

EXPERIENCE OF RISK COMMUNICATION ACTIVITIES WITH A Q&A WEB SITE ON RADIATION AFTER FUKUSHIMA DAIICHI NUCLEAR POWER PLANT ACCIDENT

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Abstract:

After the Fukushima Daiichi Nuclear Power Plant Accident, which occurred on 11 March 2011(hereinafter referred to as "Fukushima accident"), we have been providing accurate information about radiation and radioactivity on a website. Immediately after the accident, volunteers of Japan Health Physics Society (JHPS) built up a website named Questions and Answers about Radiation in Daily Life. They carefully answered all the questions posted on the website. In August, Steering Committee of the Q&A website was officially established in JHPS. Since then, the Committee has been engaged in the risk communication activities to the public. The Committee consists of 53 members, among which 40 are from Young Researchers' and Students' Association in JHPS. The answers to the questions posted on the website are firstly prepared by the young researchers, and checked by the experts who work as consultants. Finally, they are confirmed by the executive members of the Committee.

The number of the questions answered has reached over 1500 as of March, 2012. We have analyzed characteristics of them. It has been found that a major portion of the questioners is mothers with infants through the entire period. Young mothers worry about the health effects on their children due to radiation from the accident. In addition, the questions are mostly related to the circumstances of the accident that are announced by the government or reported by the mass media. Through this analysis, we can know the information needs of the people in response to the changing situation after the accident.

We are planning to compile our Q&A into a book so that it will contribute to reduce the people's anxiety about radiation effects due to Fukushima accident. We hope our experience to be of help in establishing the good understanding between experts and the public.

Key Words:

Fukushima Daiichi Nuclear Power Plant Accident, Risk communication, Questions and Answers (Q&A) about Radiation in Daily Life, Steering Committee of the Q&A, Health effects of children

1. Introduction

After the Fukushima Daiichi Nuclear Power Plant Accident occurred on 11 March 2011 (hereinafter referred to as "Fukushima accident"), we have been providing right information on radiation and radioactivity via an Internet website. Immediately after the accident, volunteers of Japan Health Physics Society (JHPS) built up a website named Questions and Answers about Radiation in Daily Life. They carefully answered all the questions posted on the website. In August, Steering Committee of the Q&A site was officially established in JHPS. Since then, the Committee has been engaged in the risk communication activities to the public. We describes an outline of the contents of 1500 questions sent to our Q&A website, and the result of the time series analysis of the questions and questioners for about one year after the Fukushima accident.

2. Activities using Question and Answer Website about radiation in Daily Life

(1) Steering Committee of Q&A about Radiation in Daily Life

The Committee has formally started on August 24, 2011 as a Standing Committee directly controlled by the executive board of JHPS. We have been carrying out risk communication activities to the general public using our Q&A website relating to radiation. The Committee consists of 40 persons belonging to Young Researchers' and Students' Association (hereinafter referred to as "Youngman researcher group"), in the JHPS and of 10 experts in each special field, and of five managers of the Committee.

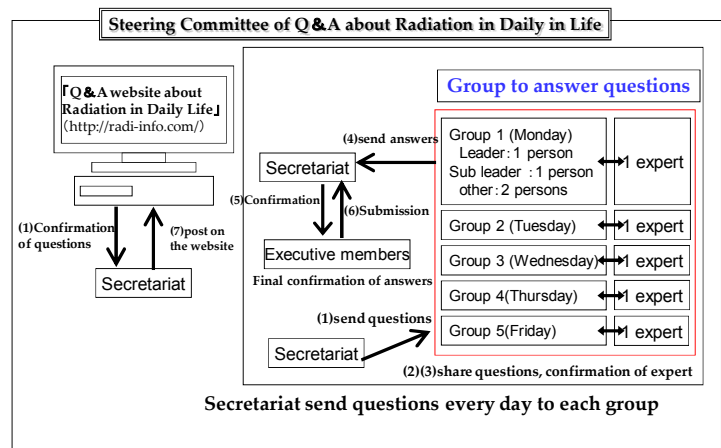


Figure 1. The correspondence process of answering

(2) A correspondence process of answering

A correspondence process of answering is as follows. Firstly, the answers to the questions posted on website are prepared by the young researchers. Secondly, the answers are checked by experts within the group, and finally five managers approve the last answers. The presenters of this paper are five managers. The name and affiliation are officially published on the website. Figure 1 shows the correspondence process of answering the questions.

3. Analysis of the questions and the questioners

(1) Change of the number of the questions

Our volunteer-based website started on March 25, 2011. At the beginning, questions more than 150 were sent to the website in a week. Therefore, volunteer members could not correspond to all of their questions. Accepting of question was unavoidably stopped for a period to June 5 from May 26 to June 5, and to August 21 from July 2. When a health survey of Fukushima residents started late June 2011 and news on the circulation of the beef having the radioactivity over the provisional regulation value have been reported early August 2011, many people sent the questions about these problems and the numbers of the questions was temporally increased.

After the Steering Committee of Q&A about Radiation in Daily Life was formally organized in the end of August, a lot of questions were sent to the website whenever a special news was released, such as the detection of radioactive strontium in Yokohama City, Kanagawa Prefecture early October 2011, the finding of a radioactive hot spot in Kashiwa City, Chiba Prefecture late October 2011, the recovery of the baby food early December 2011, the Prime Minister's declaration of the cold shutdown in mid-December 2011, and start of the decontamination operation late in December. After that, the number of questions was gradually decreased. In the end of February 2012, it was nearly 20 per week. Figure 2 shows the number of questions posted to the Q&A website during March 25, 2011 and March 1, 2012.

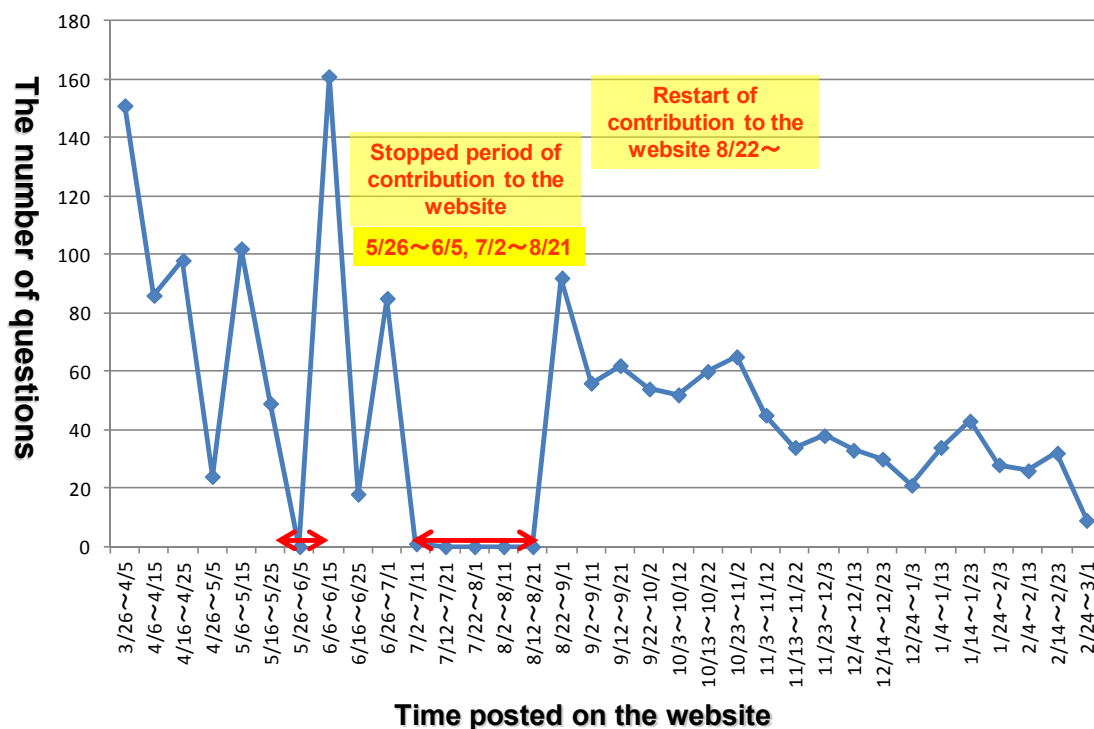


Figure 2. Change of the number of the question

(2) A questioners' characteristics

A questioner can write a sex, an age, a hometown, and an occupation etc in the website under the self-reported style. We analyzed questioners' characteristics using these data which were accumulated by the end of February, 2012.

With regard to the sex, women occupied the greater part of the questioners. An occupation of the woman was almost a full-time homemaker. About age, the most common age of the questioners was 30s, next was 40s, and the third was 20s.

Figure 3 shows the distribution of sex, age, occupation of the woman as the questioner to the website.

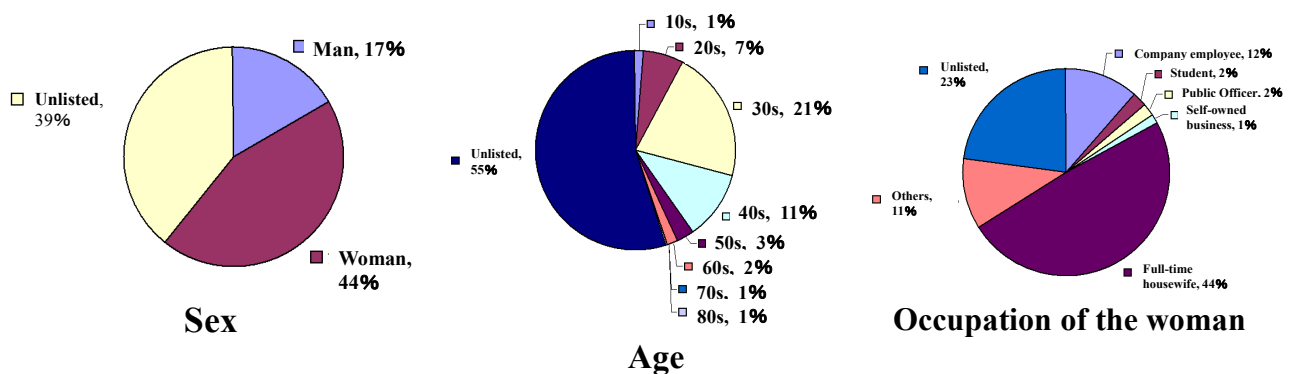


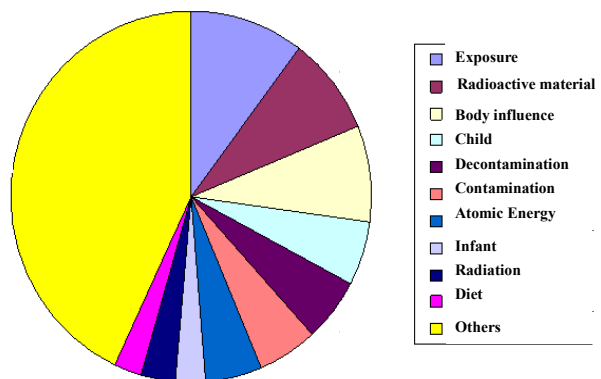
Figure 3. Analytical result about sex, age, occupation of the woman

(3) Question contents

When the answers are published on the website, the questions are classified using the keywords which are provided in the website as one of the functions. Top five of the key-words are "exposure", "radioactive material", "body influence", "child", and "decontamination". From this fact, it can be supposed that that most of the questioners worry about the health effects due to radiation for their children. Through the entire period from the beginning of the website to the end of

Figure 4. Analytical result of question content

March 2012, the most of the questions were about the health effects due to radiation for a child and/or adult. The questions concentrated into the same kind of the problem such as when the central government officially announced the situation of the accident, and when the mass media released the news about the accident, and more when people knew the variation of the radiation level. Figure 4 shows the analysis of question contents.



5. Representative Questions and Answers

As of 11 April 2012, 1,517 questions and answers are available on the website in Japanese. It is important to share facts what the public concerns after the Fukushima accident and the professionals of radiation protection could offer. The experience of risk communication in Japan will play an important role for international stage as well. In this context, here two representative questions and answers are given.

The first question was submitted by the mother who has an infant, and it concerns about the difference between ingestion and inhalation.

The question was “I can understand that radioactive materials ingested with foodstuffs are excreted by the metabolism, but how about the inhalation of radioactive materials? Are they absorbed to the lung? I am afraid that the radiocesiums remain about 30 years in a 1-year-old baby.”

Then the answer to this question was that “There are mainly two pathways of internal exposure, one is ingestion and the other is inhalation. In the case of ingestion, the radionuclides are absorbed to the digestive tract. For instance, the radioiodines are deposited to the thyroid that has high affinity, and excreted by the metabolism as time passes. On the other hand, in the case of inhalation, the radionuclides are absorbed to body fluids at the lung or to the digestive tract, and act similarly with the pathway of ingestion. Even assuming the same amount of radioactivity (Bq) for ingestion and inhalation, there are differences in doses (Sv) as the index of stochastic health effects if radionuclides are slowly absorbed to the body fluids at the lung. However, there are little differences between ingestion and inhalation if radionuclides are fastly absorbed. The radiocesiums and radioiodines, which are the dominant radionuclides after the Fukushima accident, are the type of fast lung absorption. From this reason, there are little differences in dose conversion coefficient (Sv/Bq). Furthermore, animals including human beings have metabolisms, and there is no possibility that the radiocesiums remain about 30 years.”

The second question was “Are you minions of the government or pronuclear members in the nuclear business society? Don't say safe about what has not yet been clearly understood. Could you take a responsibility and compensate for us if something happens?” The answer was that “This Q&A website has been voluntarily established in about two weeks after the Fukushima accident by the experts of radiation protection who belong to JHPS. Given the serious information about the radiation in daily life, we started the Q&A activities with the thought as the experts that we should help the people to face the fear and anxiety about radiation. The website was voluntarily started in the early phase, but JHPS has been taking the responsibility since August 2011. More than 1,200 questions and answers are available on the website, and we have carefully answered to each question. We know that there are similar Q&A website established by another academic experts, but most of their website provide the frequent Q&A that were written by themselves. One of the characteristics of our Q&A

website that we are proud of is that we have been publishing the original sentences and always answering any questions. If people really think that we are minions of the government or pronuclear members in the nuclear business society, how can we receive so many questions from the public? For instance, there was a question that is almost comment of thanks in the website. According to the comment of thanks, the questioner read our answer and could finally have a peace in mind. With regard to “what have not yet been clearly understood” written in your question, the science has revealed many facts that had not been cleared at that time. It is obvious that the science keeps revealing in future. We have a consistent stance in answering all questions that we judge based on the facts that are revealed at the moment. We assume that the point you mentioned about what have not yet been clearly understood concerns about the low dose health effects, and we answer your question as below based on this assumption. The International Commission on Radiological Protection (ICRP) uses the Linear-Non-Threshold model (LNT). At radiation doses below around 100 mSv in a year, the increase in the incidence of stochastic effects is assumed to occur with a small probability and in proportion to the increase in radiation dose over the background dose. On the other hand, it is difficult to conclude that the health effects is due to the radiation exposure below around 100 mSv, namely, we cannot say that it is obviously dangerous. As the experts who treat radiation in daily research, we have some common sense that the radiation exposure around 10 mSv in a year will not cause the health effects, considering some epidemiological studies which has shown that there are no obvious health effects in natural high background radiation area (HBRA). We know that there are some people who feels that a little dose can cause health effects and hate small amount of radioactivity, but we think that this kind of biased assumptions can lead to the difficult situation where disaster debris generated in the affected area in the Fukushima accident cannot be accepted in the non-affected area, and it will lead to the disadvantage for the society. We know a sad story that an infant was discriminated from the reason that the surface contamination could be transferred from him/her. The potential reason might be the feelings to hate small amount of radioactivity. If the meaningless discrimination comes from ignorance, there is nothing sadder than the situation and we’ve never felt so sad in our life.”

6. Summary

Most of questioners were full-time housewives in their 20s to 40s living in the Kanto region (East part of Japan). Considering the question contents, it is likely correct that the reason why many women sent many questions were that they worried about the health effects due to radiation for a child.

At the beginning of the website, the most of the questions were about the health effects of radiation. But, the question content was gradually changed to the various field of the radiation. The number of question to the website tends to decrease with time. We have carefully and politely answered many questions, which were sent by the people worrying about health effect due to Fukushima accident, one

by one. We believe that politely answering one by one is greatly effective in eliminating anxiety of the radiation.

For future perspective, a Q&A publishing task group has been set up in the Committee since March 2012 and working on the publication of the important Q&As. The book will come out in print by August 2012. We strongly hope that the book will help the citizens to eliminate anxiety of the radiation due to Fukushima accident. Furthermore, next step is to announce the contents of our Q&A website to many people in the world, and the presentation in the IRPA13 is one of the practical examples to achieve our aim. We hope to disseminate much experiences gotten in risk communication activities with the citizens who worry about the effects of radiation by the Fukushima accident to the people in the world.

References

- [1] Steering Committee of Q&A about Radiation in Daily Life, Japan Health Physics Society (JHPS), Q&A website Radiation in Daily Life;
Available at: <http://radi-info.com/> (in Japanese)
- [2] T. Oumi; Activities on Early phase after Fukushima Accident happened, Jpn. J. Health Phys, 46(3). 188~192(2011) (in Japanese)
- [3] M. Shimo; Anxiety and Question from public — Analysis from Q&A Website, Jpn. J. Health Phys, 46(3). 223~226(2011) (in Japanese)
- [4] H. Ogino; Reflection on Risk Communication in 9 months after Fukushima Nuclear Accident, Jpn. J. Health Phys, 47(1) .37~43 (2012) (in Japanese)
- [5] T. Kono, H. Ogino, H. Hayakawa, M. Shimo, K. Taniguchi, N. Ban; The experience of risk communication activities using the Q&A website concerning about radiation in life after Fukushima Daiichi Nuclear Power Plant Accident, Fukushima Daiichi Nuclear Accident Symposium IV in JHPS, proceedings (2012). (in Japanese)
- [6] T. Kono; Interim report on Q&A about Radiation in Daily Life, Young Researchers' Association, Japan Health Physic Society Homepage,
Available at: http://www.soc.nii.ac.jp/jhps/j/newsletter/pdf/nl62_1.pdf (in Japanese)