

Radiation protection culture in practice: Insights from people's behaviour in areas contaminated by the Chernobyl and Fukushima accidents

Liudmila Liutsko *et al.*

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COMET 2019

Humanities in ionising Radiation Research

2019 in Barcelona



SHAMISEN SINGS PROJECT BRIEF PRESENTATION

SHAMISEN SINGS project (PI: Elisabeth Cardis)

SHAMISEN (Nuclear Emergency Situations - Improvement of dosimetric, Medical And Health Surveillance) - Stakeholder INvolvement in Generating Science (**SINGS**)



Web: <http://radiation.isglobal.org/index.php/en/shamisen-sings-home>

Liutsko L, et al. Shamisen Sings project – stakeholders involvement in generating science (radiation protection)
Arh Hig Rada Toksikol 2018;69:364-365

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Note

SHAMISEN SINGS project – stakeholders involvement in generating science (radiation protection)

Liudmila Liutsko^{1,2,4}, Adelaida Sarukhan¹, Paola Fattibene⁵, Sara Della Monaca⁵, Sylvie Charron⁶, Joan Francesc Barquinero³, Vadim Chumak⁹, Takashi Ohba¹⁰, Koichi Tanigawa¹⁰, Yuliya Lyamzina¹⁰, Aya Goto¹⁰, Yevgenia Tomkiv¹¹, Deborah Oughton¹¹, Philippe Pirard⁸, Natallia Novikava¹², Mélanie Maître⁷, Pascal Crotaïl⁷, Thierry Shneider⁷, An Van Nieuwenhuyse¹³, and Elisabeth Cardis^{1,2,4}

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Citizen-science is a blooming field that provides benefits both to citizens – engaging them in research on topics of concern – and scientists, thus enhancing potential for positive societal changes. The roots of the approach go back hundreds of years, when science was not a paid profession (for example, Benjamin Franklin made his living in another profession, and Charles Darwin was not paid for his journey on the HMS Beagle) (1). Benefits of citizen participation in science include not only the data gathered for the project

assessment, and evaluate how new technologies could best fulfill these needs. We will consider lessons from current issues in Fukushima related to the lifting of evacuation orders and medical care for vulnerable populations;

2. Review existing apps for citizen-based dose measurements, and establish minimum standards of quality;
3. Review existing apps/systems to monitor health



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SHAMISEN SINGS

SHAMISEN-SINGS, building on the recommendations of the EC-OPERRA funded SHAMISEN project, aims to enhance Citizen Participation in preparedness for and recovery from a radiation accident through novel tools and APPs to support data collection on radiation measurements, health and well-being indicators.



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WP1. Stakeholder needs (consultation, engagement and feedback)

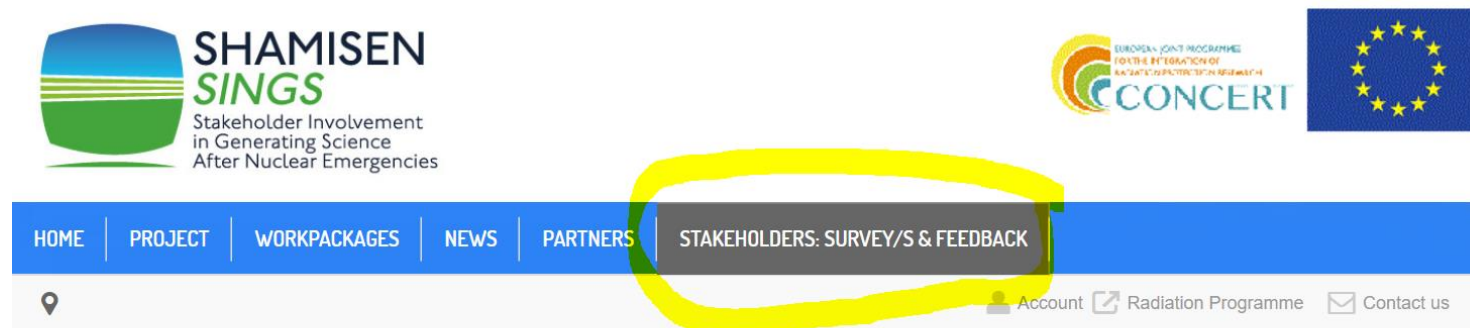
-to engage stakeholders (representatives of local populations, teachers, medical personnel, authorities and general population) to identify their needs (immediate and long-term phases of an accident)

METHODS:

Anonymous on-line Survey (in 7 languages: English, Spanish, Italian, French, Ukranian, Russian and Japanese)

Stakeholders Needs SHAMISEN SINGS Survey

METHODS: On-line Survey distribution



Stakeholder: Survey/s & Feedback

UPDATED ON 05/10/2018: Summary of the **CONCERT** stakeholders feedback on the **SHAMISEN SINGS** project that took place in the 5th of October 2018 in Rovinj, Croatia.

This survey is part of the SHAMISEN SINGS project WP1 – Stakeholders Needs on Apps/tools use for dose measurements & health/well-being related to radiation exposure (living around Nuclear Power Plants or in emergency/recovery phases after the nuclear accident)

The aim of SHAMISEN SINGS – "Nuclear Emergency Situations - Improvement of dosimetric, Medical And Health Surveillance - Stakeholder INvolvement in Generating Science (SINGS)" - is to elaborate guidelines for optimal Apps/tools/devices to enable the general public to use them to perform, if they wish, their own radiation dose measurements and log them and/or to obtain information related to concerns they may have in the case of a radiation accident or to use as a surveillance mechanism related to their state of health/well -being.

To achieve this satisfactorily, it is imperative that these Apps/tools/devices we developed in collaboration with all

OTHER PROJECTS

EPIDEMIOLOGICAL STUDY TO QUANTIFY RISKS FOR
PAEDIATRIC COMPUTERIZED...



A multinational study to assess potential health risk from paediatric CT and optimise doses in medical imaging.

Stakeholders Needs **SHAMISEN SINGS** Survey

Purpose: The current survey aims to assessing Stakeholders needs for information and for tools to measure radiation, obtain answers to their concerns and participate, if they wish, in health and well-being surveillance in the case of a possible radiation accident.

English version

Exploring People Needs on Apps (mobile applications) use for dose measurements, information & health/well-being monitoring related to radiation exposure

Ukrainian version

Вивчення потреб людей у мобільних додатках (програмах) для дозиметричних вимірювань та збору інформації про стан здоров'я та якості життя у ситуаціях радіаційного опромінення

Russian / Русский

Изучение потребностей людей в Apps (мобильных приложениях) для измерения дозы и здоровья / благосостояния, связанных с радиационным воздействием

Spanish version

Evaluar las necesidades de aplicaciones móviles para medir dosis de radiación y seguir el estado de salud/bienestar en contexto de una exposición a la radiación

Italian version

Indagine sulle richieste della popolazione sulle App (applicazioni mobili) per la misura di dose e sulla salute e benessere legati all'esposizione radiazioni ionizzanti

Japanese version

放射線被ばくによる線量測定と心身の健康状況のモニターのためのモバイルアプリケーションに対する市民ニーズ調査

French version

Identification des besoins de la population en termes d'applications pour les technologies mobiles (apps) en termes de mesure de la dose de rayonnement et définition d'indicateurs de (dégradation de la) santé et du bien-être, en cas d'exposition à la radioactivité

METHODS: On-line Survey distribution

The *average time* for completing is 10-15 minutes approx.

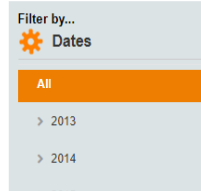
Stakeholders Needs SHAMISEN SINGS Survey



Your Voice is Important! Developing an App to Engage Citizen Participation in Case of a Radiation Accident

1 June 2018

[This article has been written by the ISGlobal members: **Adelaida Sarukhan**, scientific writer, **Liudmila Liutsko**, postdoctoral fellow, and **Elisabeth Cardis**, Head of the Radiation Programme]



How would you rate your knowledge of **ionising radiation**? Are you concerned about **potential health risks of living near a nuclear power plant**? Would you be interested in using a mobile app that allows you

“Would you be interested in using a mobile app that allows you to measure radiation?”

bit.do/shamisensings_sp

Gracias por ayudarnos respondiendo al cuestionario, te tomará unos 5-10 minutos de tu tiempo

SHAMISEN SINGS
Stakeholder Involvement in Generating Science after Nuclear Emergencies

YOUR VOICE IS IMPORTANT!

How would you rate your knowledge of **ionising radiation**? Are you concerned about potential health risks of living near a **nuclear power plant**? Would you be interested in using a mobile app that allows you to **measure** radiation?

These are some of the questions of the **survey** designed by the European-funded **SHAMISEN-SINGS project**, which aims to enhance citizen participation in case of a radiation accident.

We want to develop **mobile devices or applications** that allow the general population to do their own radiation measurements, monitor their health, monitor radiation levels in real time, and make **informed decisions**.

bit.do/shamisensings_en

Thanks for helping us answering the questionnaire, only takes 5-10 minutes of your time.



Stakeholders Needs **SHAMISEN SINGS** Survey

SHAMISEN SINGS Survey Content and structure: *4 main blocks:*

1. **General data of participants:** age group, sex, professional status, and area of work or study, country and province/region of residence, level of education, and information about family nucleus (living with children or not, along, etc.); living near a NPP (nuclear power plant) or not.
2. ***Self-assessment of knowledge*** and culture on ionising radiation, sources of knowledge.
3. ***Participant's potential interest in using mobile Apps*** for measuring dose, assessing health and obtaining information/advice; also the ***acceptability to share data*** obtained from such Apps with other stakeholders (local authorities, doctors, etc.).
4. (***optional***, targets only those persons who have already ***had a radiological or nuclear emergency experience***) ***Past experiences*** (access to information during the emergency & application of radiation protection measures in daily post-accident behavior).



Stakeholders Needs SHAMISEN SINGS Survey

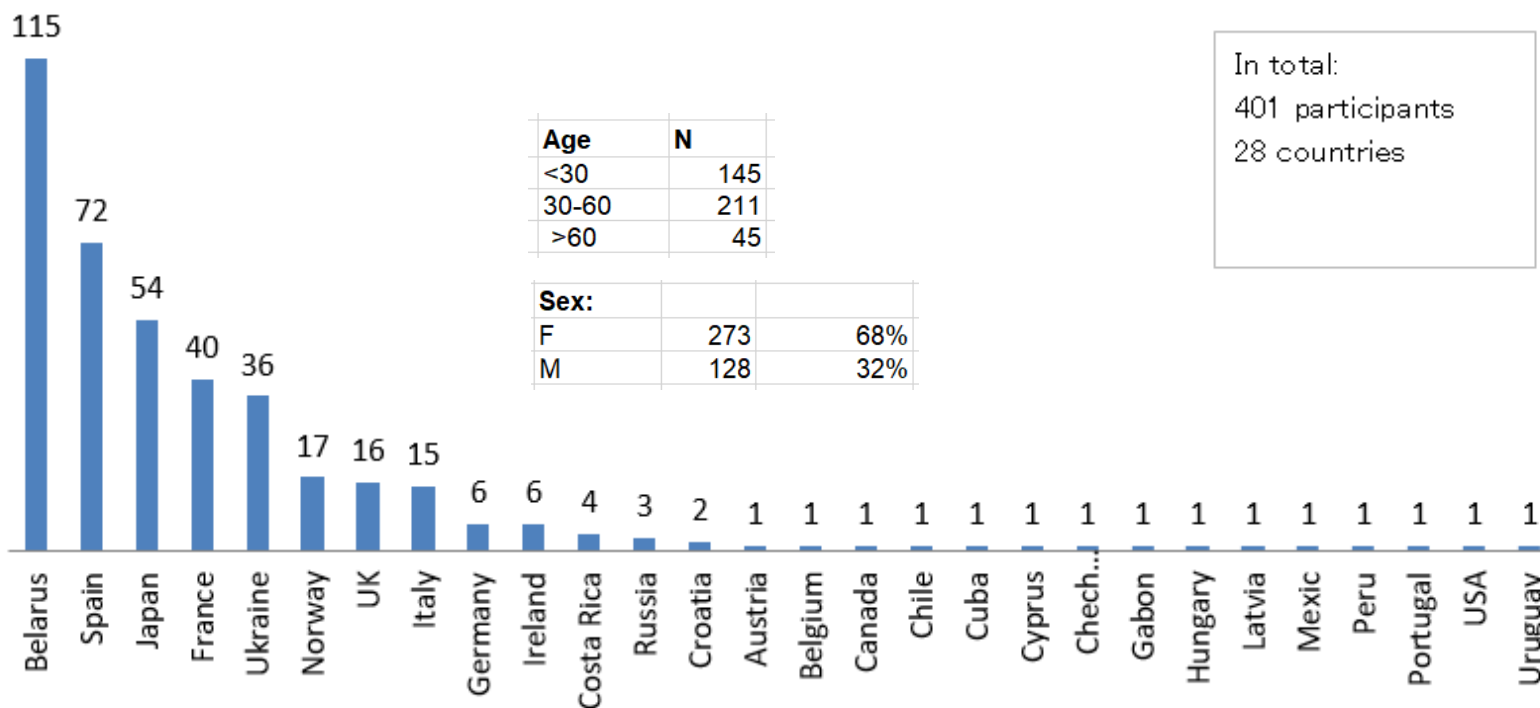
RESULTS: Socio-demographical parameters of participants

Participants by country

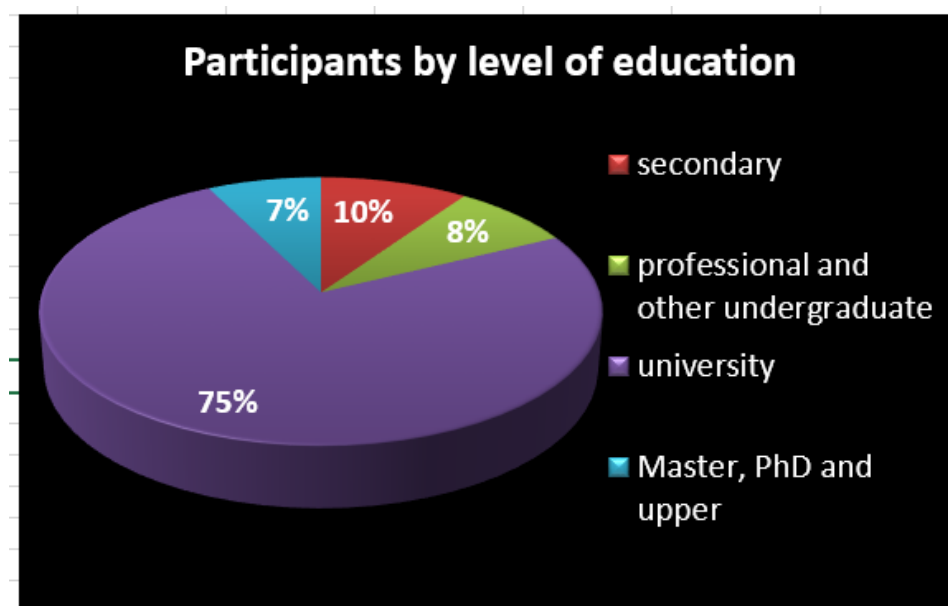
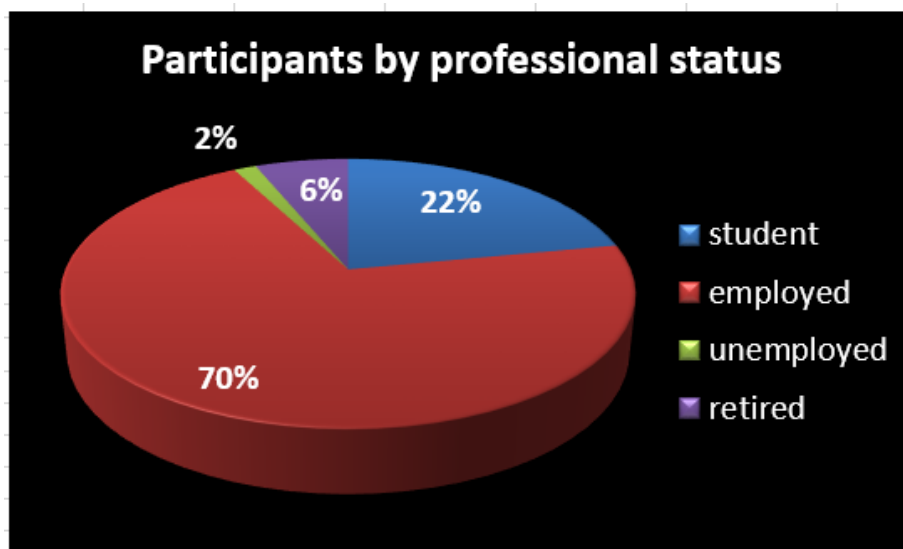
In total:
401 participants
28 countries

Age	N
<30	145
30-60	211
>60	45

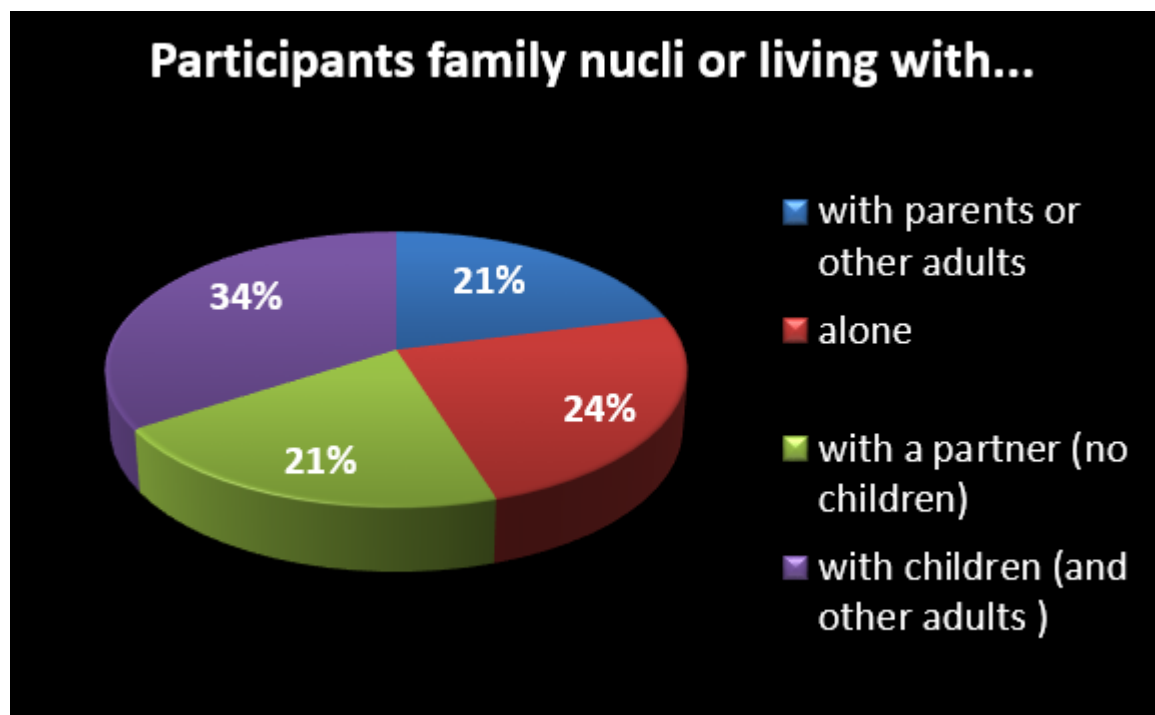
Sex:		
F	273	68%
M	128	32%



RESULTS: Socio-demographical parameters of participants



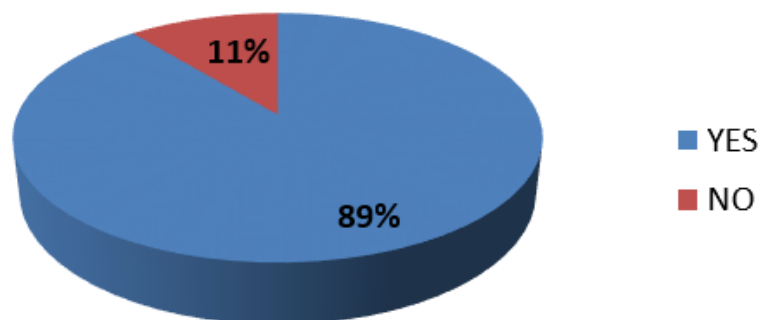
RESULTS: Socio-demographical parameters of participants



Stakeholders Needs SHAMISEN SINGS Survey

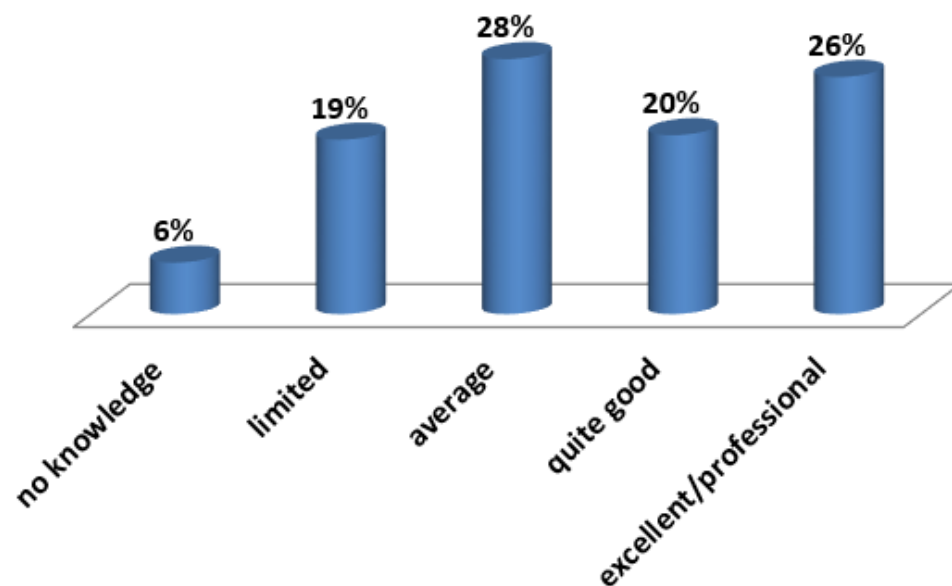
RESULTS: Knowledge level on IR

Do you know what ionizing radiation is?



0- No knowledge; Cum.	Freq.	Percent
0	5	4.10
1	19	15.57
2	48	39.34
3	20	16.39
4	30	24.59
Total	122	100.00

Knowledge about radiation
(Self-assessment)



Stakeholders Needs SHAMISEN SINGS Survey

RESULTS: Source if IR knowledge:

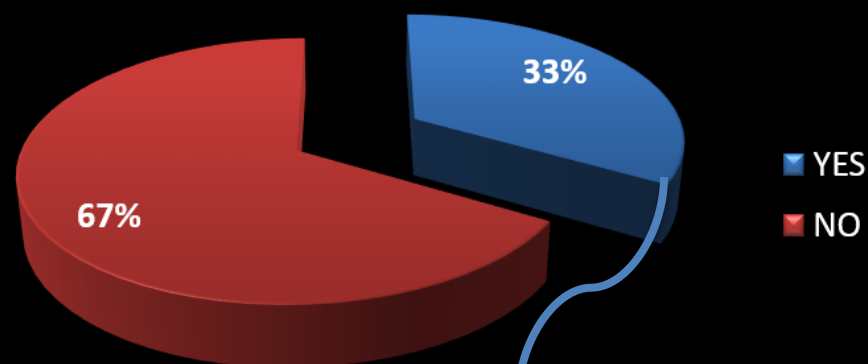
Preference							
1	From school/university courses						
2	Scientific journals/conferences/books						
4	Media (Discovery Channel						
3	Information released by Official Institutes/Government						
6	National news channels						
4	Internet and social media (Facebook/Twitter, etc)						
5	Interpersonal communication with my Parents/ Family Members / Friends/ Colleagues						



Stakeholders Needs SHAMISEN SINGS Survey

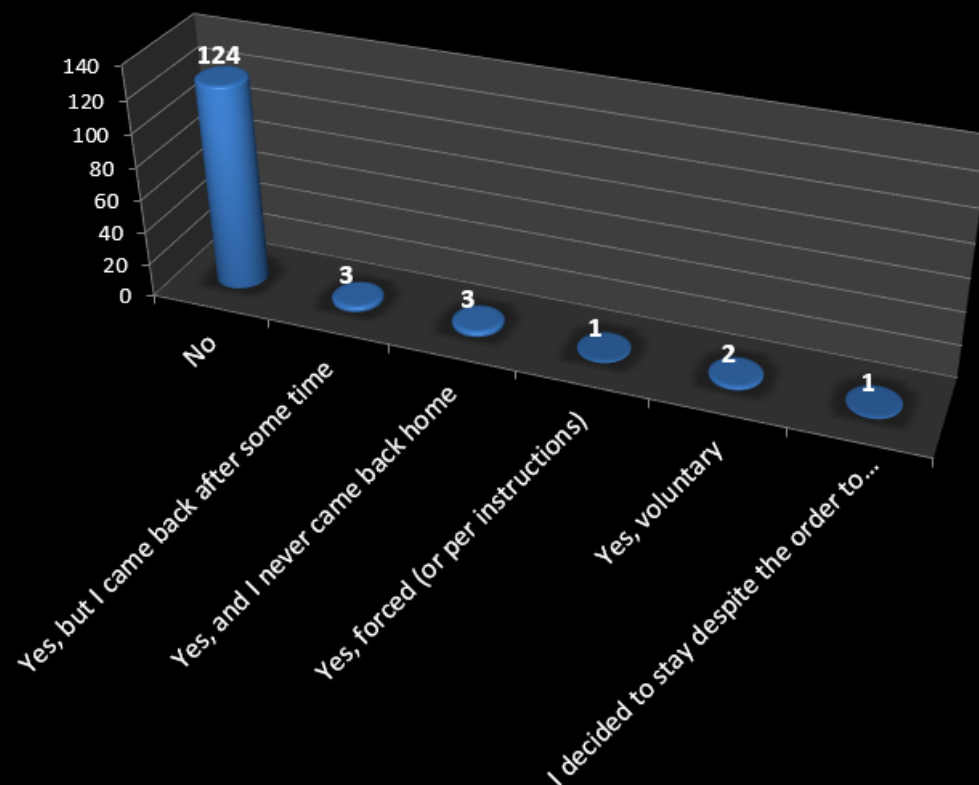
RESULTS:

**Residing in contaminated area
(before or currently)**



	N
Belarus	61
Japan	28
Ukraine	16
France	7
Spain	5
other	5
Total	122

Have you ever experienced an evacuation due to radiation?



RESULTS: RPC in a daily life (for those who reside or resided in contaminated areas)

Prudency with respect to water and alimentary (local, forest, etc.) products:

a) Water consumption (local open sources as springs, etc.): 1 - not a			
	Freq.	Percent	Cum.
-----+-----			
0	7	5.93	5.93
1	45	38.14	44.07
2	12	10.17	54.24
3	20	16.95	71.19
4	12	10.17	81.36
5	22	18.64	100.00
-----+-----			
Total	118	100.00	

Legend:

0 & 1 - not at all
2 – sometimes
3 – regularly
4 – frequently
5 – always/ NA (I moved away and do not go to the contaminated area)_

b) Food consumption (locally grown): 1 - not at all; 2 -			
	Freq.	Percent	Cum.
-----+-----			
0	4	3.39	3.39
1	40	33.90	37.29
2	26	22.03	59.32
3	23	19.49	78.81
4	12	10.17	88.98
5	13	11.02	100.00
-----+-----			
Total	118	100.00	



RESULTS:

Prudency with respect to fishing and picking local farm products

c) Fishing: 1			
- not at			
all; 2 -			
sometimes;			
3 -			
regularly;			
4 -			
frequen	Freq.	Percent	Cum.
-----+-----			
1	41	34.45	34.45
2	16	13.45	47.90
3	18	15.13	63.03
4	11	9.24	72.27
5	33	27.73	100.00
-----+-----			
Total	119	100.00	

Legend:

1 - not at all
2 – sometimes
3 – regularly
4 – frequently
5 – always/ NA (I moved away and do not go to the contaminated area)_

d) Picking			
local farm			
products:			
1 - not at			
all; 2 -			
sometimes;			
3	Freq.	Percent	Cum.
-----+-----			
1	36	30.00	30.00
2	33	27.50	57.50
3	18	15.00	72.50
4	10	8.33	80.83
5	23	19.17	100.00
-----+-----			
Total	120	100.00	



RESULTS:

e) Limiting or			
avoiding			
time spent			
in			
contaminate			
d areas:			
1 - not at			
all; 2	Freq.	Percent	Cum.
-----+-----			
1	36	29.75	29.75
2	24	19.83	49.59
3	16	13.22	62.81
4	23	19.01	81.82
5	22	18.18	100.00
-----+-----			
Total	121	100.00	

**Prudence with respect to limiting or
avoiding time spent in contaminated areas**

Legend:

1 - not at all

2 – sometimes

3 – regularly

4 – frequently

5 – always/ NA (I moved away and do
not go to the contaminated area)_



RPC (prudence of daily behaviour)

Table 1. Mean (SD) values for each behavioural category (a-e) and country of residence

	Country of current residence				
RPC in a daily behavior by residents	Belarus	Japan	Ukraine	France	Spain
a) Local water consumption	2.7 (1.6)	1.7 (1.0)	3.4 (1.8)	1.5 (1.5)	2.4 (2.0)
b) Local food consumption	2.2 (1.2)	2.0 (1.3)	3.2 (1.7)	1.9 (1.6)	4.0 (1.0)
c) Fishing	2.7 (1.6)	2.3 (1.5)	4.1 (1.4)	3.2 (1.8)	4.6 (0.9)
d) Picking local farm and wild products	3.1 (1.5)	2.8 (1.7)	4.0 (1.3)	3.0 (1.4)	3.6 (2.0)
e) Avoiding /Limiting time spent in contaminated areas	2.6 (1.6)	2.4 (1.6)	3.2 (1.6)	3.2 (1.8)	4.2 (1.3)

Legend:

1 - not at all
2 – sometimes
3 – regularly
4 – frequently
5 – always/ NA (I moved away and do not go to the contaminated area)_



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Liudmila Liutsko¹⁻³, Takashi Ohba⁴, Aya Goto⁴, Yuliya Lyamzina⁴, Koichi Tanigawa⁴, Paola Fattibene⁵, Sara Della Monaca⁵, Natallia Novikava⁶, Vadim Chumak⁷, Mélanie Maître⁸, Pascal Croüail⁸, Thierry Schneider⁸, Yevgenia Tomkiv⁹, Deborah Oughton⁹, Sylvie Charron¹⁰, Philippe Pirard¹¹, Adelaida Sarukhan¹, and Elisabeth Cardis¹⁻³; **SHAMISEN SINGS Consortium**

Affiliations:

1) ISGlobal, Barcelona, Spain; 2) UPF, Barcelona, Spain; 3) CIBERESP, Barcelona, Spain; 4) FMU, Fukushima, Japan; 5) ISS, Rome, Italy; 6) ISEI-BSU, Minsk, Belarus; 7) NRCRM, Kyiv, Ukraine; 8) CEPN, Fontenay-aux-Roses, France; 9) NMBU, Oslo, Norway; 10) IRSN, Fontenay-aux-Roses, France; 11) Santé Publique France, Saint-Maurice, France

E-mail: Liudmila.Liutsko@ISGlobal.org



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Questions?



Mail to: Liudmila.Liutsko@ISGlobal.org




Thank you!



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