとに異なったが, 全体的にセミナーへの参加希望が多かった。セミナーの内容には放射線に関する知識だけでなく放射線リスク・コミュニケーションの内容も希望され, セミナーの形態は講義と演習の両方を希望するものが多かった。放射線リスク・コミュニケーターに必要と考えられる知識は, 約 6 割が放射線に関する知識, 約 5 割がリスク・コミュニケーションの知識であった。セミナーの開催方法については平日かつ 1 日の終了が希望され, 仕事としての参加, 交通費は支給されるものという認識が多かった。本調査の結果は, 放射線リスク・コミュニケーター育成セミナーを開催する際に, セミナーの内容や開催方法などを検討するための基礎資料となる。

キーワード: 放射線リスク・コミュニケーション, 原子力発電所事故, 人材育成, 地方自治体職員

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