IAEA - Hiroshima University Consultancy Meeting

Science, Technology and Society Perspectives on Nuclear Science, Radiation and Human Health – The International Perspective

Health literacy promotion in Fukushima after the nuclear accident:

A case of responding to health care professionals' needs through the development of a health literacy toolkit

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Fukushima nuclear accident

Fukushima City

15% decline in under 5-yo pop. in 2 years

Depression and decline in maternal confidence among Fukushima mothers

BMC Psychiatry. 2015; 15: 59.

J Commun Healthc. 2014; 7: 106-116.

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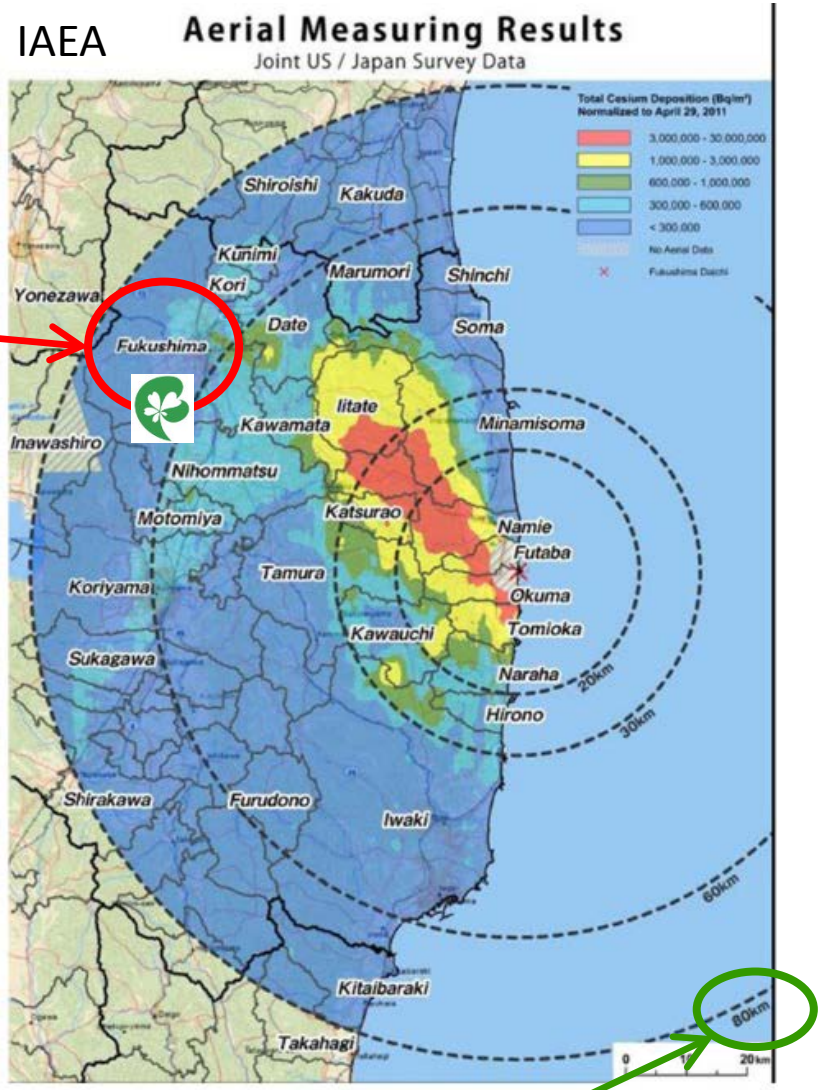


50 miles: US Recommended Evacuation Zone

Fear of unknown health effects of radiation contamination due to confusing and often contradicting health risk messages with difficult scientific data

Picture: Leaflets about radiation placed in the lobby of a health center in Fukushima City.

Community health workers

Government

Fukushima Nuclear Accident Independent Investigation Commission

"Information for residents to make informed decisions"

How do we respond to parents' concerns ?

Public health nurses

(gate keepers of community health)

Nursery school teachers

(key players of maternal and child health)

Responses in Fukushima City

Meeting time (Ms after disaster)	Major recommendations
May 2011 (2 months)	**Aim: To respond to parents' immediate anxiety.** Information provision Indoor play spaces
July 2011 (4 months)	**Aim: To respond to parents' persistent anxiety.** Systematic screening of high-risk families Individual and group counseling
November 2011 (8 months)	**Aim: To setup a long-term responding system.** Early parenting support system Regular **training** sessions of public health nurses

Disasters. 2014; 38: s179–s189.

Training workshops on radiation for nurses

Public health nurses attending workshops to learn about health effects of radiation

They voiced…

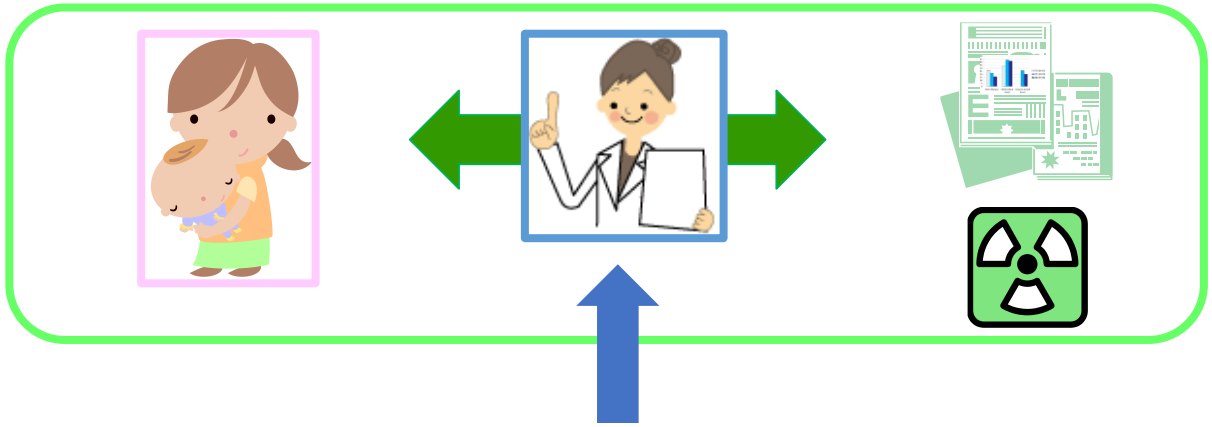
- Role as an information channel in the community
- Needed communication skills development;

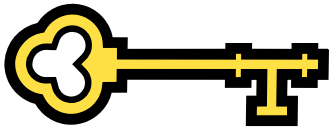
"We must say what we think about what we have learned; not just what the government says."

BMC Health Services Research. 2014; 14: 129.

From findings to actions

Community workers bridge science and community





Training on Health Literacy

Health literacy

- "The cognitive and social skills which determine the motivation and ability of individuals to gain access to understand and use information in ways which promote and maintain good health" WHO, 1998

http://www.hsph.harvard.edu/healthliteracy/overview/

Health literacy training

Table 2 Content of the health literacy training program in Fukushima City

First session	Second session	Follow-up survey
1. Ice-breaking activity 2. Lecture • General background of health literacy • Instructions to use material assessment tools 3. Exercise • Assessment of an assigned written health material 4. Training evaluation 5. Homework • Assessment of materials that participants themselves developed	1. Review quiz 2. Lecture Techniques to improve; • Text • Graphics • Risk presentation 3. Exercise • Revision of their own materials that they had assessed as homework 4. Training evaluation 5. Homework • Apply learned knowledge and skills in practice	1. Review of one-month application 2. Training evaluation 3. Distribute additional information leaflet about tips to apply health literacy in practice

- Goto A, et al. Japan Medical Association Journal. 2014; 57: 146-53.
- Rudd RE. Assessing health materials: Eliminating barriers – increasing access. 2010. http://www.hsph.harvard.edu/healthliteracy/

Training content

- Sentences: Grade level, topic sentence
- Numbers: Numeracy level

  RISK is one of the most difficult statistical concepts.

  (Apter AJ, et al. J Gen Intern Med. 2008;23(12):2117-24.)

- Graphs: Pictogram

- Communication: Marker method

(Method to ask readers to mark difficult words and phrases.)

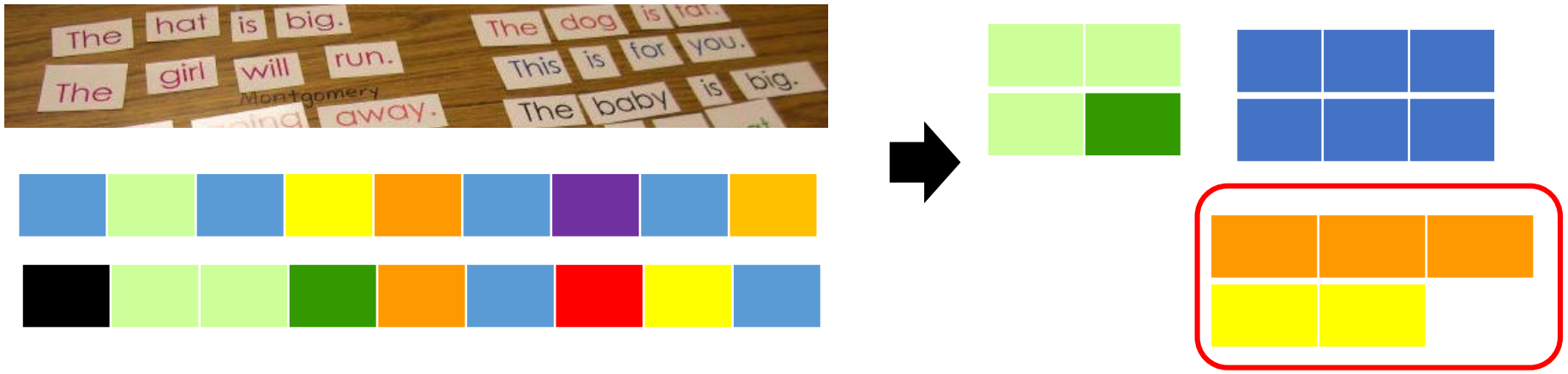
Training evaluation

- Workshop evaluation surveys among participants
- 65 nurses and 45 teachers who attended workshops in 2013-2014
- At the end of each session, 1 month (nurses only) and 1 year after the second session.
- Evaluation items
  - Application, confidence gain and interest in further training.
  - 12 specific training goals: 4 items each on knowledge, material assessment and development
  - Opinions on applications and barriers of learned skills in daily practices

Japan Medical Association Journal. 2015; 58: 1-9.
Journal of Seizon and Life Sciences. 2017; 27: 192-207.

Analysis

- Quantitative data: Descriptive analysis by using STATA version 13.
- Qualitative data: Text mining by using KH coder.



KH coder breaks sentences into pieces, lists frequent words and builds a diagram to show their relationships. We listed and focused on words used more than twice and categorized into major topics by referring to the diagram and context in original sentences.

Achievements toward training objectives

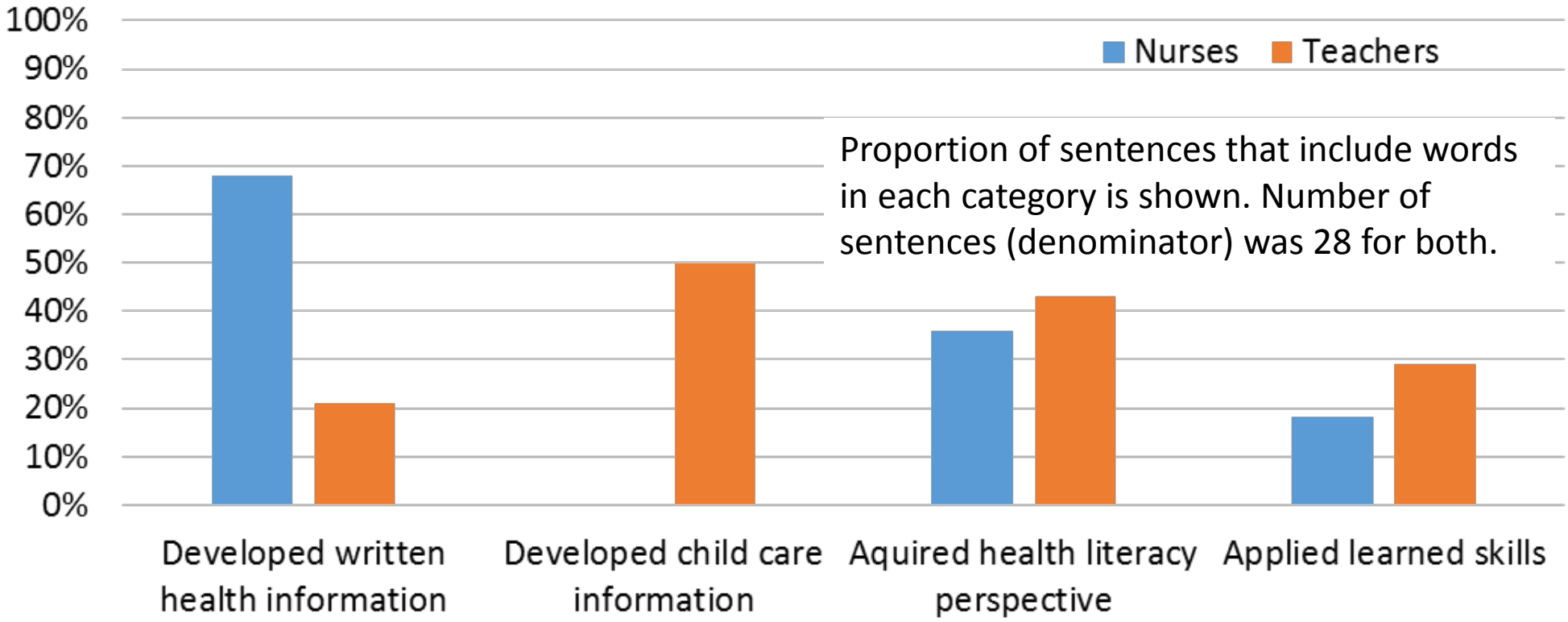
	TOTAL (N=57)	Nurses (N=31)	Teachers (N=26)
I applied learned skills in practice.	61%	68%	47%
I gained confidence in assessing in revising written materials.	27%	32%	45%
I want to attend further training.	68%	81%	54%
Selected knowledge items			
I can explain health literacy needs.	42%	65%	15%
I can explain numeracy levels.	9%	12%	4%
Selected assessment items			
I can use the Marker Method	47%	61%	29%
Selected development items			
I can write easy-to-read text.	44%	52%	35%
I can explain risk.	14%	16%	12%

Application and confidence

Nurses and teachers	Non-users (N=22)	Users (N=35)	P value
I gained confidence in assessing and revising written materials	32%	45%	0.02
I want to attend further training.	41%	86%	<0.001

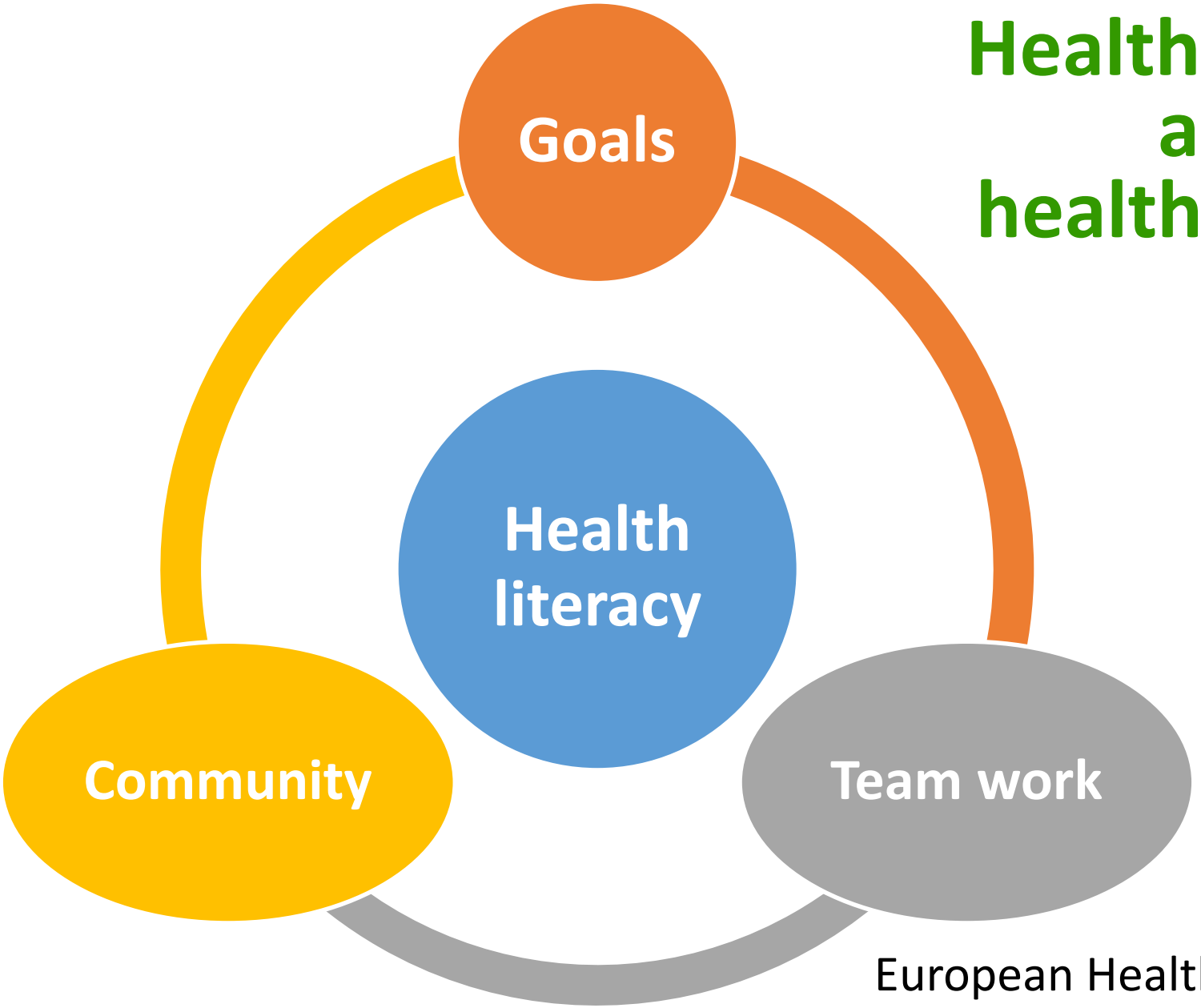
A five-ping Likert-scale ranging from highly disagree (1) to highly agree (5) was used. Those who answered 4 and 5 to the item “I applied learned skills in practice” was classified as users. Chi-square test was used.

Applications during the follow-up



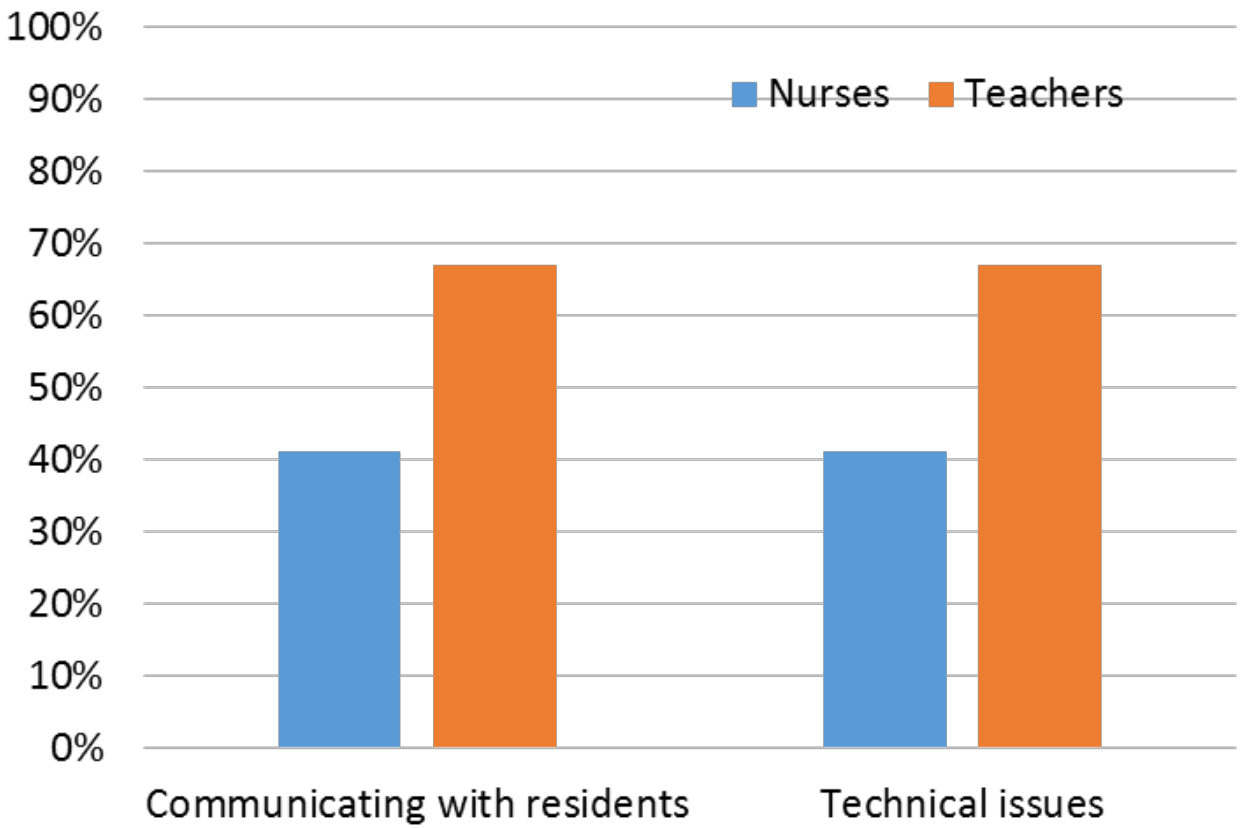
"Even among staff, we started circulating documents and getting signatures in addition to oral communication." (Nursery school teacher)

Health literacy and health system



European Health Psychologist. 2015; 17: 281-285.

Difficulties during the follow-up



Number of sentences (denominator) was 22 for nurses and 12 for teachers.

"How can we explain professional terms in a way that is understandable to villagers?"
(Public health nurse)

From findings to actions

- We therefore upgraded the workshop by developing a pocket-size “health literacy toolkit” that contained…

1. a glossary explaining radiation-related terms in plain language and
2. an index to measure the accessibility of both text and numerical information.

Development processes of the toolkit

HEALTH LITERACY TOOLKIT

Glossary	Assessment Index
▫ Selection of terms from a radiation lecture ▫ Categorization of terms	▫ Selection of the index (CDC's Clear Communication Index) ▫ Translation

STEP 1 Drafting tools

⇩

STEP 2 Revising tools

- Checking of the understandability and field applicability by nurses and a psychologist working in community.

⇩

STEP 3 Testing tools in practice

- Pilot distribution of printed copies of the two tools as a packaged kit
- The packaged kit was tested in a government project

3. 放射線に関する用語

よく使う用語	言い換え・説明
遺伝影響	ある人が受けた放射線の体への影響が、将来生まれる子どもに現れること
陰膳調査	実際の食事の放射線量を測る調査
汚染される	本来ないところに放射性物質があること
拡散	飛びちる、出る、広がる
確定的な影響	ある一定以上あびると多くの人に症状が出る
確率的な影響	あびればあびるほど症状がでやすい。あびる量が少なければ少ないほど病気になる可能性が小さくなる
過剰診断	見つける必要のない病気を見つけること
外部被ばく	体の外から放射線をあびること
基準（値）	食品中などの濃度を、ある一定レベル以下にするように、政策として決める値
空間線量(率)	空間にどれくらい放射線が飛び交っているか
結節	甲状腺にできる「しこり」、できものの一種
検出限界以下	放射性物質をはかる目盛りより量が小さく、あるかないか分からないほど少ない
現行	今の
甲状腺	のどぼとけの下のあたりにある、甲状腺ホルモンをつくる臓器。チョウ(蝶)くらいの大きさ
暫定	仮の、一時的な
しきい値	ここから下は良く分からないという値 (低い値から高い値に向かって) 影響が出はじめる値 (高い値から低い値に向かって) 自然の状態と比べて違いが分からなくなる値
自然放射線	自然界にもともとある放射性物質から出る放射線や、宇宙から飛んでくる放射線

米国疾病管理予防センター（CDC）発行

Clear Communication Index (CCI)
効果的なコミュニケーションの指標

日本語版作成：小泉沙織、Alden Y Lai、後藤あや

資 料 名

評価者名

評 価 日　　年　　月　　日

資料の対象者

対象者のヘルスリテラシーのレベルについて

※文章や数字の理解力だけでなく、意欲、注意力、その他の留意点についても考慮してください。例えば、どのレベルの言葉や数字に慣れているか、図に慣れているか、健康情報を読み慣れているかなど。対象者について良く知らない場合は、理解力が限られていると想定してください。

A 全ての資料に使える指標

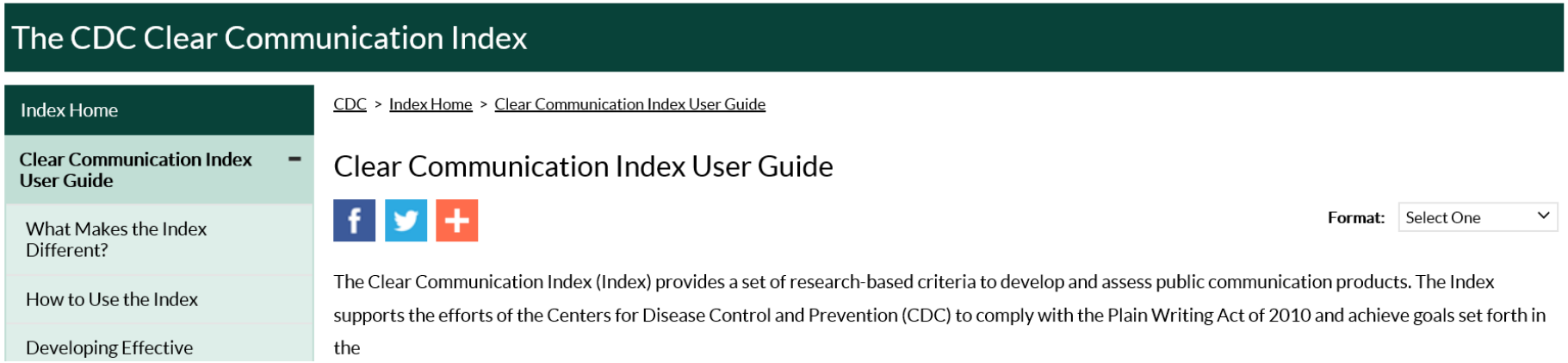
評価指標 内　容	点数
1 資料が伝えたい主なメッセージは一つですか? 想定している読者に向けた主なメッセージが、一つに絞れていない場合や、一番伝えたいことがはっきりしていない場合は、「いいえ」とお答えください。主なメッセージとは、簡潔に一番伝えたいことをまとめた１～３つの短い文章です。 ※質問１が「いいえ」の場合、質問２～４も全て「いいえ」とし、質問５に進んでください。	□はい　1 □いいえ 0
2 一番伝えたいメッセージが資料の上の方、はじめ、または表紙に書いてありますか? １枚だけの資料の場合、一番伝えたいメッセージが資料の4分の1より上にあれば、「はい」とお答えください。インターネット資料では、一番伝えたいメッセージがスクロールしなくても見えるなら、「はい」とお答えください。	□はい　1 □いいえ 0
3 一番伝えたいメッセージが視覚的に強調して書いてありますか? 一番伝えたいメッセージが、フォント、色、形、線、矢印、見出し(例「知っておくべきこと」)などによって強調されているなら、「はい」とお答えください。	□はい　1 □いいえ 0
4 一番伝えたいメッセージについての視覚資料が使われていますか? 写真、絵、図などが使われていますか。それらに表題や説明がついてなければ「いいえ」とお答えください。推奨している行動と関係のない人物像が示されている場合も「いいえ」と答えてください。	□はい　1 □いいえ 0

Sample radiation-related term in the glossary

Words	Definition and explanation
Threshold	The value under which effect is uncertain. From lower to higher value: The point where effect appears. From higher to lower value: The point where effect becomes unclear.

Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

https://www.cdc.gov/ccindex/tool/index.html



Future direction

- The major limitation of the present work is that it still lacks an assessment of effects of training on accessibility of information from a community perspective.
- We will incorporate the formative assessment and revision of the toolkit into the workshop activities.

Acknowledgement

- This project was supported in part by the research grants of Fukushima Labor and Health Center, Institute of Seizon and Life Sciences, and JSPS KAKENHI (No. 16K09135).
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- Project team includes Rima E Rudd (Harvard University) and Alden Y Lai (Johns Hopkins University) who have provided continuous invaluable contribution bringing in international perspectives.