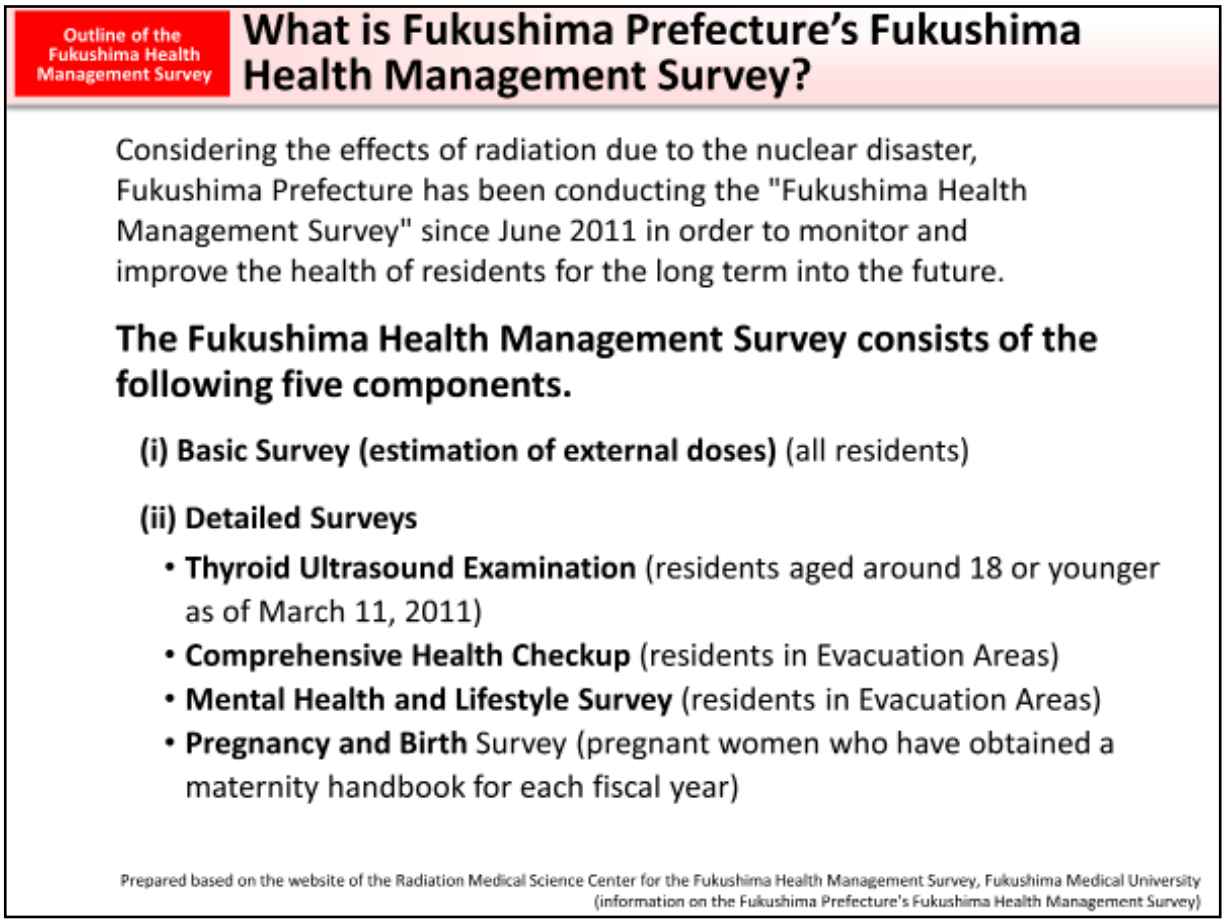


In the aftermath of the diffusion of radioactive materials from the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS, subsequent evacuations and such, the "Fukushima Health Management Survey" was commenced in Fukushima Prefecture, aiming to improve and maintain the health of the residents of the prefecture into the future by means of understanding their health conditions and linking such data to the prevention and early detection and treatment of diseases, while assessing their radiation doses.

Within the Fukushima Health Management Survey, the Basic Survey was offered to all residents of Fukushima Prefecture to ascertain their external doses during the four months following the accident at the NPS, and the Thyroid Ultrasound Examination has been conducted for all residents who were around 18 years old or younger at the time of the accident. The Comprehensive Health Checkup to ascertain physical health conditions and the Mental Health and Lifestyle Survey to ascertain mental health conditions have also been conducted for approximately 210,000 people who were residing in areas designated for evacuation after the accident. Furthermore, the Pregnancy and Birth Survey has been conducted for pregnant women who obtained a maternity handbook within Fukushima Prefecture and those who obtained a maternity handbook somewhere else but gave birth in the prefecture.

Included in this reference material on March 31, 2013
Updated on March 31, 2019

Outline of the Fukushima Health Management Survey

Fukushima Health Management Survey (Survey Promotion System)

[Purpose of the Survey]

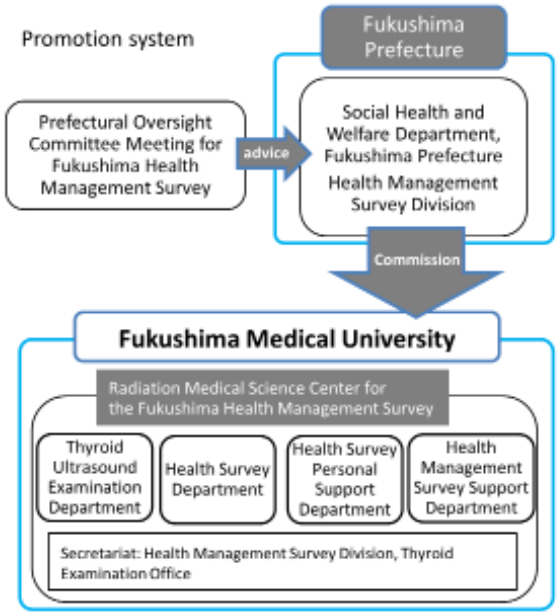
Considering the effects of radiation due to the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS, Fukushima Prefecture has commissioned Fukushima Medical University to conduct the "Fukushima Health Management Survey" for all residents of the prefecture in order to monitor and improve their health for the long term and ensure their safety and peace of mind.

By continuously conducting surveys and health checkups, the Survey aims to achieve the prevention and early detection and treatment of diseases and improve the health of residents into the future, while developing better systems for research, education and medical services.

[Promotion system]

With advice, etc. from qualified individuals comprising the Prefectural Oversight Committee Meeting for Fukushima Health Management Survey, Fukushima Prefecture and Fukushima Medical University have been jointly conducting the Survey.

Fukushima Medical University established the Radiation Medical Science Center for the Fukushima Health Management Survey in September 2011.

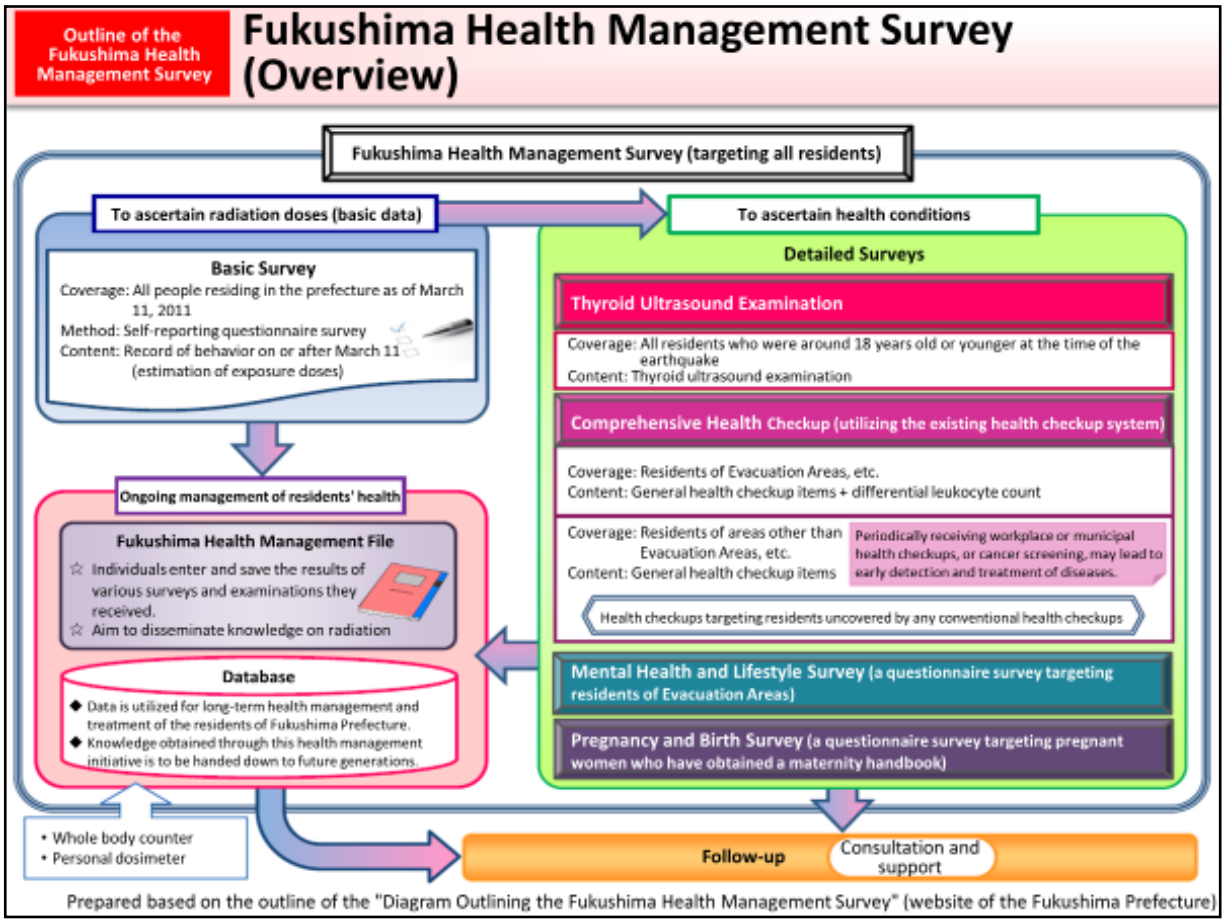


Prepared based on the "Fukushima Health Management Survey, Fukushima Prefecture" (website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University)

The Fukushima Health Management Survey is being carried out by Fukushima Medical University under commission from Fukushima Prefecture, which serves as the responsible entity. Fukushima Medical University established the Radiation Medical Science Center for the Fukushima Health Management Survey to carry out the Survey.

Fukushima Prefecture set up the Prefectural Oversight Committee Meeting for Fukushima Health Management Survey with the aim of obtaining advice on the Fukushima Health Management Survey from a broad panel of experts.

Included in this reference material on March 31, 2015
Updated on March 31, 2022



The Fukushima Health Management Survey is broadly divided into the Basic Survey and Detailed Surveys.

The Basic Survey was conducted for the purpose of estimating residents' external doses for the four months after the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS based on their behavioral records and obtaining data that is to serve as the basis for monitoring and protecting their health into the future.

The Detailed Surveys are to ascertain residents' present health conditions, as follows:

The first is the Thyroid Ultrasound Examination for all residents who were around 18 years old or younger as of March 11, 2011. As cases of thyroid cancer increased among children after the Chornobyl NPS Accident, this examination aims to ascertain children's thyroid status and promote their health for the long term.

The second is the Comprehensive Health Checkup for people who used to reside in Evacuation Areas, being conducted with the aim of achieving the prevention, early detection, and treatment of lifestyle-related diseases that may be caused by changes in their living circumstances.

The third is the Mental Health and Lifestyle Survey, which is also conducted for people from Evacuation Areas. This is for offering support to the affected people to ease anxiety caused by the Great East Japan Earthquake and the accident at the NPS.

The fourth is the Pregnancy and Birth Survey targeting pregnant women who have worries over various things including radiation fears in relation to childbirth and child rearing.

Fukushima Prefecture compiles all data into a centralized database for the long-term utilization of accumulated knowledge.

Included in this reference material on March 31, 2013
Updated on March 31, 2022

Basic Survey

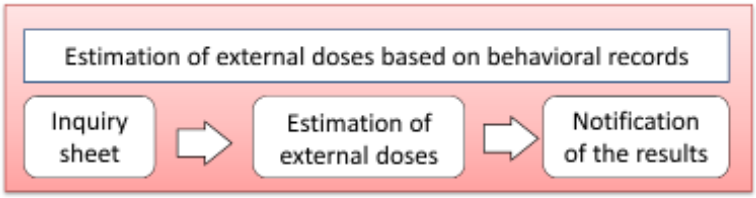
Basic Survey: Purpose

A survey to obtain data that is to serve as the basis for monitoring and protecting residents' health

In order to estimate external doses, individuals were asked to keep and submit a record of their behavior.

Based on collected behavioral records for the four months from March 11 to July 11, 2011, each individual's external dose was estimated using the External Dose Estimation System developed by the National Institute of Radiological Sciences.

[Survey scheme]



Estimated results and the period for estimation are reported to participating individuals to let them know their own external doses, and at the same time, the obtained data are utilized in the Detailed Surveys and individuals' health management to be continued for the long term.

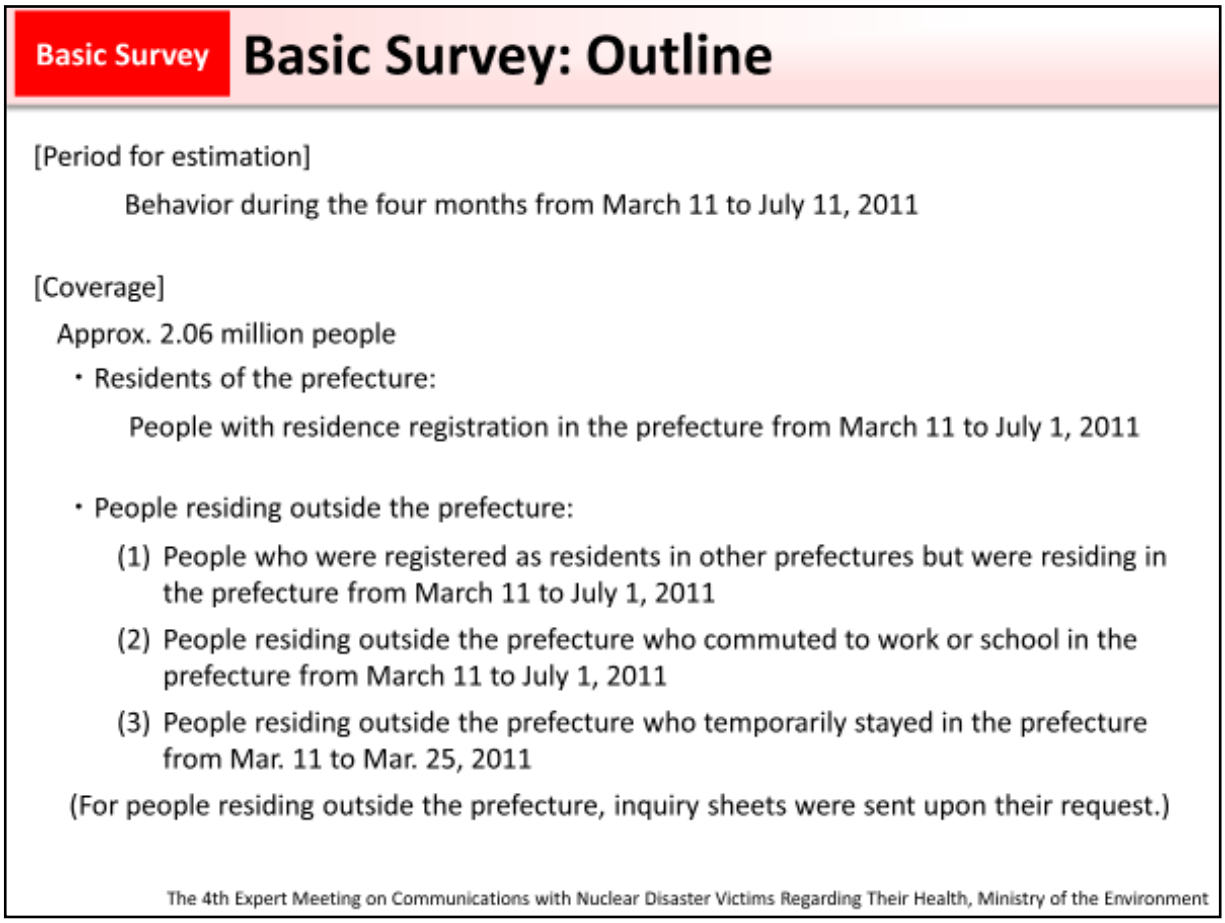
Prepared based on the 4th Expert Meeting on Communications with Nuclear Disaster Victims Regarding Their Health, Ministry of the Environment

The Basic Survey was commenced for the purpose of estimating the level of external doses of the residents of Fukushima Prefecture based on the records of their behavior, informing them of the estimation results individually, and thereby promoting and maintaining the health of the prefectural residents, in light of the effect of radiation due to the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS, which occurred following the Great East Japan Earthquake.

Specifically, inquiry sheets were delivered to the applicable residents to ask them to record their behavior during the four months after the accident. Based on the behavioral records entered in the inquiry sheets, individuals' external doses were estimated using a program developed by the National Institute of Radiological Sciences. The four months after the accident, which is the targeted period of the Basic Survey, is the period during which ambient dose rates were the highest, and it is most important to determine people's external doses during this period.

Individuals' estimated external doses were compiled and statistically processed, and have been utilized for analyzing radiation exposure and its health effects in Fukushima Prefecture.

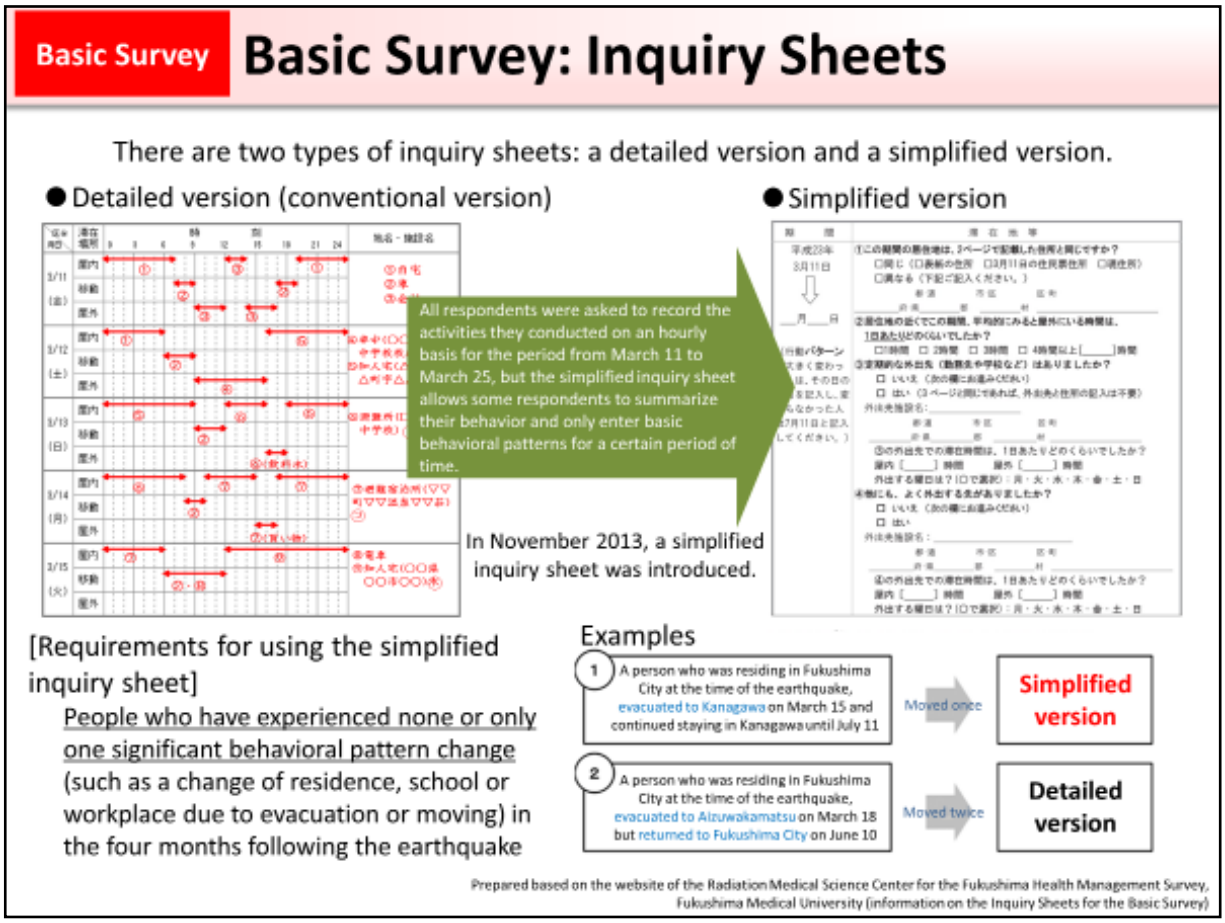
Included in this reference material on March 31, 2013
Updated on March 31, 2020



The period for surveying behavioral records was the four months from March 11 to July 11, 2011.

The Basic Survey covered approx. 2.06 million people who were registered as residents of the prefecture at the time of the earthquake. People registered as residents in other prefectures were also covered if they resided, commuted to work or school, or temporarily stayed in the prefecture during this period.

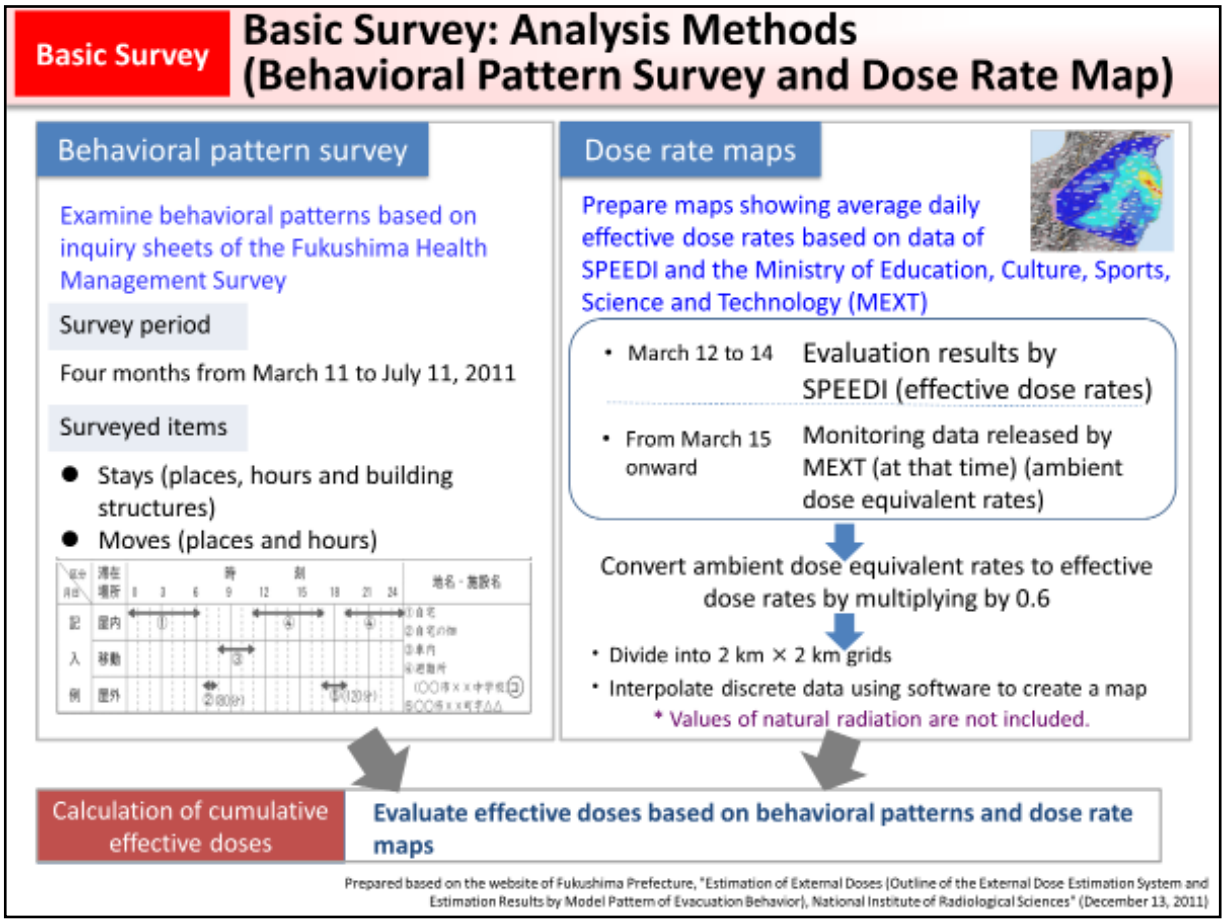
Included in this reference material on March 31, 2013
Updated on March 31, 2019



The inquiry sheet for the Basic Survey requires respondents to record the activities they conducted on an hourly basis for the period from March 11 to March 25. In response to complaints concerning the difficulty in filling in the sheet, a simplified version was introduced in November 2013.

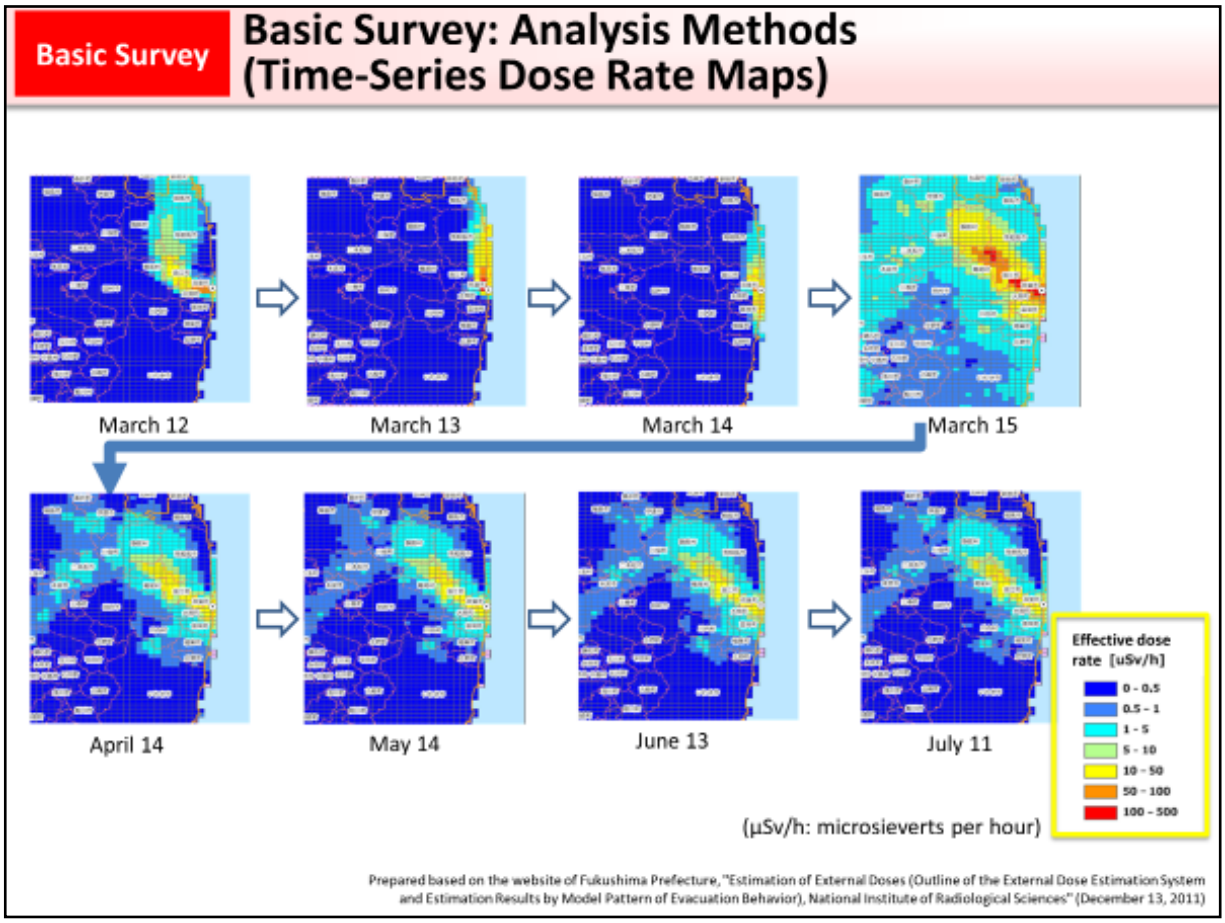
However, in order to maintain the accuracy of the survey, the simplified inquiry sheet may be used only by those who have experienced none or only one significant change in their living place due to evacuation or moving, etc. in the four months following the earthquake.

Included in this reference material on March 31, 2013
Updated on March 31, 2019



In the Basic Survey, external doses were evaluated combining the results of the behavioral pattern survey and the created dose rate maps. The evaluation was conducted based on dose rate maps and behavioral records entered by respondents, such as where and how long they stayed in buildings, and the type of buildings where they stayed, during the survey period.

Included in this reference material on March 31, 2013
Updated on March 31, 2019



Dose rate maps used here are the monitoring data released by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) (at that time).[1]

1. For the three days from March 12 to March 14, which are included in the period (March 12 to March 15, 2011) during which the monitoring data released by MEXT (at that time) is not available, calculation results by SPEEDI (System for Prediction of Environmental Emergency Dose Information) using the data on radioactive material discharge released by the Nuclear and Industrial Safety Agency (at that time) in June 2011 were applied. Data for March 15 was assumed to be the same as that for March 16, and from March 16 onward, the monitoring data released by MEXT (at that time) was used.

Included in this reference material on March 31, 2013
Updated on March 31, 2019

Basic Survey: Obtained Responses and Their Representativeness

The response rate was 27.7% for the entire Fukushima Prefecture.
However, as a result of the examination on the representativeness, the dose distribution based on the responses obtained so far in the seven districts in the prefecture was found to be unbiased and to properly represent that of respective districts.

Table 1

Responses to the Basic Survey

As of March 31, 2022

Coverage		2,055,236	
Number of responses	Detailed version	493,938	24.0%
	Simplified version	75,250	3.7%
	Total	569,188	27.7%

* Response rates are rounded off for each category.

Table 2

Response rate by age group

As of March 31, 2022

Age group	0~9	10~19	20~29	30~39	40~49	50~59	60~	Total
Response rate	46.7%	36.3%	18.2%	24.8%	22.5%	23.0%	27.9%	27.7%

* Rates (%) are rounded off.

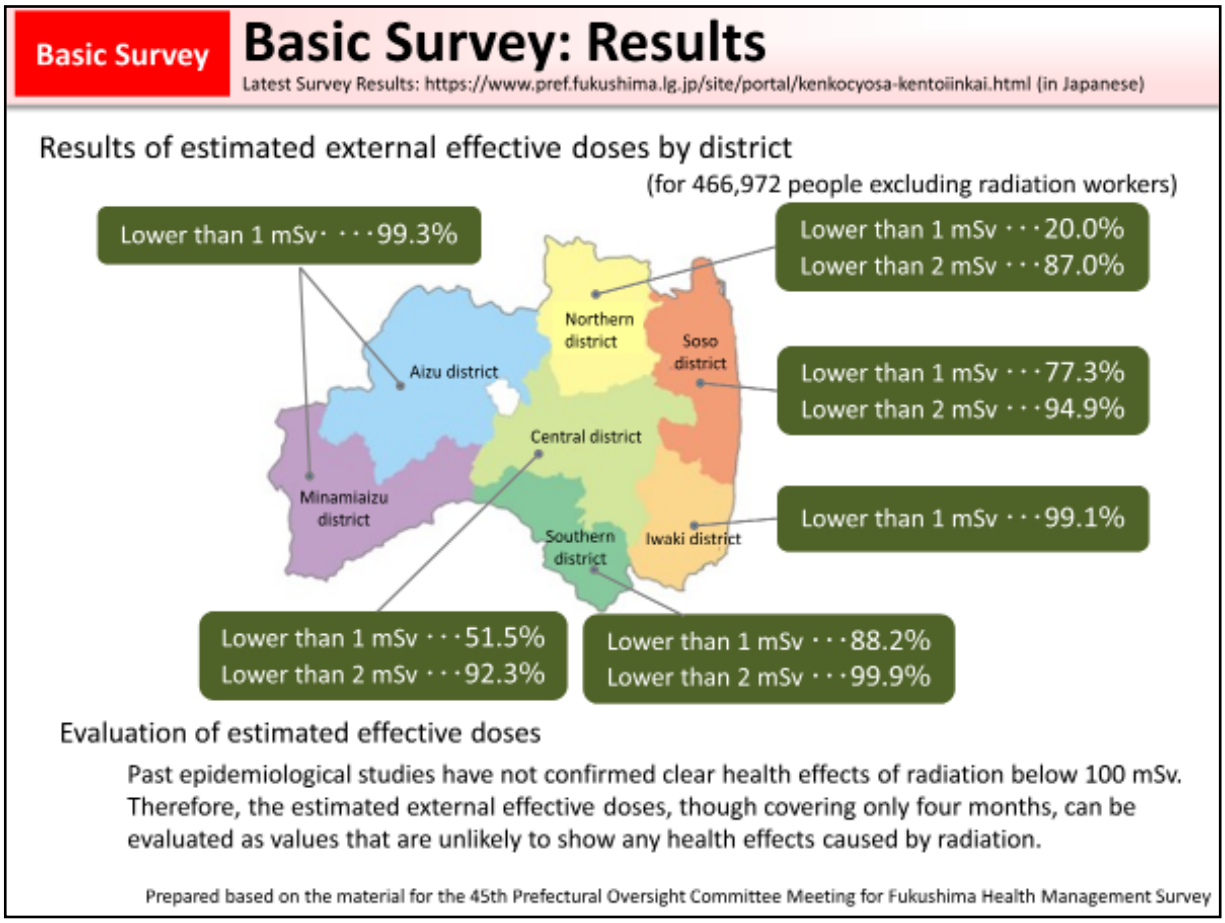
Prepared based on the material for the 45th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

Approx. 569,188 people have responded so far (response rate: 27.7%).

In light of the fact that the response rate of the Basic Survey had remained unchanged at around 27%, an examination on the representativeness of the dose distribution was conducted in FY2015. As a result of the examination, the dose distribution based on the responses obtained so far in the seven districts in the prefecture was found to be unbiased and to properly represent that of respective districts.

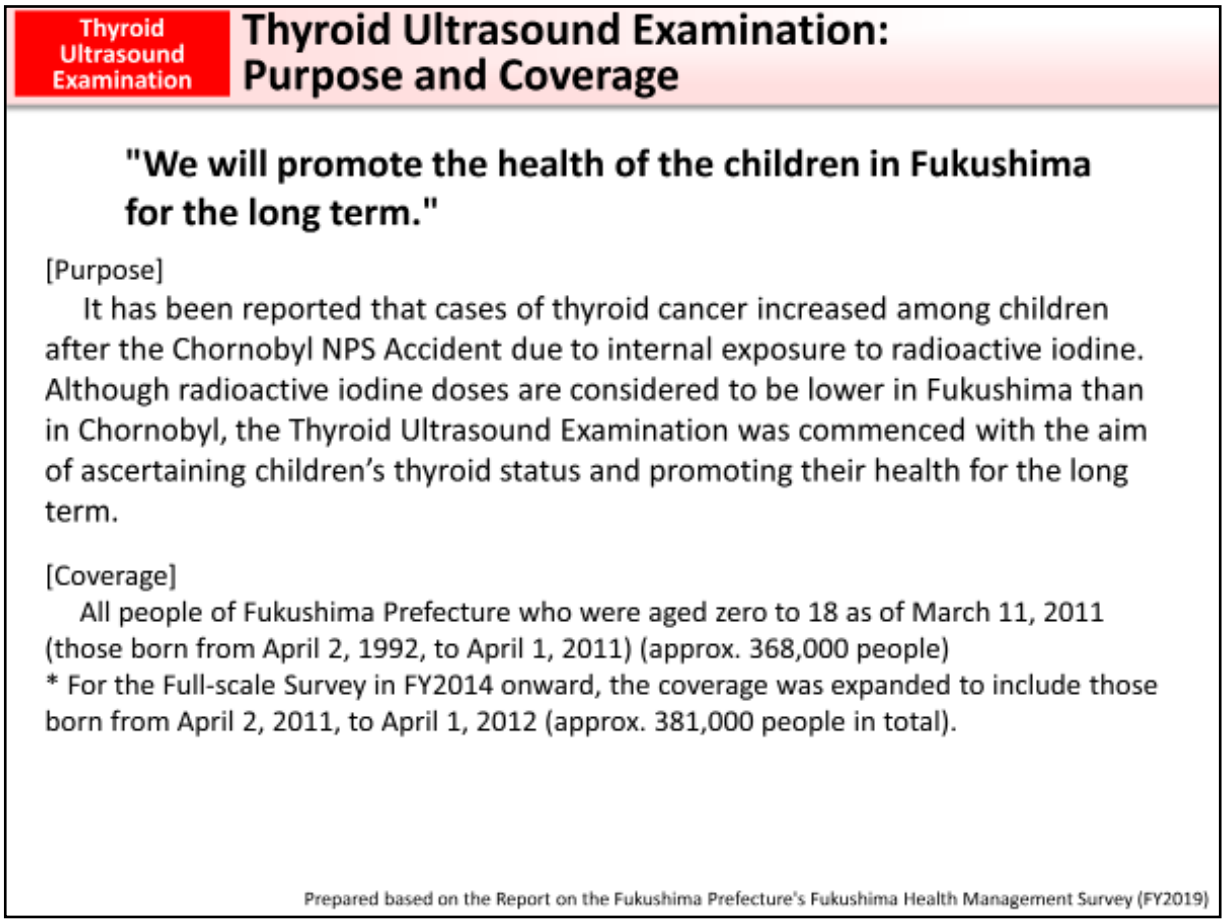
See the following website for details:
https://www.pref.fukushima.lg.jp/uploaded/attachment/529182.pdf (in Japanese)

Included in this reference material on March 31, 2013
Updated on March 31, 2023



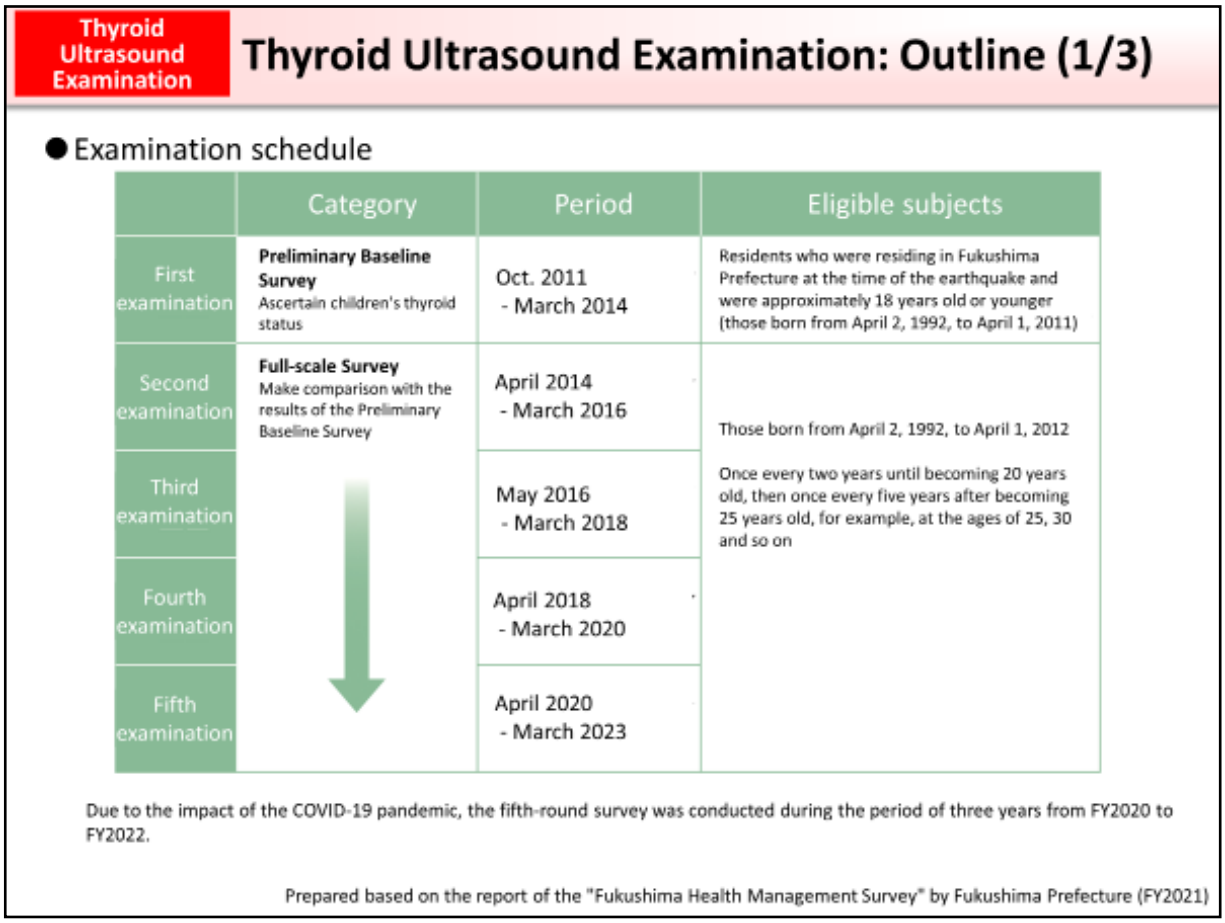
Out of a total of 554,929 people for whom external effective doses have been estimated by March 31, 2022, a total of 476,189 people submitted records of their behavior for the entirety of the four-month period for estimation. The figure above shows the estimation results of 466,972 people, excluding those who had engaged in radiation work, by district. As shown in the figure, people for whom estimated external effective doses were lower than 1 mSv accounted for 88.2% in the southern district, 99.3% in the Aizu and Minamiaizu districts, 77.3% in the Soso district, and 99.1% in the Iwaki district. The maximum value was 25 mSv estimated for a person residing in the Soso district.

Included in this reference material on March 31, 2013
Updated on March 31, 2023



It has been reported that cases of thyroid cancer increased among children after the Chornobyl NPS Accident due to internal exposure to radioactive iodine. Compared with the Chornobyl NPS Accident, the amount of radioactive materials discharged into the environment after the accident in Fukushima was much smaller, and estimated internal and external doses of the residents were even smaller. Therefore, it is predicted that there would be no epidemiologically detectable thyroid health risks (p.141 of Vol. 1, “Evaluation of the Interim Report on Thyroid Cancer Compiled by the Expert Meeting on Health Management After the TEPCO’s Fukushima Daiichi NPS Accident”). However, as concerns remain about effects of radiation due to the accident on children’s thyroid glands, the Thyroid Ultrasound Examination has been continued under the framework of the Fukushima Health Management Survey with the aim of ascertaining children’s thyroid status and promoting their health into the future.

Included in this reference material on March 31, 2013
Updated on March 31, 2021



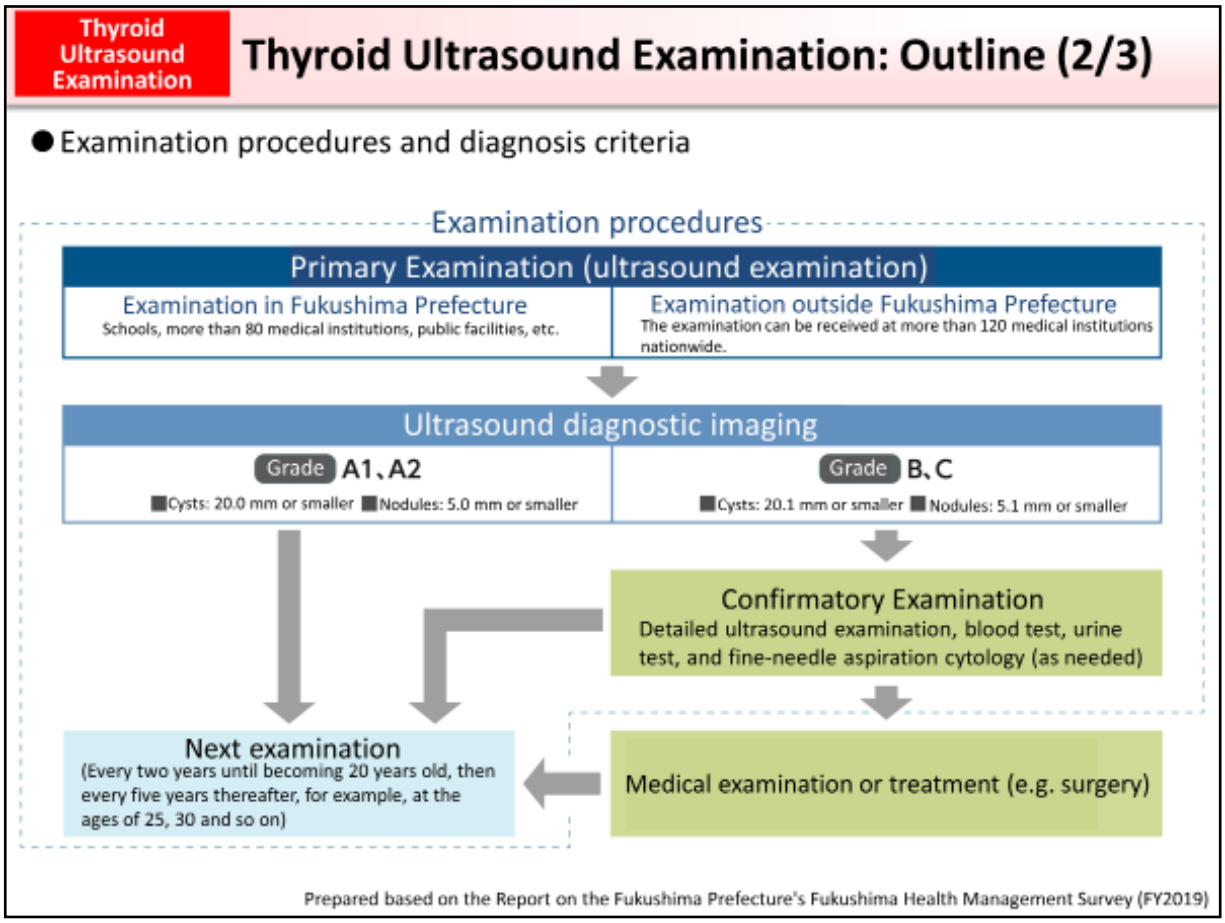
Even though radiation effects are unlikely to be detected, ascertaining the current thyroid status of the relevant group of people is very important in order to monitor and support health for the long term. Therefore, the Thyroid Ultrasound Examination was conducted for all children in Fukushima Prefecture after the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS over a period of approximately two and a half years from October 2011 (Preliminary Baseline Survey).

Then, in FY2014, the coverage was expanded to include those born from April 2, 2011, to April 1, 2012, and the Full-scale Survey was conducted as the second-round survey.

From the third-round survey onward, the participants receive examinations once every two years until they become 20 years old and once every five years thereafter.

Due to the impact of the COVID-19 pandemic, the fifth-round survey was conducted during the period of three years from FY2020 to FY2022.

Included in this reference material on March 31, 2013
Updated on March 31, 2023



The Primary Examination checks whether there are any nodules or cysts and measures the sizes thereof, if any. The Confirmatory Examination is recommended to those who are considered to require a more detailed examination.

In the Confirmatory Examination, a more accurate ultrasound examination, plus blood and urine tests are conducted, and fine-needle aspiration cytology is also conducted when a doctor considers it necessary.

The Thyroid Ultrasound Examination is completed at this point.

Then, individuals who are found to require treatment receive it from their regular healthcare provider, under the relevant medical insurance system.

Included in this reference material on March 31, 2016
Updated on March 31, 2021

Thyroid Ultrasound Examination

Thyroid Ultrasound Examination: Outline (3/3)

● Content of the examination

[Primary Examination]

An ultrasound examination assesses whether there are any nodules or cysts. The examination ordinarily finishes in three to five minutes with no pain involved.

The diagnosis panel, consisting of medical specialists, reviews the ultrasound images and makes diagnoses. The examination results are sent by post, but explanations are given at the examination venues or by phone upon examinees' requests.

[Confirmatory Examination]

When a more detailed examination is found to be necessary as a result of the Primary Examination, the Confirmatory Examination is conducted for the relevant person.
In the Confirmatory Examination, another ultrasound examination, plus blood and urine tests are conducted.

If a doctor considers it necessary as a result of these tests, fine-needle aspiration cytology of the thyroid may also be performed and interpreted.

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University (information on the Thyroid Ultrasound Examination, FAQs)

An ultrasound examination is conducted with an examinee lying on his/her back. A doctor places an ultrasonic probe with jelly on its tip over the examinee's thyroid (located around the base of the neck) and examines whether there are any cysts or nodules while moving the probe over the examinee's skin.

The examination ordinarily finishes in three to five minutes with no pain involved.

Definitive diagnoses from the Primary Examination are not made at the venues. In order to make comprehensive and objective judgments, ultrasound images are later reviewed by a panel of medical specialists. This is to ensure a consistently high level of diagnostic accuracy throughout the Fukushima Health Management Survey.

The sizes of nodules and cysts mentioned above are reference values for making diagnoses. If any nodules or cysts found in ultrasound images are suspected to be malignant, the case is designated as Grade B irrespective of the sizes of the nodules or cysts and the Confirmatory Examination is recommended.

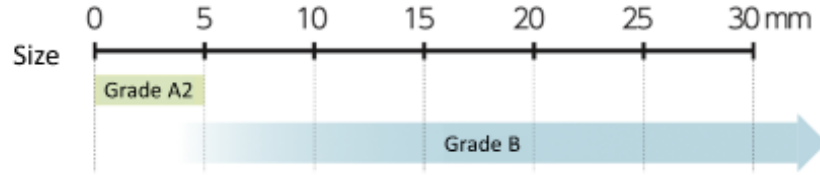
In the Confirmatory Examination, a more accurate ultrasound examination, plus blood and urine tests, are conducted. If, as a result of these tests, a doctor considers it necessary, fine-needle aspiration cytology, an examination of a sample tissue taken from the person's thyroid, may also be conducted.

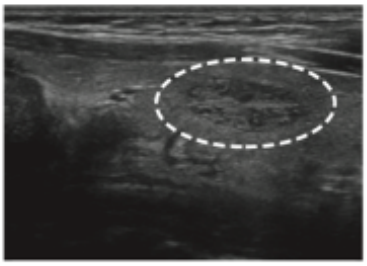
Included in this reference material on March 31, 2016
Updated on March 31, 2019

Thyroid Ultrasound Examination

Thyroid Ultrasound Examination: Nodules

A nodule, which might also be called a lump, is an irregular density of thyroid cells.





Nodules

* The part circled with a dotted line is a nodule.

- Nodules may be benign or malignant (cancerous), and most are benign. Even if a detected nodule is 5.0 mm or smaller, if the Confirmatory Examination is considered to be necessary, the diagnosis is Grade B.
- It has been widely known that many cases of thyroid cancer are occult (latent), showing no symptoms or health effects over a lifetime. Occult thyroid cancer is 5.0 mm or smaller in most cases and it is considered to be disadvantageous for patients to detect and treat them. Accordingly, it is generally recommended not to conduct a detailed examination, such as cytological testing, for nodules of 5.0 mm or smaller.
- Therefore, in the Thyroid Ultrasound Examination conducted through the Fukushima Health Management Survey, the Confirmatory Examination is not performed for nodules of 5.0 mm or smaller; instead, an ultrasound examination (Primary Examination) is to be conducted in 2 to 5 years.

Prepared based on the Report on the Fukushima Prefecture's Fukushima Health Management Survey (FY2019)

A nodule, which might also be called a lump, is a thyroid cell with irregular density. Some nodules are malignant, but most are benign.

It has been known that thyroid cancer is often latent, presenting no symptoms or health effects over a lifetime. Thus, detecting all cancers and forcing patients to receive treatment may be sometimes rather disadvantageous, so a detailed examination, such as cytological testing, is not generally conducted for small nodules. In the Thyroid Ultrasound Examination conducted through the Fukushima Health Management Survey, the Confirmatory Examination is not performed for nodules of 5 mm or smaller; instead, the next regularly scheduled ultrasound examination (Primary Examination) is to be conducted.

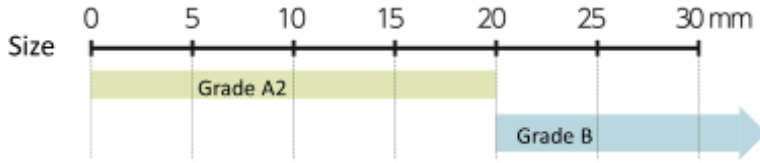
In some cases, a person once diagnosed as Grade A1 is diagnosed as Grade A2 or Grade B in the next examination, or conversely, a person once diagnosed as Grade A2 is subsequently diagnosed as Grade A1.

Included in this reference material on March 31, 2013
Updated on March 31, 2021

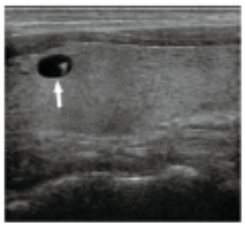
Thyroid Ultrasound Examination

Thyroid Ultrasound Examination: Cysts

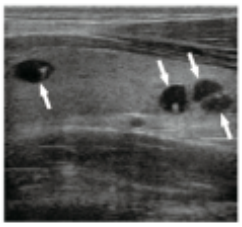
A cyst, which resembles a bag filled with fluid, is generally benign, and is often found even in healthy people



Cysts are generally benign, but those of 20 mm or larger may cause a feeling of pressure in the throat and fluid in a cyst is sometimes withdrawn.



Single cyst



Multiple cysts

* The parts pointed with arrows are cysts.

- A cyst, which resembles a bag filled with fluid, is benign, and is often found even in healthy people.
- Cysts often change in size or number, and many people have multiple cysts.
- Examinations so far revealed that cysts are seldom found in infants and young children but are found more often in elementary, junior high, and high school students.

Prepared based on the Report on the Fukushima Prefecture's Fukushima Health Management Survey (FY2021)

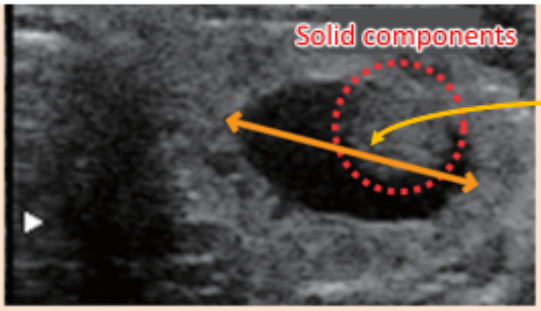
Cysts identified in the Thyroid Ultrasound Examination being conducted in Fukushima Prefecture are considered benign, consisting only of fluid and containing no cells. They are often found even in healthy people, especially among primary and secondary school students. Therefore, repeated examinations often find cysts as children grow up.

Included in this reference material on March 31, 2013
Updated on March 31, 2023

Thyroid Ultrasound Examination

Thyroid Ultrasound Examination: Handling of Cysts with Solid Components

Cysts with solid components are all judged as nodules.



Measure the entirety of a nodule

When the maximum size of a nodule with solid and cystic components (the length of the orange arrow) is 5.1 mm or larger, the examinee is diagnosed as Grade B.

- "Cysts with solid components," which are cysts containing nodules inside, are all evaluated as nodules in this examination.
- In such case, not the size of a nodule inside but the maximum size of a cyst with the nodule is recorded. For example, when a 3 mm-nodule is found in a 30 mm-cyst, the relevant examinee is judged to have a 30 mm-nodule and is diagnosed as Grade B (as the size exceeds 5.1 mm).

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University (information on the Thyroid Ultrasound Examination, FAQs)

Some cysts contain nodules. In the Thyroid Ultrasound Examination conducted in the Fukushima Health Management Survey, those cysts with solid components (nodules) are all judged as nodules and diagnosis criteria for nodules are applied.

For example, a 30 mm-cystic lesion with a 3 mm-solid component is judged as a nodule and diagnosis criteria for nodules are applied. As the size is larger than 5.1 mm, the examinee is diagnosed as Grade B and is advised to receive the Confirmatory Examination.

Lesions judged as fluid-only cysts are considered to be benign.

(Related to p.132 of Vol. 2, “Thyroid Ultrasound Examination: Cysts”)

Included in this reference material on March 31, 2016
Updated on March 31, 2022

Thyroid Ultrasound Examination

Thyroid Ultrasound Examination: System for Examinations in and outside Fukushima

Expansion of available institutions and system for implementing examinations in Fukushima Prefecture

Efforts have been continued to increase the number of institutions in Fukushima Prefecture and to enhance system for implementing examinations in order to reduce the number of people who cannot receive the examination due to various reasons.

Expansion of institutions for implementing examinations outside Fukushima Prefecture

Efforts have been continued to increase institutions so that people can receive the examination even outside the prefecture.

The examination can be received at more than 120 medical institutions nationwide.

In order to receive the Thyroid Ultrasound Examination, you need to make a reservation in advance with the Radiation Medical Science Center for the Fukushima Health Management Survey.

Provision of explanation booths

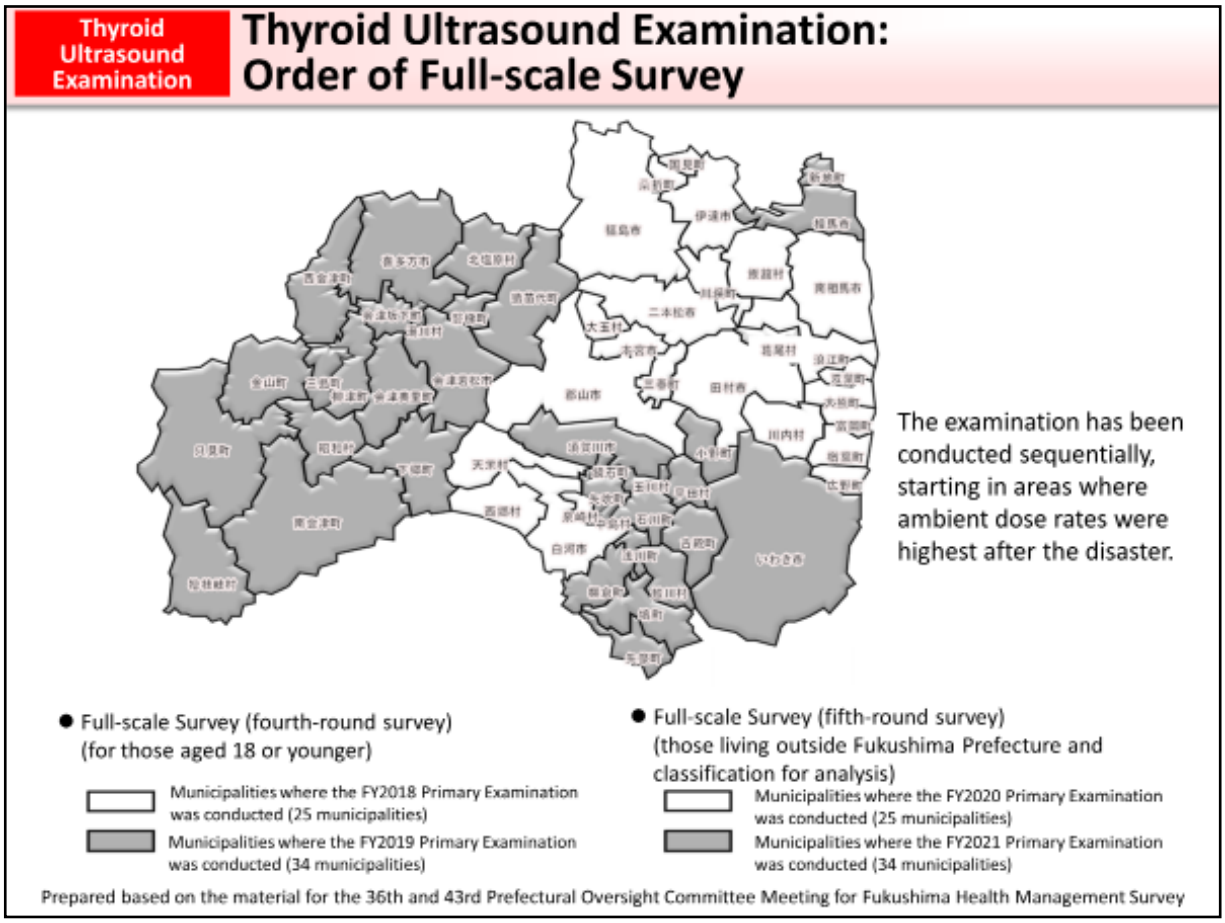
Since July 2015, booths have been set up at examination venues in public facilities, etc. for providing examinees with explanations on examination results. Physicians explain provisional examination results available on the day using ultrasound images.

When explanation booths cannot be set up at the examination venue or for examination performed in some venues such as schools, telephone consultation services are provided instead.

Prepared based on the Fukushima Health Management Survey Reports (2018 and 2019)

The Thyroid Ultrasound Examination is conducted in collaboration between Fukushima Medical University and medical institutions in and outside Fukushima Prefecture. For more convenience to residents of the prefecture, efforts have been made to increase venues and opportunities with the aim of promoting the health of the residents in Fukushima Prefecture for the long term.

Included in this reference material on March 31, 2015
Updated on March 31, 2021



The Thyroid Ultrasound Examination has been conducted sequentially, starting in areas where ambient dose rates were higher at the time of the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS.

For Full-scale Surveys following the Preliminary Baseline Survey, notices of the examination have been sent mostly in the same order.

Since the Full-scale Survey (fourth-round survey), the examination has been conducted mostly in the same order for those aged 18 or younger. However, for those aged 19 or older, the examination has been conducted not by region but by age (school year). In FY2018, those born in FY1996 (aged 22) and born in FY1998 (aged 20) were examined, and in FY2019, those born in FY1997 (aged 22) and born in FY1999 (aged 20) were examined.

Since FY2017, the examination has been conducted for those who become 25 years old in the relevant year, and then once every five years thereafter.

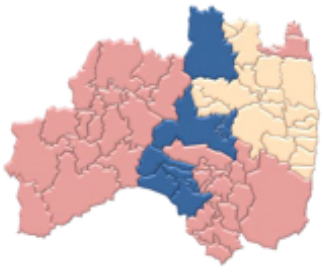
Due to the impact of the COVID-19 pandemic, the Full-scale Survey (fifth-round survey) was decided to be carried out in three years. As originally planned, notices of the examination were sent to examination targets living outside Fukushima Prefecture in FY2020 and FY2021, and the examination may be received until the end of FY2022.

Included in this reference material on March 31, 2015
Updated on March 31, 2022

Thyroid Ultrasound Examination

Order of Implementing the Full-scale Survey (Fifth-round Survey) of the Thyroid Ultrasound Examination (within Fukushima Prefecture)

- Full-scale Survey (fifth-round survey):
  At elementary schools and junior high schools in Fukushima Prefecture



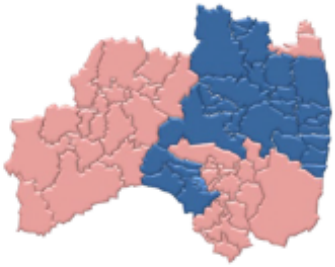
Municipalities where the Primary Examination was conducted in FY2020 (18 municipalities)

Municipalities where the Primary Examination was conducted in FY2021 (7 municipalities)

Municipalities where the Primary Examination was conducted in FY2022 (34 municipalities)

* Due to the impact of the COVID-19 pandemic, the survey at elementary schools and junior high schools for FY2020 was commenced in September 2020.

- Full-scale Survey (fifth-round survey): At high schools in Fukushima Prefecture



Municipalities where the Primary Examination was conducted in FY2021 (25 municipalities)

Municipalities where the Primary Examination was conducted in FY2022 (34 municipalities)

Prepared based on materials for the 43rd Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

Due to the impact of the COVID-19 pandemic, the Full-scale Survey (fifth-round survey) was decided to be carried out in three years. The survey at elementary schools and junior high schools for FY2020 was commenced in September 2020 and has been conducted from FY2020 through to FY2022. The survey at high schools in Fukushima Prefecture is planned to be conducted in FY2021 and FY2022. For students who graduate high schools in the fiscal year preceding the survey year, notices for examinations in public facilities or other institutions implementing examinations are sent.

Included in this reference material on March 31, 2022

Thyroid Ultrasound Examination

Thyroid Ultrasound Examination: Results of the Preliminary Baseline Survey

Latest Examination Results: https://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

● Results of the Primary Examination

	Number of eligible subjects (people)	Number of examinees (people)		Diagnosis rate (%)	Number of those diagnosed (people)			
					Breakdown by grade (%)			
		Examination rate (%)	Examinees from outside of the prefecture		A		Those recommended to take the Confirmatory Examination	
					A 1	A 2	B	C
Total	367,637	300,472 (81.7)	9,511	300,472 (100.0)	154,605(51.5)	143,573 (47.8)	2,293(0.8)	1 (0.0)

Grade A : 99.2%

● Results of the Confirmatory Examination

	Number of eligible subjects (people)	Number of examinees (people) / Examination rate (%)	Rate of definitive diagnosis (%)	Number of those who received a definitive diagnosis (people)			
				For next examination		For regular healthcare program, etc.	
				A 1	A 2		Those who received fine-needle aspiration cytology
Total	2,293	2,130 (92.9)	2,091 (98.2)	132 (6.3)	579 (27.7)	1,380 (66.0)	547 (39.6)

● Results of the fine-needle aspiration cytology

Malignant or suspicious for malignancy: 116 people; 39 males and 77 females
Average age: 17.3 ± 2.7 years old (8 to 22 years old); At the time of the earthquake: 14.9 ± 2.6 years old (6 to 18 years old)
Average tumor size: 13.9 ± 7.8 mm (5.1 to 45.0 mm)

● Out of 116 people whose tumors were diagnosed as malignant or suspicious for malignancy, 102 received surgery (benign nodule: 1; papillary cancer: 100; poorly differentiated cancer: 1).

Prepared based on the material for the 31st Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

These are the results of the Preliminary Baseline Survey, which was the very first Thyroid Ultrasound Examination (FY2011 to FY2013).

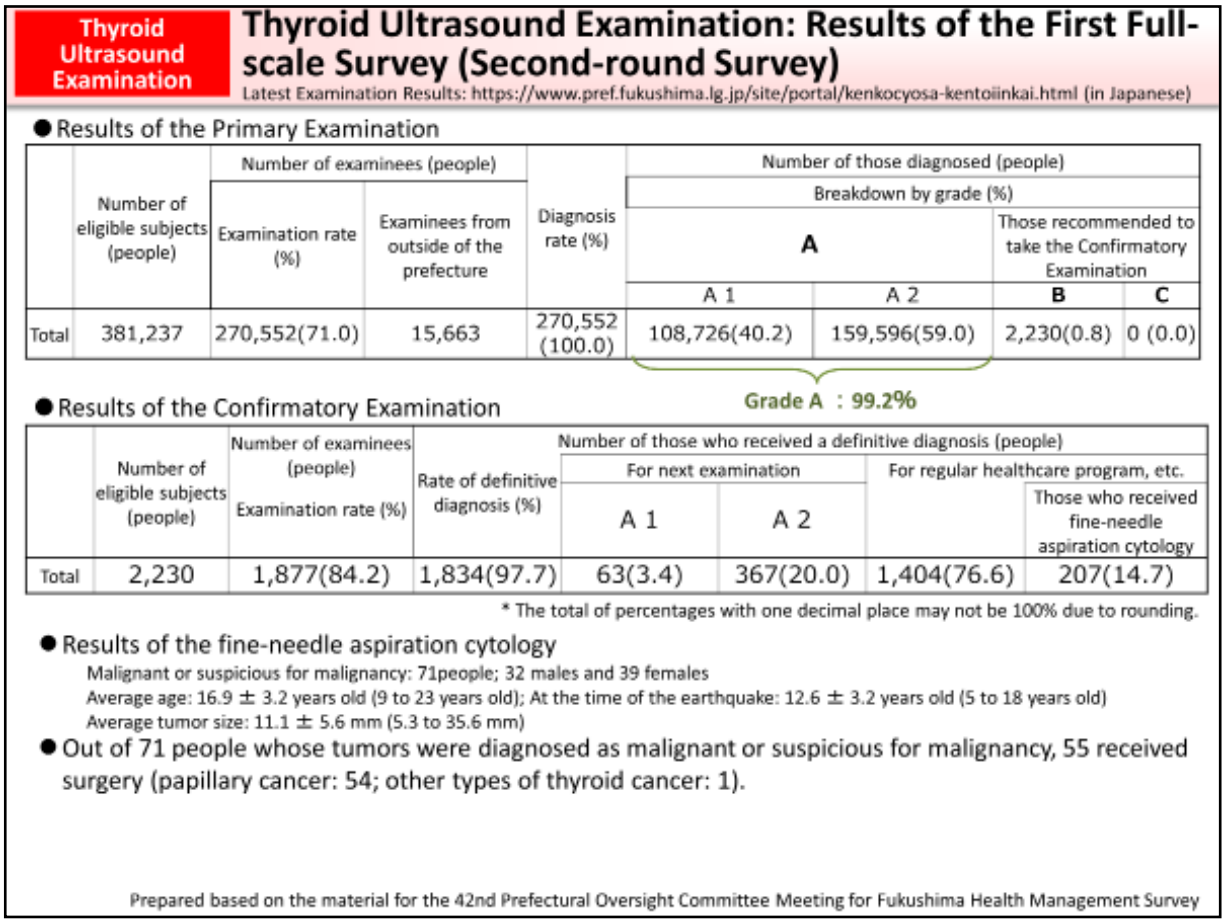
Examinees diagnosed as Grade A in the Primary Examination accounted for 99.2% of the total, while those diagnosed as Grade B accounted for 0.8%. It became clear that most of those diagnosed as Grade A2 had cysts of 20 mm or smaller and that those diagnosed as Grade B had nodules of 5.1 mm or larger.

In the Confirmatory Examination, as a result of a more accurate ultrasound examination and other tests, 34%, or approximately one out of three who received the Confirmatory Examination, were diagnosed as being equivalent to Grade A and were recommended to receive the next periodic examination (Full-scale Survey) in the same manner as those diagnosed as Grade A in the Primary Examination. This is because those who were suspected to have any abnormalities were diagnosed as Grade B just to be safe in the Primary Examination, and such people include those eventually diagnosed as Grade A in the Confirmatory Examination as a result of comprehensive and objective judgments through a more detailed examination, etc.

Among the examinees whose results of the Confirmatory Examination were finalized, 66% were shifted to ordinary medical care covered by health insurance, and appropriate measures are determined by the responsible doctor, based on individual findings and circumstances.

Furthermore, 39.6% went through fine-needle aspiration cytology, and 116 examinees were diagnosed as malignant or suspicious for malignancy. Out of these examinees, it is known that 102 had surgery. However, not all the patients who are diagnosed as malignant or suspicious for malignancy are indicated for immediate surgery, and the decisions are made depending on the individuals' situations after the consultation among physicians, examinees, and their families.

Included in this reference material on March 31, 2016
Updated on March 31, 2023



Thyroid Ultrasound Examination

Thyroid Ultrasound Examination: Results of the First Full-scale Survey (Second-round Survey)

Latest Examination Results: https://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

● Results of the Primary Examination

	Number of eligible subjects (people)	Number of examinees (people)		Diagnosis rate (%)	Number of those diagnosed (people)			
		Examination rate (%)	Examinees from outside of the prefecture		Breakdown by grade (%)			
					A		Those recommended to take the Confirmatory Examination	
					A 1	A 2	B	C
Total	381,237	270,552(71.0)	15,663	270,552 (100.0)	108,726(40.2)	159,596(59.0)	2,230(0.8)	0 (0.0)

Grade A : 99.2%

● Results of the Confirmatory Examination

	Number of eligible subjects (people)	Number of examinees (people) Examination rate (%)	Rate of definitive diagnosis (%)	Number of those who received a definitive diagnosis (people)			
				For next examination		For regular healthcare program, etc.	
				A 1	A 2		Those who received fine-needle aspiration cytology
Total	2,230	1,877(84.2)	1,834(97.7)	63(3.4)	367(20.0)	1,404(76.6)	207(14.7)

* The total of percentages with one decimal place may not be 100% due to rounding.

● Results of the fine-needle aspiration cytology

Malignant or suspicious for malignancy: 71people; 32 males and 39 females
Average age: 16.9 ± 3.2 years old (9 to 23 years old); At the time of the earthquake: 12.6 ± 3.2 years old (5 to 18 years old)
Average tumor size: 11.1 ± 5.6 mm (5.3 to 35.6 mm)

● Out of 71 people whose tumors were diagnosed as malignant or suspicious for malignancy, 55 received surgery (papillary cancer: 54; other types of thyroid cancer: 1).

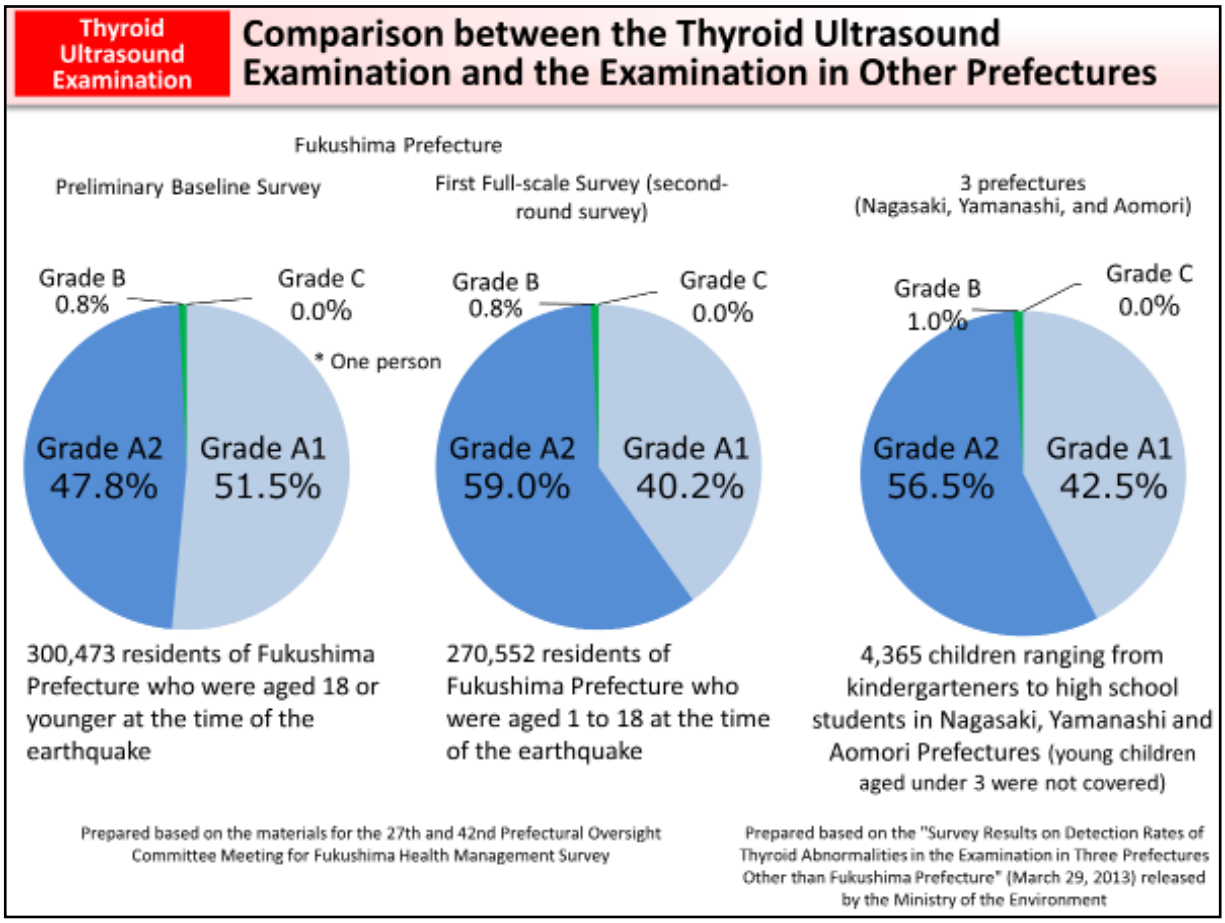
Prepared based on the material for the 42nd Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

These are the results of the first Full-scale Survey, which was the second round of the Thyroid Ultrasound Examination.

Examinees diagnosed as Grade A in the Primary Examination accounted for 99.2% of the total, while those diagnosed as Grade B accounted for 0.8%. Most of those diagnosed as Grade A2 had cysts of 20 mm or smaller and those diagnosed as Grade B had nodules of 5.1 mm or larger. This tendency was the same as that observed in the Preliminary Baseline Survey.

In the Confirmatory Examination, as a result of fine-needle aspiration cytology, 71 examinees were diagnosed that their tumors were malignant or suspicious for malignancy.

Included in this reference material on March 31, 2016
Updated on March 31, 2022

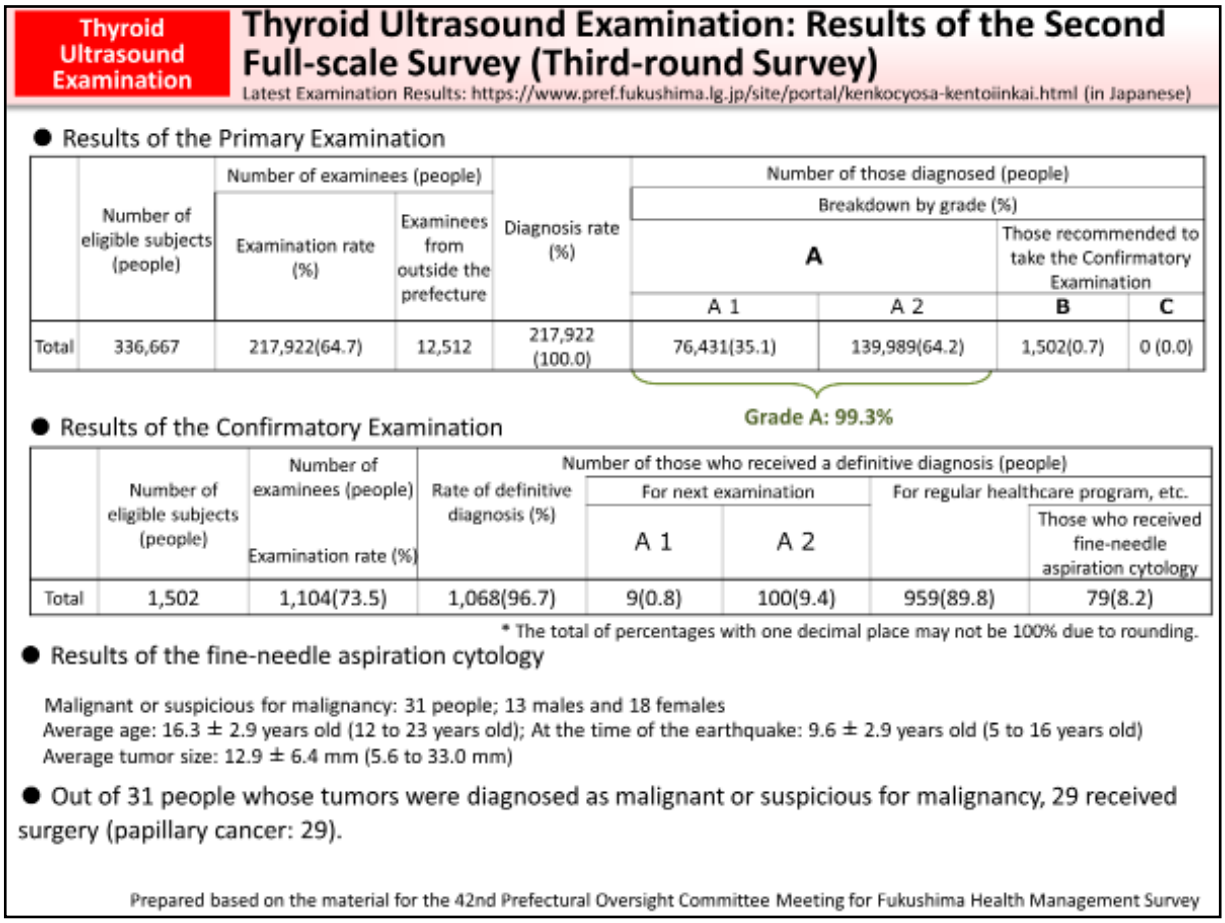


When the Thyroid Ultrasound Examination commenced, many concerns were raised about a relatively high percentage of examinees diagnosed as Grade A2. Therefore, in FY2012, the Ministry of the Environment (MOE) conducted the thyroid examination targeting approx. 4,300 children in Nagasaki, Yamanashi and Aomori Prefectures (3-prefecture examination) in the same manner as the examination conducted in Fukushima Prefecture.

The Preliminary Baseline Survey in Fukushima Prefecture covered those aged zero to 18 at the time of the earthquake, and the first Full-scale Survey covered those aged two to 23 at the time of the examination, respectively, while the 3-prefecture examination excluded children aged under 3 and covered only those aged 3 to 18. As the sample size of the cohort was much smaller in the 3-prefecture examination, a simple comparison cannot be made, but the results show that those diagnosed as Grade A2 were not exceedingly greater in number among the children of Fukushima Prefecture. The results of the 3-prefecture examination after age adjustment based on the demographics of Japan as of 2010 show that the detection rate of cysts was reported as 52.35% and that of nodules as 1.54%,[1] which were similar to the results of the Preliminary Baseline Survey and the first Full-scale Survey in Fukushima Prefecture. The report of the 3-prefecture examination also made the following observations: “It is generally known that the detection rate of nodular lesions is lower in the group of examinees aged 3 to 5 than in the group of examinees aged 6 or older, and that females show higher detection rate than males. Therefore, there is the possibility that a detection rate tabulated based on simple descriptive statistical methods as in this case may be higher than the actual rate.”[2] In fact, the percentage of those diagnosed as Grade A2 in the first Full-scale Survey (second-round survey) excluding examinees aged 2 or younger was extremely close to the results of the 3-prefecture examination.

1. Hayashida N, et al. Thyroid Ultrasound Findings in Children from Three Japanese Prefectures: Aomori, Yamanashi and Nagasaki. PLoS One. 8(12): e83220, 2013.
2. “Report on the Outcome of the FY2012 Survey on Detection Rates of Thyroid Abnormalities” (commissioned by MOE), The Japan Association of Breast and Thyroid Sonology (March 2013)

Included in this reference material on March 31, 2014
Updated on March 31, 2022



Thyroid Ultrasound Examination

Thyroid Ultrasound Examination: Results of the Second Full-scale Survey (Third-round Survey)

Latest Examination Results: https://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

● Results of the Primary Examination

	Number of eligible subjects (people)	Number of examinees (people)		Diagnosis rate (%)	Number of those diagnosed (people)			
		Examination rate (%)	Examinees from outside the prefecture		Breakdown by grade (%)			
					A		Those recommended to take the Confirmatory Examination	
					A 1	A 2	B	C
Total	336,667	217,922(64.7)	12,512	217,922 (100.0)	76,431(35.1)	139,989(64.2)	1,502(0.7)	0 (0.0)

Grade A: 99.3%

● Results of the Confirmatory Examination

	Number of eligible subjects (people)	Number of examinees (people) / Examination rate (%)	Rate of definitive diagnosis (%)	Number of those who received a definitive diagnosis (people)			
				For next examination		For regular healthcare program, etc.	
				A 1	A 2		Those who received fine-needle aspiration cytology
Total	1,502	1,104(73.5)	1,068(96.7)	9(0.8)	100(9.4)	959(89.8)	79(8.2)

* The total of percentages with one decimal place may not be 100% due to rounding.

● Results of the fine-needle aspiration cytology

Malignant or suspicious for malignancy: 31 people; 13 males and 18 females
Average age: 16.3 ± 2.9 years old (12 to 23 years old); At the time of the earthquake: 9.6 ± 2.9 years old (5 to 16 years old)
Average tumor size: 12.9 ± 6.4 mm (5.6 to 33.0 mm)

● Out of 31 people whose tumors were diagnosed as malignant or suspicious for malignancy, 29 received surgery (papillary cancer: 29).

Prepared based on the material for the 42nd Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

These are the results of the second Full-scale Survey, which was the third round of the Thyroid Ultrasound Examination. Examinees diagnosed as Grade A in the Primary Examination accounted for 99.3% of the total, while those diagnosed as Grade B accounted for 0.7%. Most of those diagnosed as Grade A2 had cysts of 20 mm or smaller and those diagnosed as Grade B had nodules of 5.1 mm or larger. This tendency was the same as that observed in the Preliminary Baseline Survey and the first Full-scale Survey (second-round survey). In the Confirmatory Examination, as a result of fine-needle aspiration cytology, 31 examinees were diagnosed that their tumors were malignant or suspicious for malignancy.

Included in this reference material on March 31, 2019
Updated on March 31, 2022

Thyroid Ultrasound Examination

Thyroid Ultrasound Examination: Results of the Third Full-scale Survey (Fourth-round Survey)

Latest Examination Results: https://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

● Results of the Primary Examination

	Number of eligible subjects (people)	Number of examinees (people)		Diagnosis rate (%)	Number of those diagnosed (people)			
		Examination rate (%)	Examinees from outside the prefecture		Breakdown by grade (%)			
					A		Those recommended to take the Confirmatory Examination	
					A 1	A 2	B	C
Total	294,228	183,410 (62.3)	10,234	183,410 (100.0)	61,712 (33.6)	120,304 (65.6)	1,394 (0.8)	0 (0.0)

Grade A: 99.2%

● Results of the Confirmatory Examination

	Number of eligible subjects (people)	Number of examinees (people) Examination rate (%)	Rate of definitive diagnosis (%)	Number of those who received a definitive diagnosis (people)			
				For next examination		For regular healthcare program, etc.	
				A 1	A 2		Those who received fine-needle aspiration cytology
Total	1,394	1,036 (74.3)	1,016 (98.1)	6 (0.6)	88 (8.7)	922 (90.7)	91 (9.9)

* The total of percentages with one decimal place may not be 100% due to rounding.

● Results of the fine-needle aspiration cytology

Malignant or suspicious for malignancy: 39 people; 17 males and 22 females
Average age: 17.0 ± 3.1 years old (9 to 24 years old); At the time of the earthquake: 8.3 ± 2.9 years old (0 to 14 years old)
Average tumor size: 13.1 ± 6.3 mm (6.1 to 29.4 mm)

● Out of 39 people whose tumors were diagnosed as malignant or suspicious for malignancy, 34 received surgery (papillary cancer: 34).

Prepared based on the material for the 46th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

These are the results of the third Full-scale Survey which was the fourth round of the Thyroid Ultrasound Examination.

Examinees diagnosed as Grade A in the Primary Examination accounted for 99.2% of the total, while those diagnosed as Grade B accounted for 0.8%. Most of those diagnosed as Grade A2 had cysts of 20 mm or smaller and those diagnosed as Grade B had nodules of 5.1 mm or larger. This tendency was the same as that observed in the Preliminary Baseline Survey and the first and second Full-scale Surveys (second- and third-round surveys).

In the Confirmatory Examination, as a result of fine-needle aspiration cytology, 39 examinees were diagnosed that their tumors were malignant or suspicious for malignancy.

Included in this reference material on March 31, 2021
Updated on March 31, 2023

Thyroid Ultrasound Examination

Thyroid Ultrasound Examination: Results of Full-scale Survey (the survey at age 25 years)

Latest Examination Results: https://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

● Results of the Primary Examination

	Number of eligible subjects (people)	Number of examinees (people)		Diagnosis rate (%)	Number of those diagnosed (people)			
					Breakdown by grade (%)			
		Examination rate (%)	Examinees from outside the prefecture		A		Those recommended to take the Confirmatory Examination	
					A 1	A 2	B	C
Total	108,713	9,841 (9.1)	3,448	9,520 (96.7)	4,043 (42.5)	4,973 (52.2)	504 (5.3)	0 (0.0)

Grade A: 94.7%

● Results of the Confirmatory Examination

	Number of eligible subjects (people)	Number of examinees (people) Examination rate (%)	Rate of definitive diagnosis (%)	Number of those who received a definitive diagnosis (people)			
				For next examination		For regular healthcare program, etc.	
				A 1	A 2		Those who received fine-needle aspiration cytology
Total	430	353 (82.1)	345 (97.7)	2 (0.6)	23 (6.7)	320 (92.8)	31 (9.7)

* The total of percentages with one decimal place may not be 100% due to rounding.

● Results of the fine-needle aspiration cytology

Malignant or suspicious for malignancy: 16 people; 4 males and 12 females
Average age: 25.4 ± 0.7 years old (24 to 27 years old); At the time of the earthquake: 16.3 ± 1.1 years old (15 to 18 years old)
Average tumor size: 15.6 ± 12.1 mm (5.3 to 49.9 mm)

● Out of 16 people whose tumors were diagnosed as malignant or suspicious for malignancy, 10 received surgery (papillary cancer: 9; follicular cancer: 1).

Prepared based on the material for the 45th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

From FY2017, during the implementation period of the Full-scale Survey (third-round survey), a survey for those who became 25 years old during the relevant fiscal year was commenced as part of the Full-scale Survey. These are the results of the Primary Examination for residents born in FY1992 through FY1996 and the Confirmatory Examination for those born in FY1992 to FY1995.

Examinees diagnosed as Grade A in the Primary Examination accounted for 94.7% of the total, while those diagnosed as Grade B accounted for 5.3%. Most of those diagnosed as Grade A2 had cysts of 20 mm or smaller and those diagnosed as Grade B had nodules of 5.1 mm or larger. This tendency was the same as that observed so far, but targeted examinees were older than in prior examinations, and therefore, the percentages of those diagnosed as Grade B and those diagnosed to have nodules were higher compared with the Preliminary Baseline Survey and the Full-scale Surveys (second- to fourth-round surveys).

In the Confirmatory Examination, as a result of fine-needle aspiration cytology, 16 examinees were diagnosed that their tumors were malignant or suspicious for malignancy.

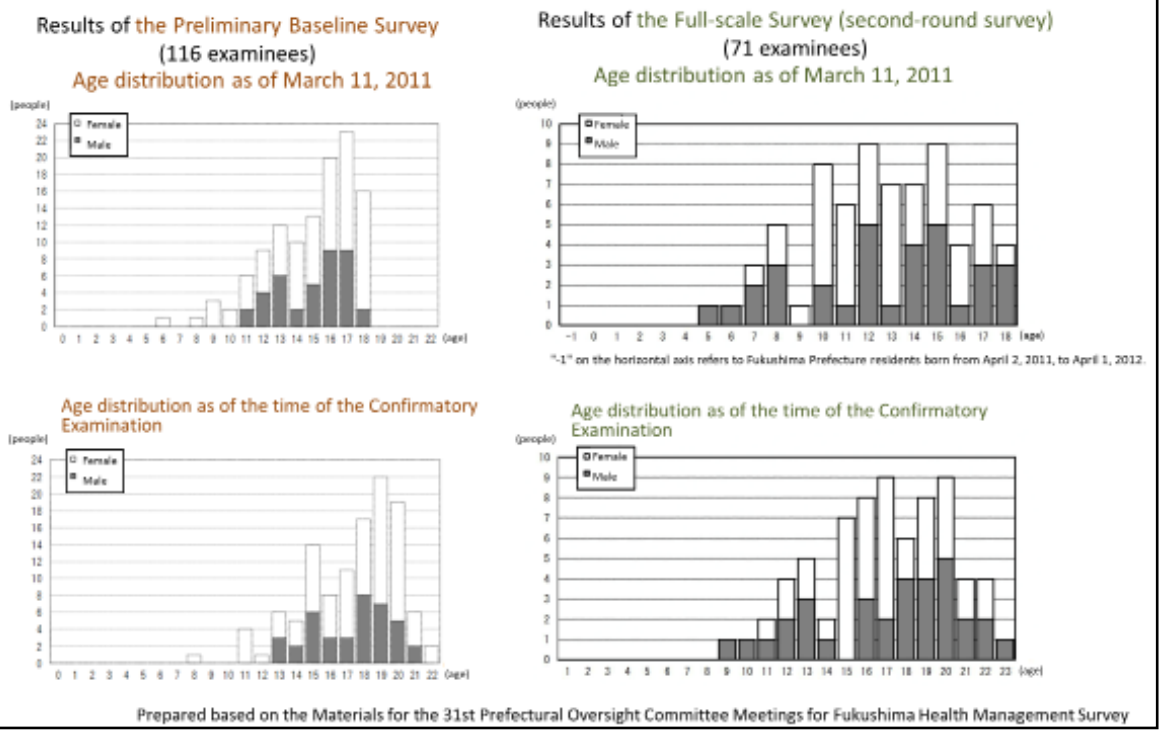
Included in this reference material on March 31, 2021
Updated on March 31, 2023

Thyroid Ultrasound Examination

Thyroid Ultrasound Examination: Results of the Preliminary Baseline Survey and the Full-scale Survey (Details of Fine-needle Aspiration Cytology 1)

Latest Examination Results: https://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

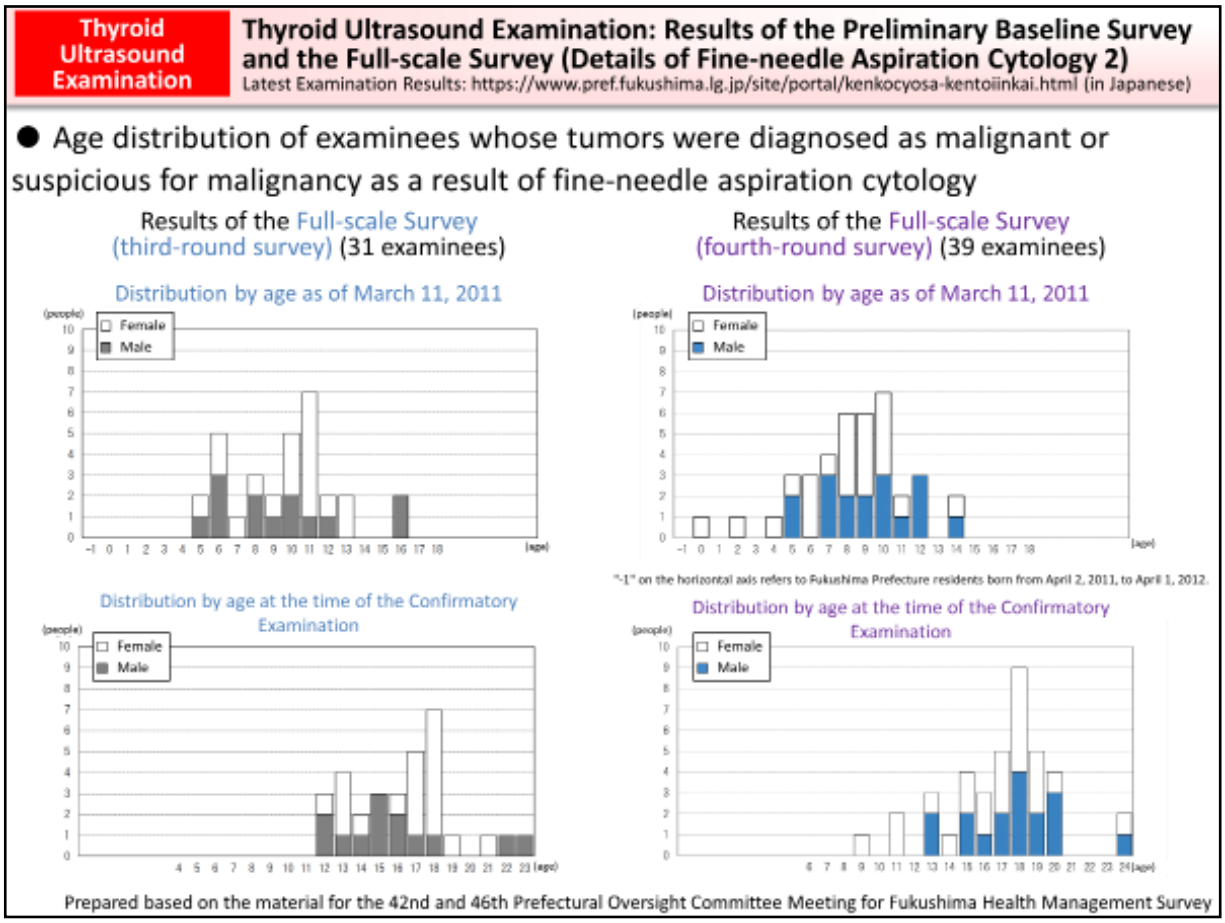
- Age distribution of examinees whose tumors were diagnosed as malignant or suspicious for malignancy as a result of fine-needle aspiration cytology



Prepared based on the Materials for the 31st Prefectural Oversight Committee Meetings for Fukushima Health Management Survey

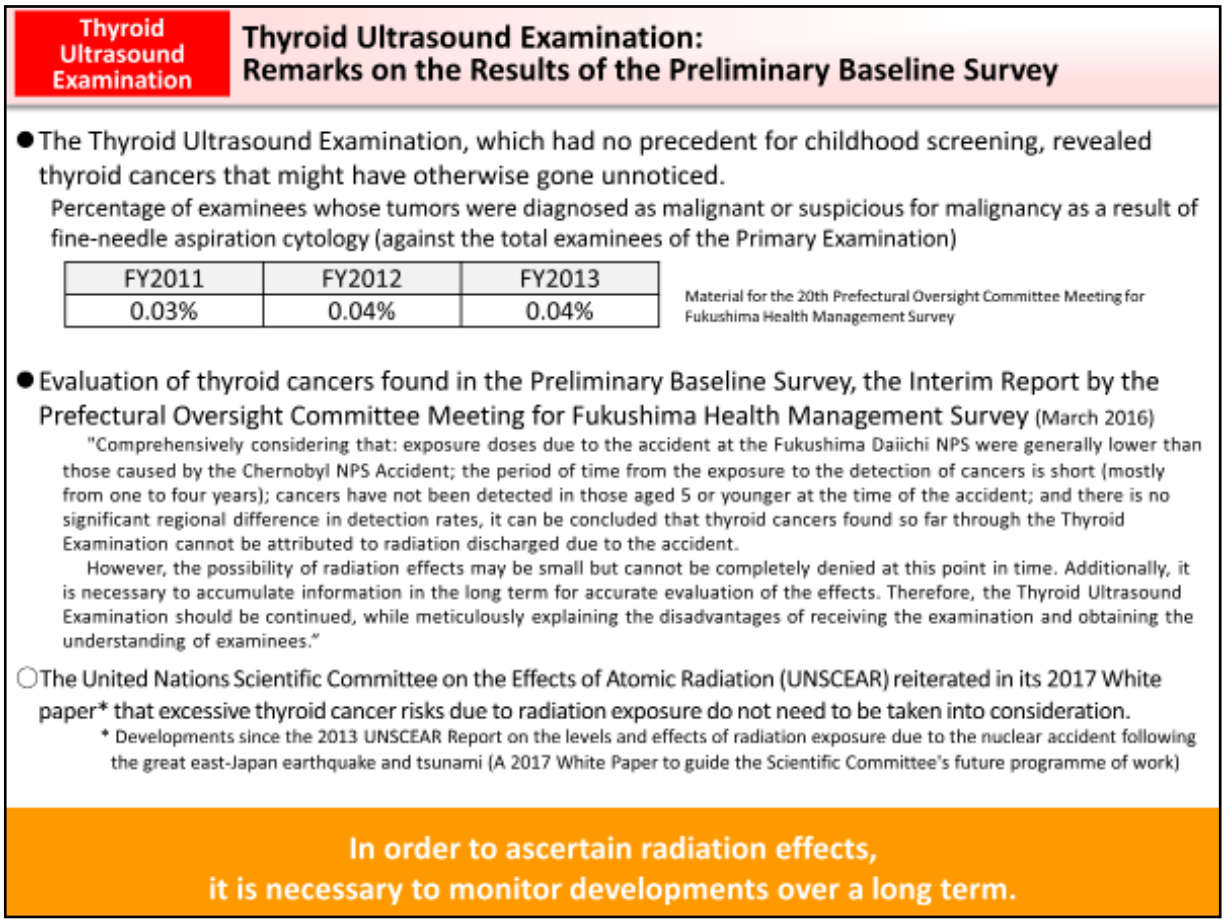
These graphs show the age distributions of examinees whose thyroid lesions were diagnosed as malignant or suspicious for malignancy by fine-needle aspiration cytology in the Preliminary Baseline Survey and the Full-scale Survey (second-round survey): they are shown by the age as of March 11, 2011 (top) and at the time of the Confirmatory Examination (bottom). The results of the Preliminary Baseline Survey and the Full-scale Survey (second-round survey) do not show the situation where thyroid cancer is found more frequently among young children (aged zero to 5), who are considered to have higher sensitivity to radiation, than among people in the other age groups.

Included in this reference material on March 31, 2014
Updated on March 31, 2021



These graphs show the age distribution, as of March 11, 2011, of examinees who subsequently had thyroid lesions diagnosed as malignant or suspicious for malignancy by fine-needle aspiration cytology in the second and third Full-scale Surveys (third- and fourth-round surveys), and their ages at the time of the Confirmatory Examination. The distribution by age at the time of the disaster tends to be shifted towards younger ages compared with the results of the Preliminary Baseline Survey and the first Full-scale Survey (second-round survey), but the distribution by age at the time of the Confirmatory Examination was the same as in the case of the Preliminary Baseline Survey and the first Full-scale Survey (second-round survey).

Included in this reference material on March 31, 2021
Updated on March 31, 2023



Thyroid cancers found so far through the Thyroid Ultrasound Examination being conducted in Fukushima Prefecture are considered to be unrelated to the radiation discharged due to the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS.

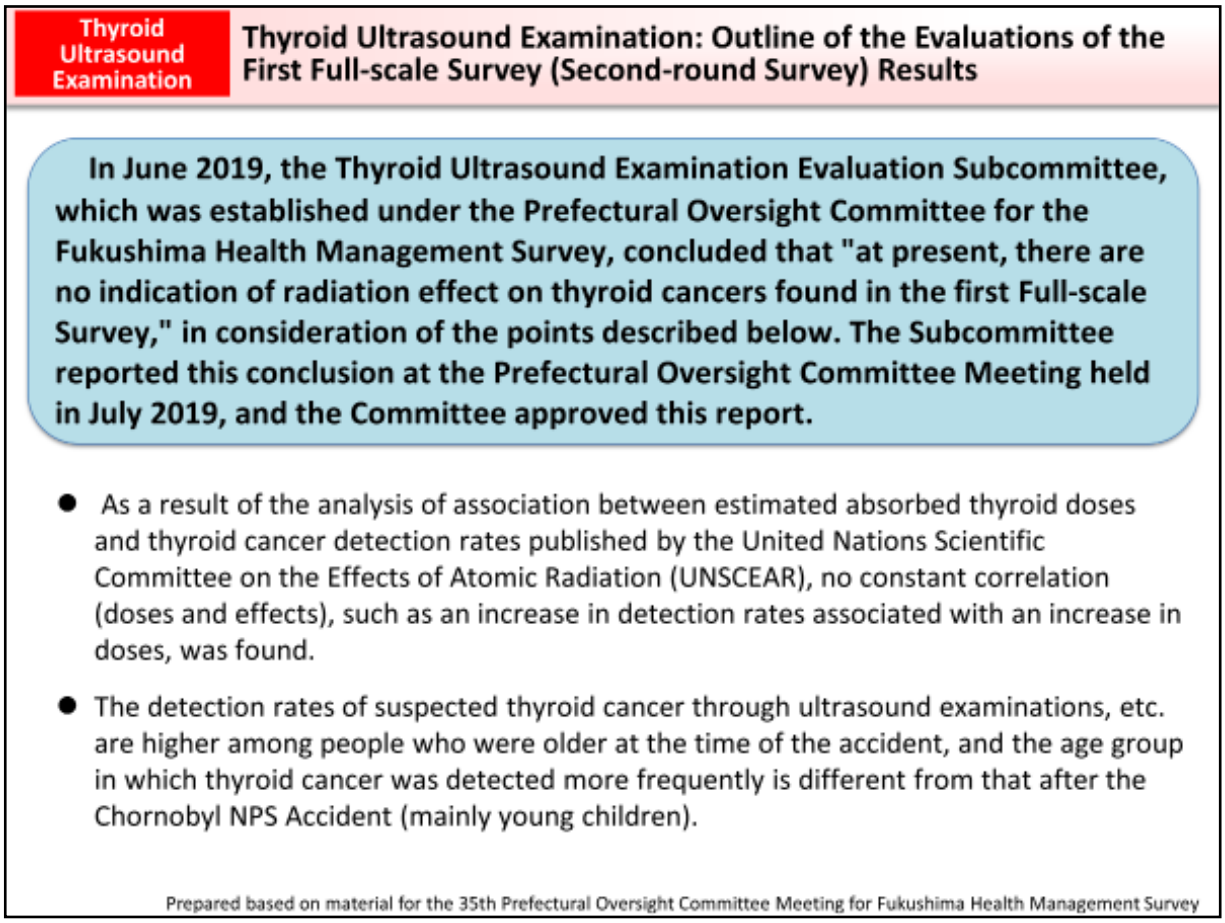
This evaluation is based on a comprehensive judgment of the following facts:

1. Exposure doses due to the accident at the Fukushima Daiichi NPS were generally lower compared with those caused by the Chornobyl NPS Accident.
2. The period of time from the exposure to the detection of cancers is short, mostly from one to four years.
3. Cancers have not been detected in those who were 5 years old or younger at the time of the accident.
4. Age distribution of patients significantly differs in Fukushima Prefecture and Chornobyl (p.140 of Vol. 1, "Comparison between the Chornobyl NPS Accident and the TEPCO's Fukushima Daiichi NPS Accident (Ages at the Time of Radiation Exposure)").
5. There are no significant differences in detection rates among different regions.

However, it is necessary to monitor developments over a long term to ascertain radiation effects.

(Related to p.141 of Vol. 1, "Evaluation of the Interim Report on Thyroid Cancer Compiled by the Expert Meeting on Health Management After the TEPCO's Fukushima Daiichi NPS Accident")

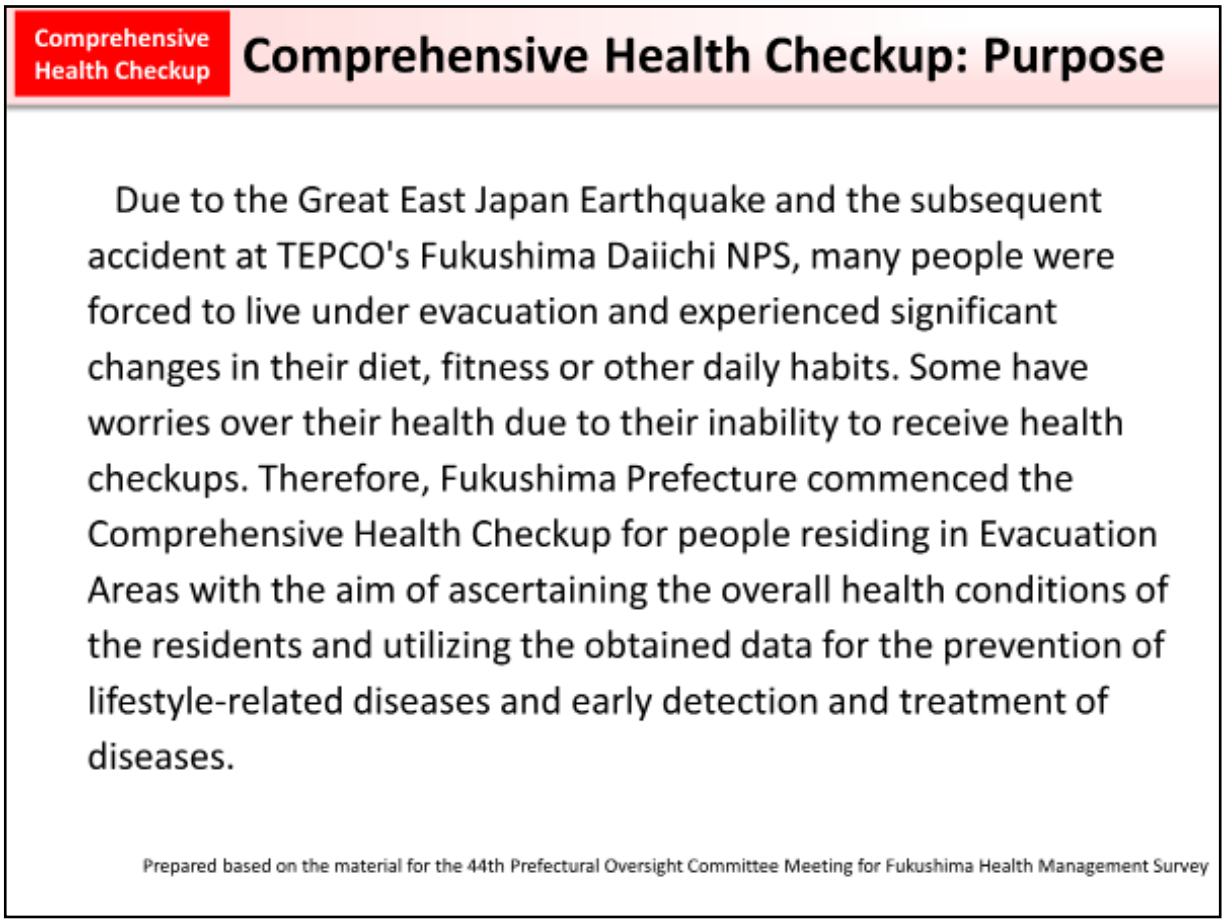
Included in this reference material on March 31, 2015
Updated on March 31, 2021



In June 2019, the Thyroid Ultrasound Examination Evaluation Subcommittee, which was established under the Prefectural Oversight Committee for the Fukushima Health Management Survey, published the “Report on the Results of the first Full-scale Survey of the Fukushima Thyroid Ultrasound Examination.” In the Report, the Subcommittee states that no correlation is found between thyroid cancer cases detected through the first Full-scale Survey (second-round survey) and radiation exposure due to Tokyo Electric Power Company (TEPCO)’s Fukushima Daiichi NPS Accident. Additionally, the Subcommittee points out the necessity to review evaluations of the Thyroid Ultrasound Examination and examination results from the following perspectives:

- It is necessary to analyze accumulated results of the second and third Full-scale Surveys.
- It is necessary to conduct analyses by properly ascertaining the status of developing cancer among the subjects of Thyroid Ultrasound Examination using regional and national cancer registries.
- It is necessary to study correlation between doses and incidence rates of thyroid cancer in the future by using more detailed data on estimated thyroid exposure doses as a case-control study with adjusted confounding factors or as a prospective study.

Included in this reference material on March 31, 2020



Due to the Great East Japan Earthquake and the subsequent accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS, many residents were forced to live as evacuees. Fukushima Prefecture has been conducting the Comprehensive Health Checkup for the purpose of monitoring whether they have any physical problems and guiding them to early treatment as necessary.

Included in this reference material on March 31, 2013
Updated on March 31, 2023

Comprehensive Health Checkup

Comprehensive Health Checkup: Outline (1/2)

[Check items]

Age group	Check items
Aged zero to 6 (babies and preschoolers)	Body height and weight [Only when requested] Complete blood cell count (red blood cell count, hematocrit, hemoglobin, platelet count, white blood cell count, and differential white blood cell count)
Aged 7 to 15 (first to ninth grade students)	Body height, weight, blood pressure, and complete blood cell count (red blood cell count, hematocrit, hemoglobin, platelet count, white blood cell count, and differential white blood cell count) [Only when requested] Blood biochemistry (AST, ALT, γ-GT, TG, HDL-C, LDL-C, HbA1c, glucose, serum creatinine, and uric acid)
Aged 16 or older	Body height, weight, abdominal girth (or BMI), blood pressure, and complete blood cell count (red blood cell count, hematocrit, hemoglobin, platelet count, white blood cell count, and differential white blood cell count) Urinalysis (protein, glucose and blood) Blood biochemistry (AST, ALT, γ-GT, TG, HDL-C, LDL-C, HbA1c, glucose, serum creatinine, eGFR, and uric acid) * Items in red letters are additional items that are not ordinarily checked in the specified health checkups.

[Eligible subjects]

- Residents who were registered at covered areas from March 11, 2011 to April 1, 2012 (also after moving out of those covered areas)
- Residents registered at evacuation areas, etc. as of April 1 of the examination year

[Covered areas]

Hirono Town, Naraha Town, Tomioka Town, Kawauchi Village, Okuma Town, Futaba Town, Namie Town, Katsurao Village and Iitate Village, Minamisoma City, Tamura City, Kawamata Town, and parts of Date City (areas containing Specific Spots Recommended for Evacuation)

Prepared based on the material for the 44th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

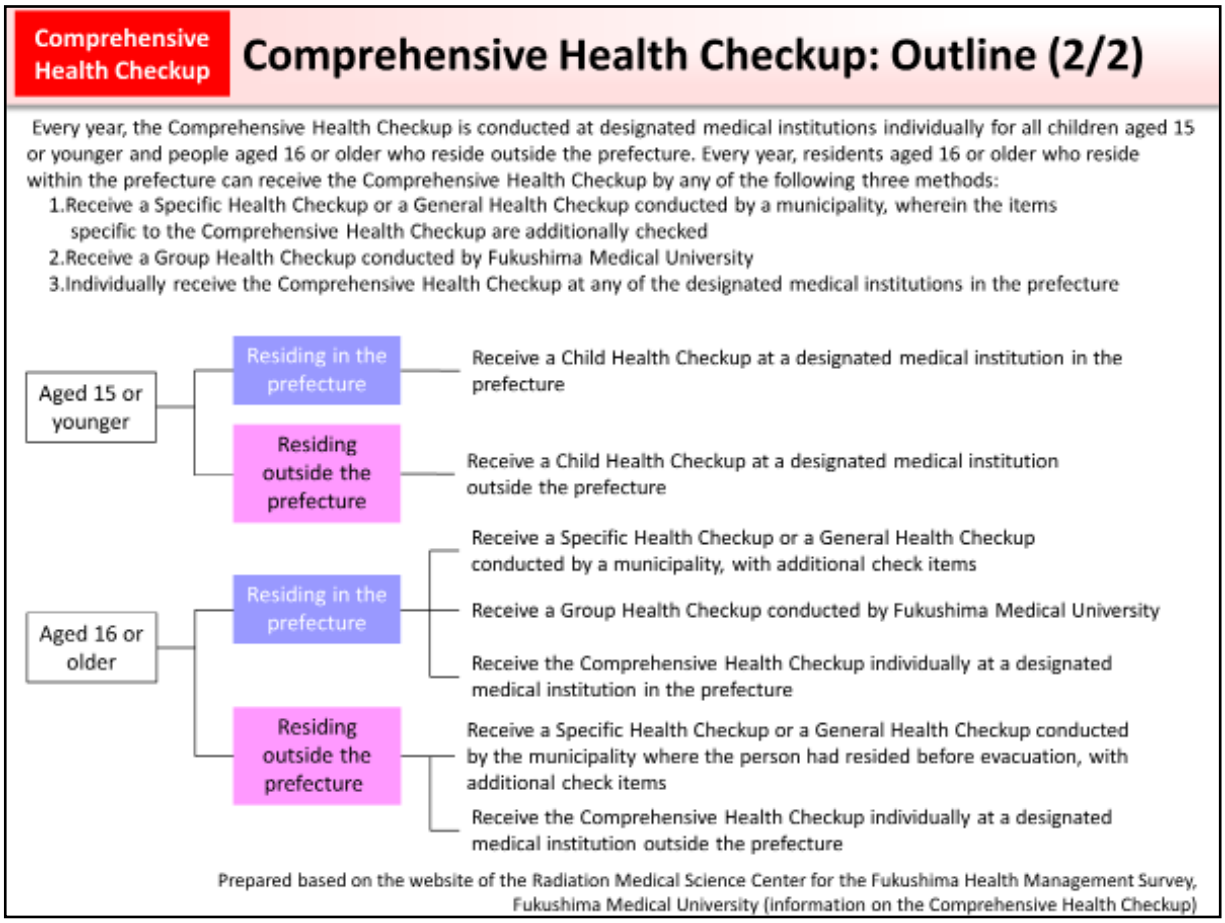
Check items for all age groups are decided so that each of the residents residing in covered areas can ascertain their own health conditions and obtained data can be utilized for the prevention and early detection and treatment of lifestyle-related and other diseases.

Based on the check items for the Specific Health Checkup targeting people aged 16 or older, ordinary health checkups are conducted by adding other necessary items, such as blood counts (those in red letters).

The Comprehensive Health Checkup covers people who were residing in any of the municipalities designated as Restricted Areas, Deliberate Evacuation Areas or Evacuation-Prepared Areas in Case of Emergency or in any of the areas containing Specific Spots Recommended for Evacuation[1] at the time of the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS and residents registered at those areas as of April 1 of the examination year.

1. The entire areas of Tamura City, Minamisoma City, Kawamata Town, Hirono Town, Naraha Town, Tomioka Town, Kawauchi Village, Okuma Town, Futaba Town, Namie Town, Katsurao Village and Iitate Village, and parts of Date City

Included in this reference material on March 31, 2013
Updated on March 31, 2023



Children aged 15 years or younger, regardless of whether residing inside or outside Fukushima Prefecture, can receive health checkups at any of the designated medical institutions with pediatricians.

People aged 16 years or older who reside in Fukushima Prefecture can select any of the following methods to receive checkups: the Specific Health Checkup or the General Health Checkup conducted by municipalities, with additional check items specific to the Comprehensive Health Checkup; the Group Health Checkup conducted by Fukushima Medical University; or the Comprehensive Health Checkup at designated medical institutions in the prefecture.

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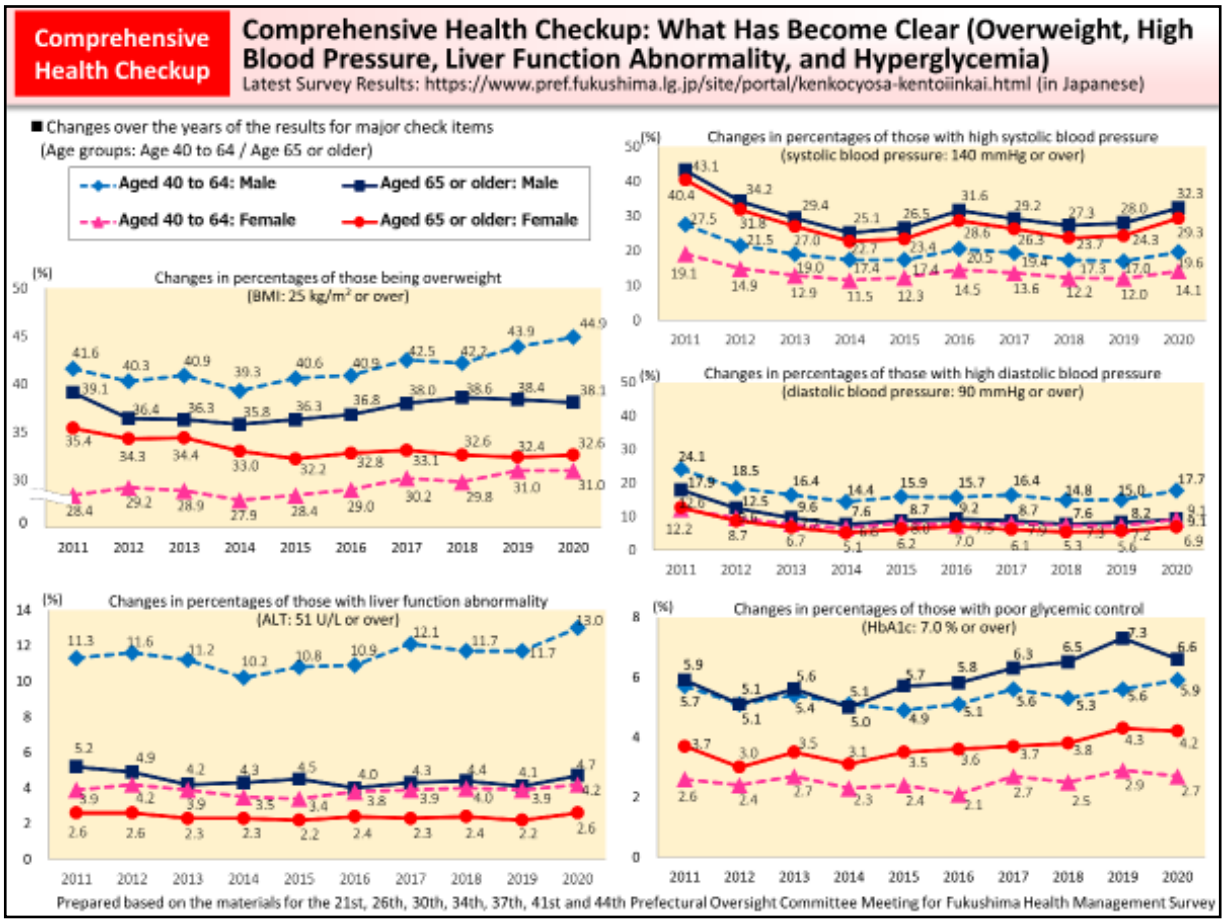

Based on the results of the Comprehensive Health Checkup from FY2011 to FY2020, longitudinal changes in major check items are shown.

● Examinees being overweight

The percentage of overweight people (BMI: 25 kg/m^2 or over) were higher among males than among females for all fiscal years. Among males and females aged 40 to 64 years, the percentage of overweight people showed a slightly increasing trend from FY2011 to FY2020.

● Examinees with high blood pressure

The percentage of examinees with high systolic blood pressure (systolic blood pressure: 140 mmHg or over) showed a declining trend from FY2011 to FY2014 for both males and females aged 40 years or older. The percentage increased from FY2015 to FY2016, decreased thereafter, and then showed an increasing trend again in FY2020.

For both males and females aged 40 years or older, the percentage of examinees with high diastolic blood pressure (diastolic blood pressure: 90 mmHg or over) showed a declining trend from FY2011 to FY2014, did not show a large change from FY2015, but showed an increasing trend in FY2020.

● Examinees with liver function abnormality

The percentage of examinees with liver function abnormality (ALT: 51 (U/L) or over) had been comparable until FY2019, but the percentage of male aged 40 to 64 years showed a slightly increasing trend.

● Examinees with poor glycemic control

The percentage of examinees with poor glycemic control (HbA1c: 7.0% or over) had been higher among males than among females for all fiscal years. The percentage had been comparable throughout the observed years.

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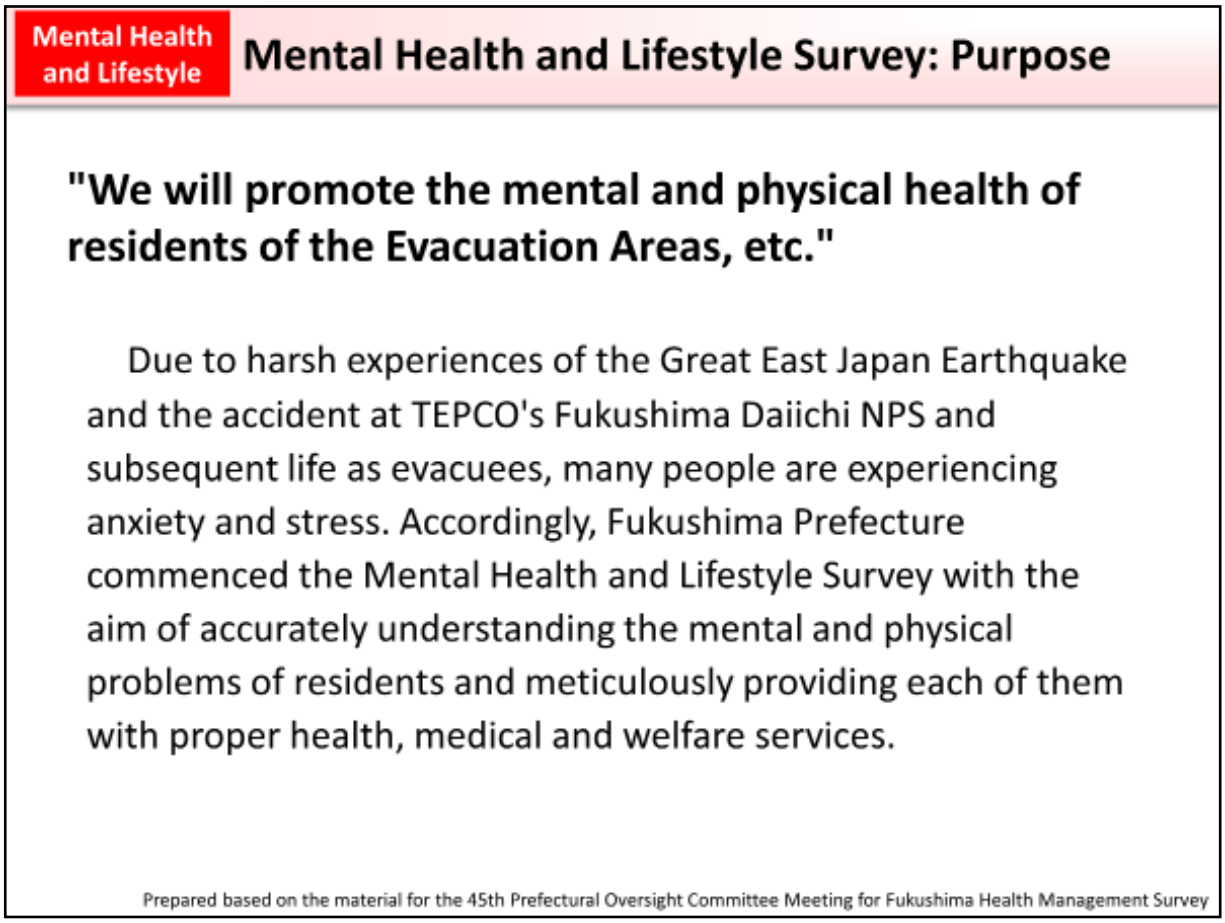

Many of the residents whose houses are located in municipalities designated as Evacuation Areas were forced to evacuate and live as evacuees for a prolonged period of time. They have experienced drastic changes in their living environment and have been forced to change their individual lifestyles as well. In order to carefully watch not only the physical disorders but also mental problems of these residents and offer them appropriate support and build a better system therefor, Fukushima Prefecture has been conducting the Mental Health and Lifestyle Survey.

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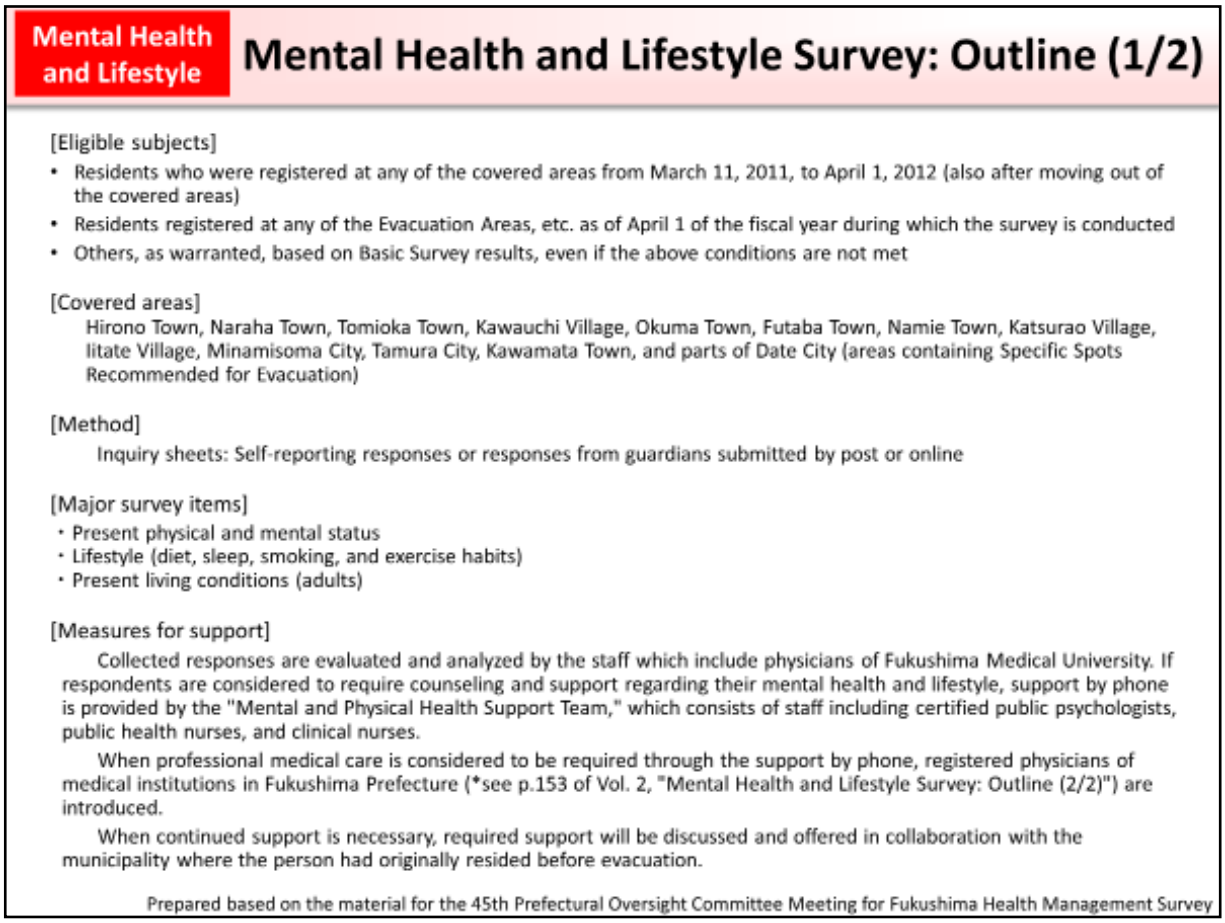

Mental Health and Lifestyle

Mental Health and Lifestyle Survey: Outline (1/2)

[Eligible subjects]

- Residents who were registered at any of the covered areas from March 11, 2011, to April 1, 2012 (also after moving out of the covered areas)
- Residents registered at any of the Evacuation Areas, etc. as of April 1 of the fiscal year during which the survey is conducted
- Others, as warranted, based on Basic Survey results, even if the above conditions are not met

[Covered areas]

Hirono Town, Naraha Town, Tomioka Town, Kawauchi Village, Okuma Town, Futaba Town, Namie Town, Katsurao Village, Iitate Village, Minamisoma City, Tamura City, Kawamata Town, and parts of Date City (areas containing Specific Spots Recommended for Evacuation)

[Method]

Inquiry sheets: Self-reporting responses or responses from guardians submitted by post or online

[Major survey items]

- Present physical and mental status
- Lifestyle (diet, sleep, smoking, and exercise habits)
- Present living conditions (adults)

[Measures for support]

Collected responses are evaluated and analyzed by the staff which include physicians of Fukushima Medical University. If respondents are considered to require counseling and support regarding their mental health and lifestyle, support by phone is provided by the "Mental and Physical Health Support Team," which consists of staff including certified public psychologists, public health nurses, and clinical nurses.

When professional medical care is considered to be required through the support by phone, registered physicians of medical institutions in Fukushima Prefecture (*see p.153 of Vol. 2, "Mental Health and Lifestyle Survey: Outline (2/2)") are introduced.

When continued support is necessary, required support will be discussed and offered in collaboration with the municipality where the person had originally resided before evacuation.

Prepared based on the material for the 45th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

As in the case of the Comprehensive Health Checkup, the Mental Health and Lifestyle Survey also covers residents who were registered, as of March 11, 2011, and as of April 1 of the relevant survey year, at any of the municipalities that were designated as Restricted Areas, Deliberate Evacuation Areas or Evacuation-Prepared Areas in Case of Emergency or at any of the areas containing Specific Spots Recommended for Evacuation at the time of the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS. Others, as warranted, based on Basic Survey results are also covered, even if the above conditions are not met. Different inquiry sheets are used depending on the age groups, with the aim of taking required measures more appropriately. Children are divided into four age groups: those aged zero to 3; those aged 4 to 6; elementary school students; and junior high school students. People aged 16 or older are categorized as adults.

In addition to questions concerning mental problems, such as depression and traumatic stress, the survey items include questions about changes in lifestyles, such as diet, sleep, drinking, smoking, and exercise habits.

Included in this reference material on March 31, 2013
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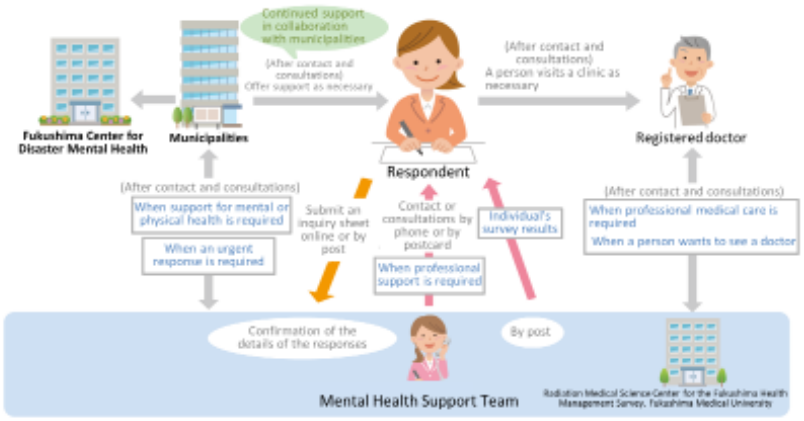
Mental Health and Lifestyle

Mental Health and Lifestyle Survey: Outline (2/2)

- Procedures from submission of an inquiry sheet to receipt of support -
Relevant organizations and doctors are collaboratively offering care.



* For people who are considered to require continued support, care is provided in collaboration with regional registered doctors and municipalities, etc.

* Survey results are sent individually from FY2014.

* Registered doctors: Psychiatrists and pediatricians, etc., who have received lectures concerning disaster mental health and radiation medical science: As of July 1, 2022, there are 121 registered doctors in 78 medical institutions.

Number of people who received support by phone

	Children	Adults
FY2011	1,180	6,310
FY2012	623	5,991
FY2013	473	3,913
FY2014	327	3,053
FY2015	250	2,567
FY2016	181	2,382
FY2017	210	2,410
FY2018	167	2,404
FY2019	143	2,117
FY2020	117	2,213

Number of people who received support in writing

	Children	Adults
FY2011	1,066	10,898
FY2012	800	10,168
FY2013	752	7,664
FY2014	517	6,244
FY2015	435	6,075
FY2016	336	6,098
FY2017	375	5,545
FY2018	297	4,994
FY2019	314	4,408
FY2020	253	4,716

Prepared based on the materials for the 11th, 15th, 19th, 22nd, 26th, 27th, 31st, 32nd, 35th, 38th, 39th, 42nd and 45th Prefectural Oversight Committee Meetings for Fukushima Health Management Survey

Analysis results and advice based thereon are individually sent to people who have submitted inquiry sheets. For respondents who are considered to require professional support as a result of analyzing their responses, clinical psychotherapists, public health nurses, or clinical nurses, etc. make a phone call to offer support concerning problems with their mental health and lifestyles. If necessary, brochures containing health-related information and contacts for consultation services are provided by mail.

Remarks by people who have received support by phone include, “I am glad that I can confess what I cannot say to my family,” or, “I am relieved to know that I can call this number to make consultations whenever I feel depressed.”

Regarding those in need of continued support or professional medical care, support is offered in collaboration with municipalities, the Fukushima Center for Disaster Mental Health and registered doctors who can provide professional advice.

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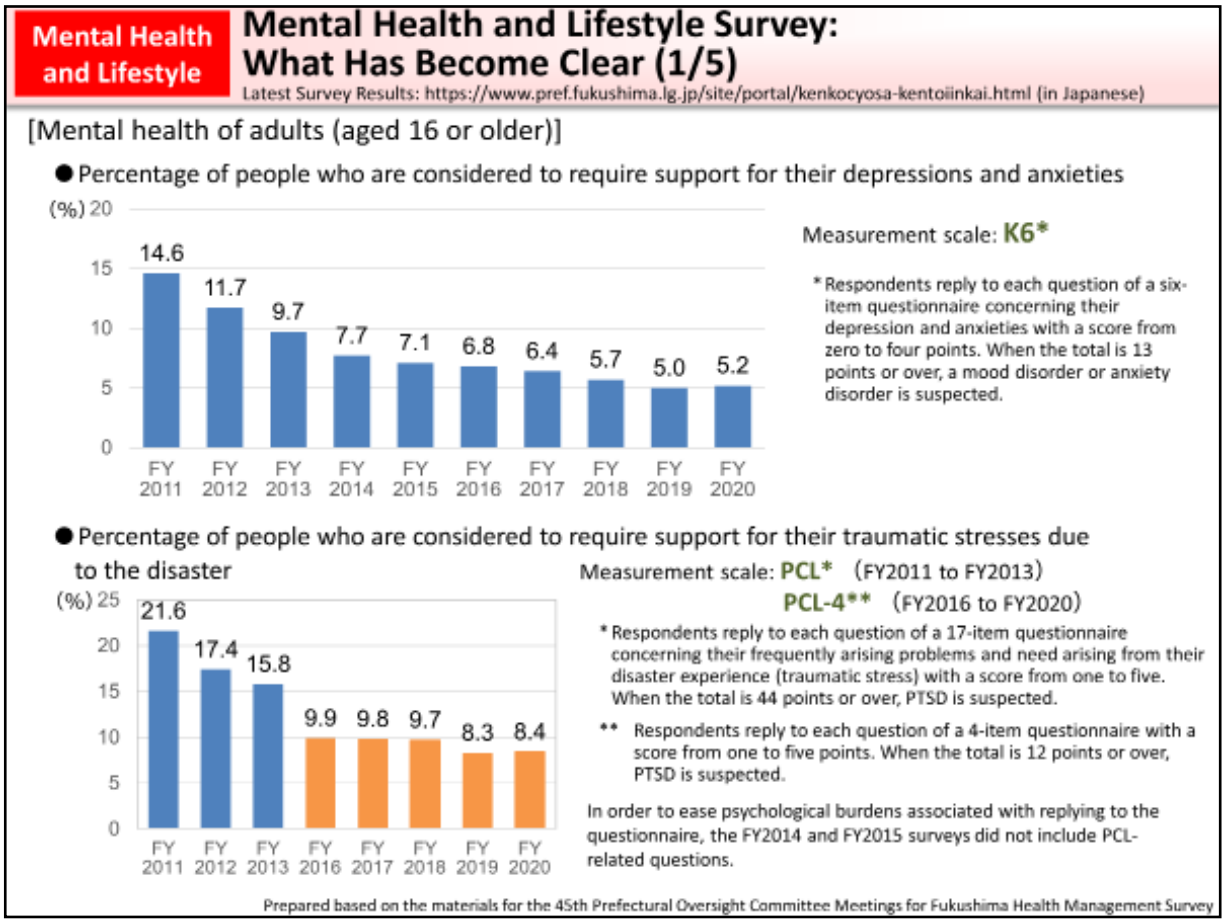

K6[1] is used as a scale to evaluate the levels of mental health of adults (aged 16 or older). K6 still remains at a high level (bad), compared with the value (3.0%) in a prior study in Japan (Kawakami, 2007), although the values have been declining (improving) compared with the FY2011 survey and the FY2012 survey.

Females show higher values than males. By age group, values for younger people tend to be higher.

As a scale to evaluate traumatic stress of adults (aged 16 or older), PCL[2] is used. PCL declined (improved) significantly in the surveys in FY2016 to FY2020, compared with the results of the surveys in FY2011 to FY2013. However, it was found that nearly 10% of the examinees still have strong traumatic stress.

By gender, females generally show higher values than males, and values tend to become higher for older examinees.

1. K6: Respondents reply to each question of a six-item questionnaire concerning the frequencies with which they felt depressed or anxious during the past 30 days (such as “Have you felt extremely nervous?” or “Have you felt desperate and helpless?”).This survey targets people aged 16 or older to evaluate risks of any mood or anxiety disorder.
2. PCL (Post-Traumatic Stress Disorder Checklist): Respondents reply to each question concerning their mental and physical reactions (traumatic stress) during the past 30 days in relation to their disaster experience.This survey also targets people aged 16 or older to evaluate individuals’ levels of traumatic stress.The survey was suspended for two years after being conducted in FY2011 to FY2013 and was resumed in FY2016 by significantly reducing questionnaire items (it has been confirmed that the reliability of this scale is unchanged even with fewer questionnaire items).

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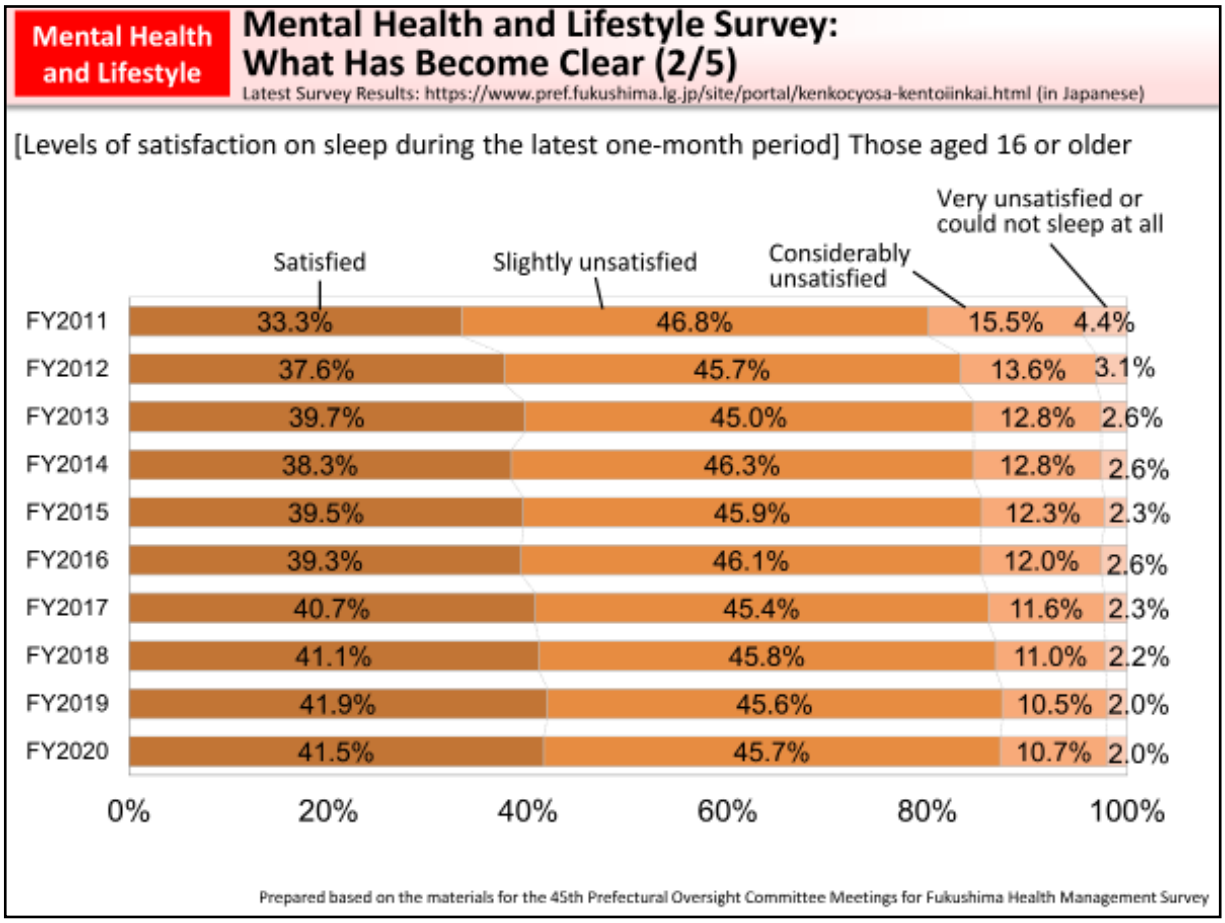

Sleep is a significant factor that exerts influence on various chronic diseases such as high blood pressure or diabetes, as well as affecting people's mental health.

The figure shows that slightly less than 60% of the respondents are still somewhat unsatisfied with their sleep, while the number of those satisfied with their sleep is gradually increasing.

Included in this reference material on March 31, 2016
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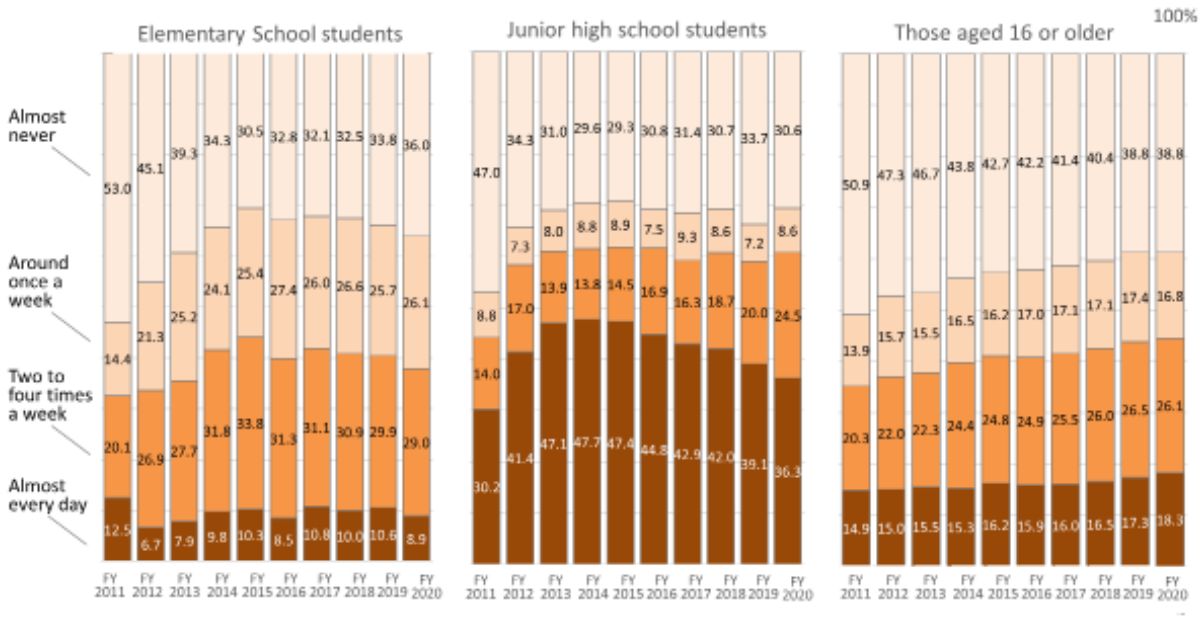
Mental Health and Lifestyle

Mental Health and Lifestyle Survey: What Has Become Clear (3/5)

Latest Survey Results: https://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

[Percentages concerning daily exercises]



Prepared based on the material for the 45th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

Elementary school students and junior high school students have come to have more chances for exercises gradually since FY2012, showing an improving trend. However, no significant change was observed from FY2016 to FY2020. The frequency of exercise has been increasing gradually among adults (aged 16 or older).

In particular, exercises are considered to exert a significant influence on the growth of elementary school students and junior high school students, and exercise habits are also very important for adults for improving their mental health and preventing lifestyle-related diseases.

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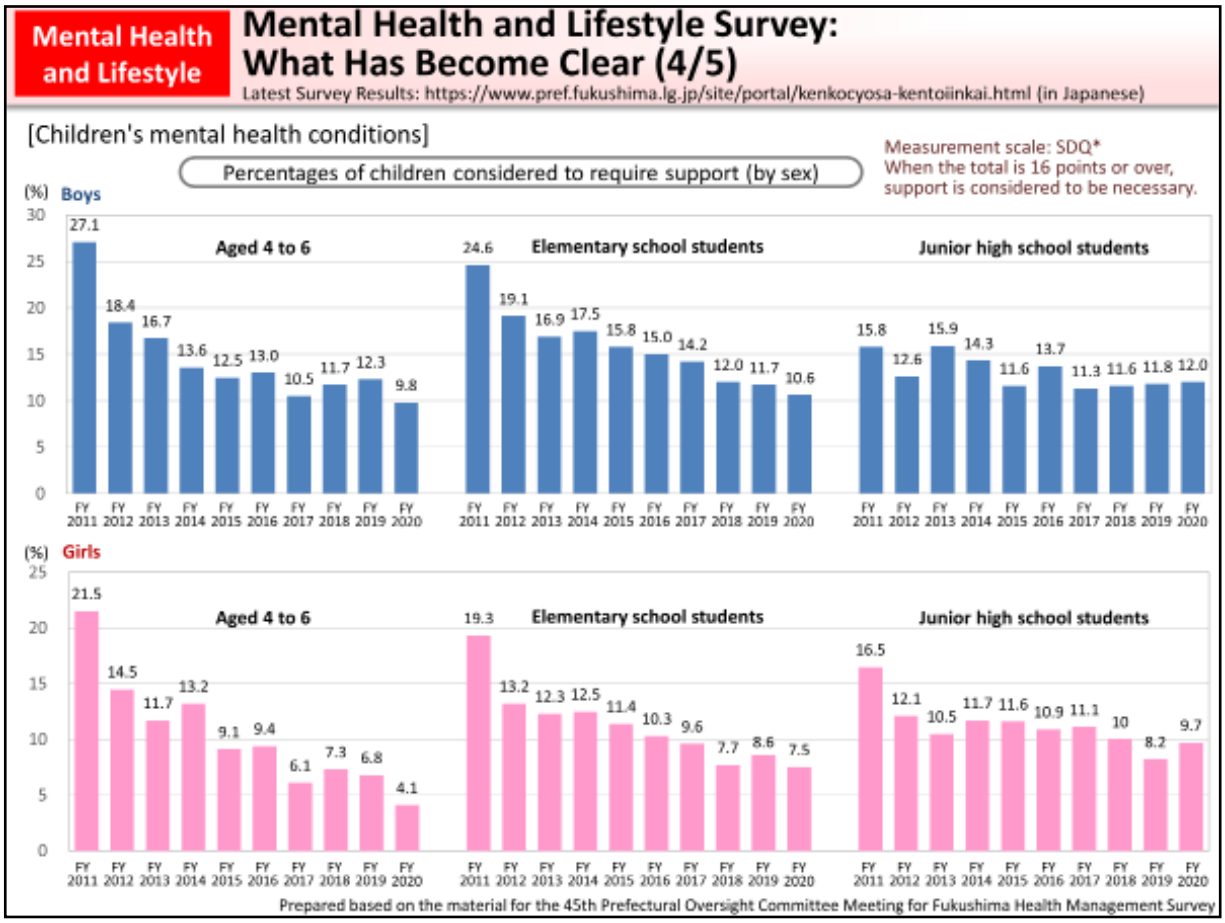

As an indicator to evaluate children's mental health conditions, SDQ[1] is utilized.

Compared with the percentage of children showing an SDQ score of 16 or over (9.5%) reported in a prior study in Japan (Matsuishi et al., 2008), the percentages of high-risk girls were almost the same or lower for all groups but the percentages of high-risk boys were still higher for all groups in the FY2020 survey.

In the FY2020 survey, the percentages of high SDQ scores decreased for all categories compared with the results of the FY2011 survey. However, the improvement slowed down and the percentages remained almost unchanged from those of the FY2012 survey.

1. SDQ (Strengths and Difficulties Questionnaire): Respondents reply to each question of a 25-item questionnaire concerning children's moods and behavior during the past six months (such as "Gives due consideration to other's feelings" or "Is restless and cannot stay still for a long time").This survey covers those aged 4 to 15 to judge whether they need professional support or not.

Included in this reference material on March 31, 2015
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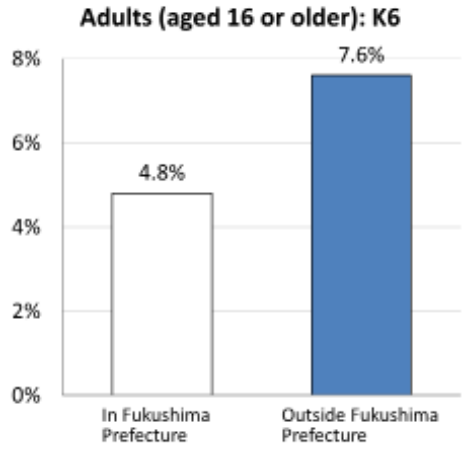
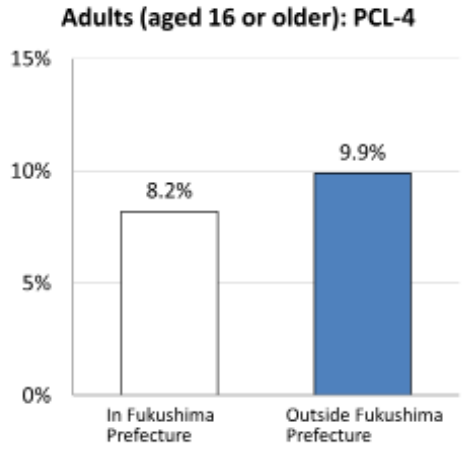
Mental Health and Lifestyle

Mental Health and Lifestyle Survey: What Has Become Clear (5/5)

Latest Survey Results: https://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

[Mental health by place of residence at the time of the survey (in and outside Fukushima Prefecture): Percentages of people considered to require support]





Measurement scale: K6
Respondents reply to each question of a 6-item questionnaire concerning their depression and anxieties with a score from zero to four. When the total is 13 points or over, a mood disorder or anxiety disorder is suspected.

Measurement scale: PCL-4
Respondents reply to each question of a 4-item questionnaire concerning their occasionally arising mental and physical reactions originated from their disaster experience (traumatic stress) with a score from one to five. When the total is 12 points or over, PTSD is suspected.

Prepared based on materials for the 45th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

Respondents to the survey for FY2020 were classified by their places of residence into those who resided in Fukushima Prefecture and those who resided outside Fukushima Prefecture at the time of the relevant survey, and a comparison was made concerning their mental health conditions using measurement scales, K6 and PCL-4. As a result, the percentage of people considered to require support based on the K6 scale among adults (aged 16 or over) tends to be higher for those outside Fukushima Prefecture than those in Fukushima Prefecture. Compared with the relevant percentage (3.0%) in a prior study in Japan (Kawakami, 2007), the percentage for those in Fukushima Prefecture was approximately 1.6 times and that for those outside Fukushima Prefecture was approximately 2.45 times higher. In the same manner, the percentage of people considered to require support based on the PCL-4 scale among adults (aged 16 or over) tends to be higher for those outside Fukushima Prefecture than those in Fukushima Prefecture.

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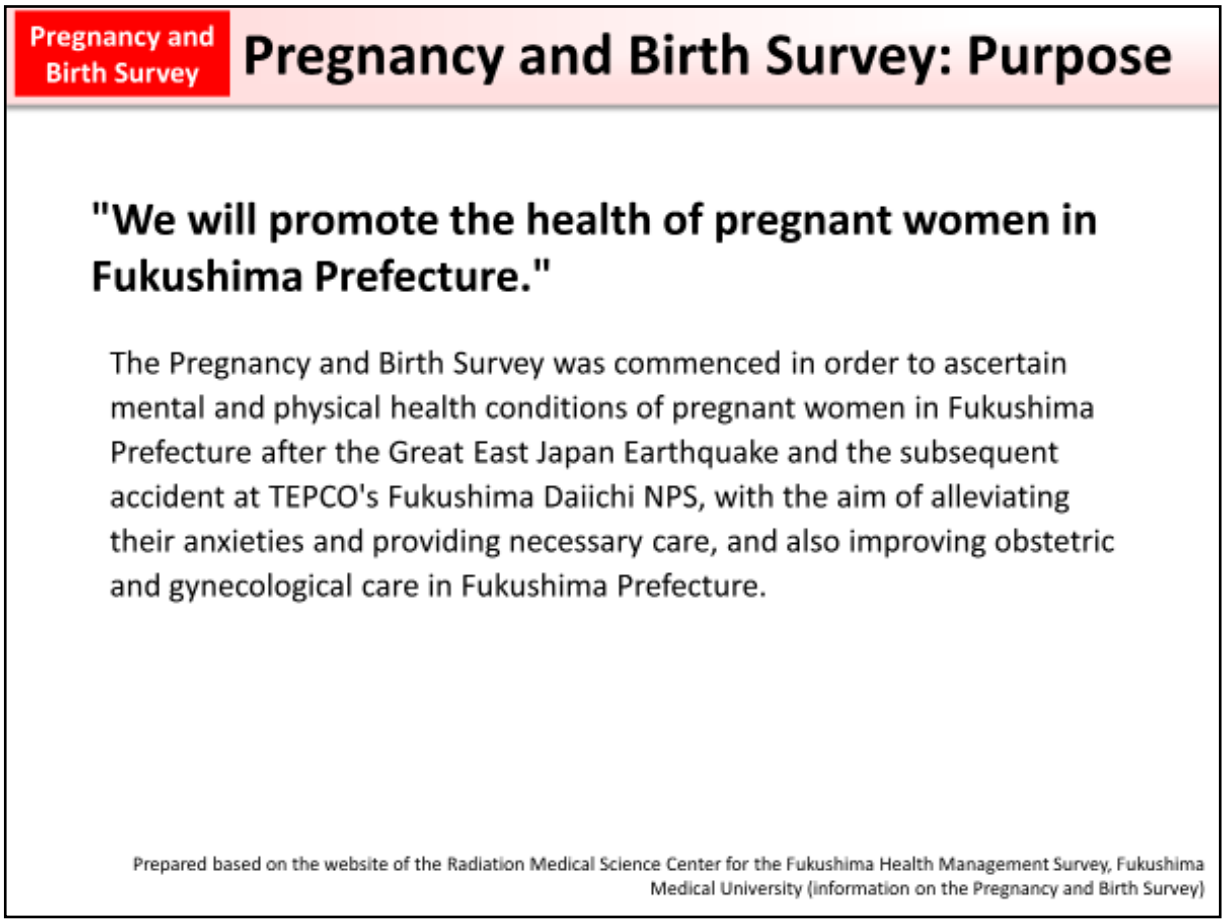

Fukushima Prefecture has been conducting the Pregnancy and Birth Survey in order to ascertain mental and physical health conditions of pregnant women in the prefecture after the Great East Japan Earthquake and the subsequent accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS, with the aim of alleviating their anxieties and providing necessary care, and also improving obstetric and gynecological care in Fukushima Prefecture.

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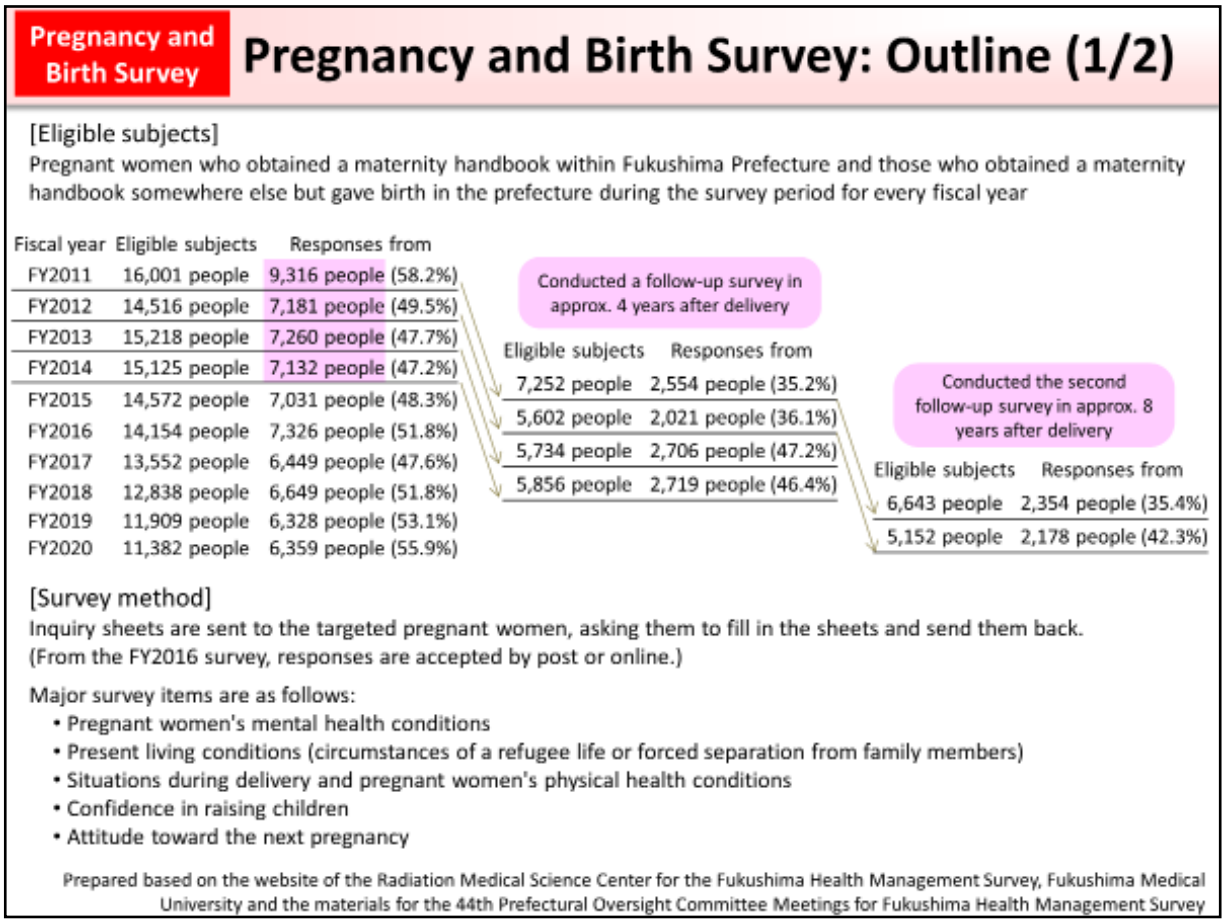

The Pregnancy and Birth Survey covers (i) pregnant women who newly obtained a maternity handbook in Fukushima Prefecture and (ii) those who obtained a maternity handbook elsewhere but gave birth in the prefecture during the survey period.

For those falling under (i), inquiry sheets are sent based on information provided by each municipality in the prefecture. Those falling under (ii) may use inquiry sheets provided by obstetric institutions in the prefecture or request the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, to send them inquiry sheets.

For respondents to the main survey in FY2011 to FY2014, the first follow-up survey (4 years after delivery) was completed and the second follow-up survey (8 years after delivery) is being conducted.

Survey targets are asked to fill in inquiry sheets and send them back. From the FY2016 survey, responses can also be submitted online.

The number of women who become pregnant and give birth in Fukushima Prefecture decreased after the earthquake in FY2012 but temporarily increased in FY2013. However, the number has been on a decline thereafter as seen nationwide.

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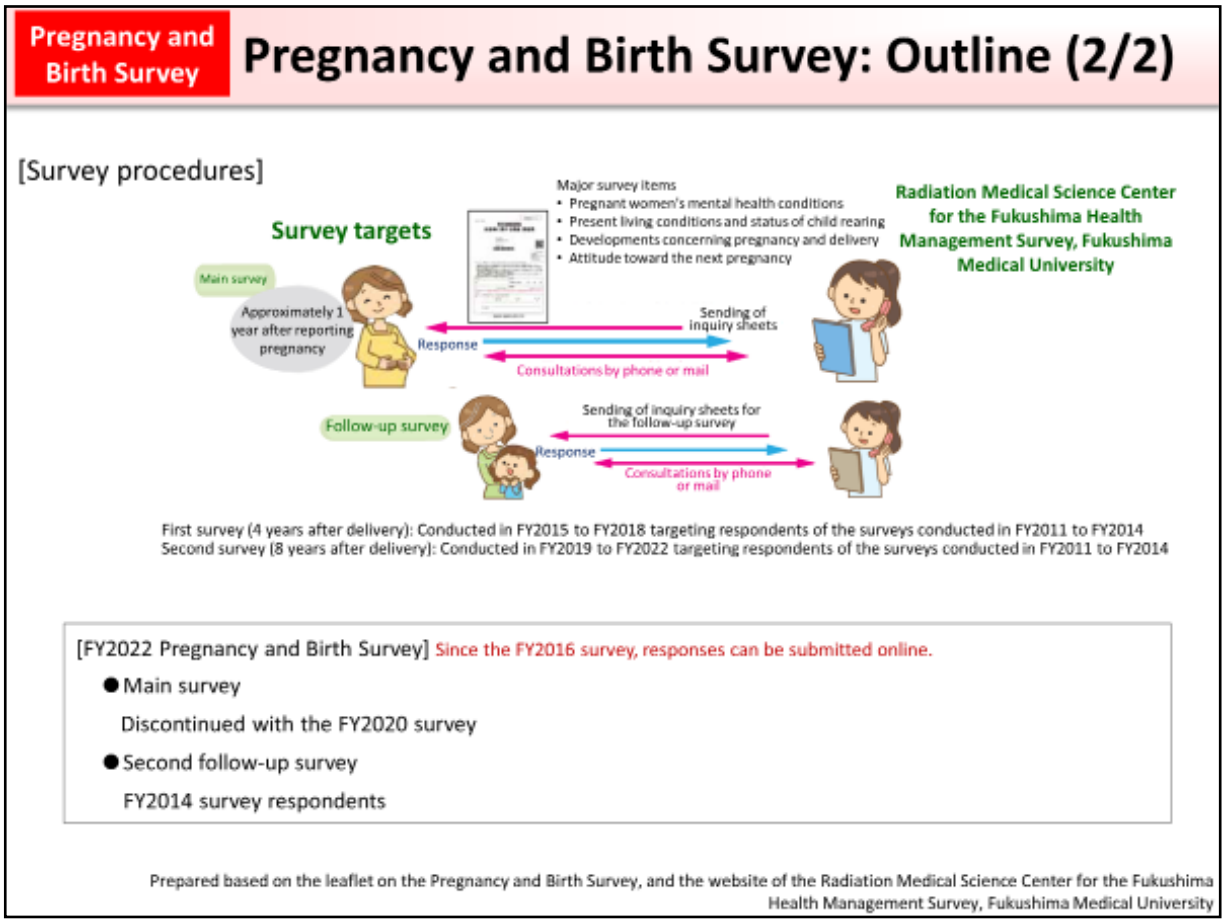

Details of the responses are compiled by the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, to detect people considered to be in need of support.[1] If there are any people who are considered to be in need of support, midwives, public health nurses, doctors or other specialized staff members offer consultations or other support to such people by mail or by other means.

The main survey was discontinued upon completion of the one conducted in FY2020.

From FY2015, the first follow-up survey to ask about mental and physical health conditions was conducted targeting FY2011 survey respondents (4 years after delivery). Since FY2019, the second follow-up survey has been conducted targeting FY2011 survey respondents (8 years after delivery).

1. Respondents who replied that they tend to feel depressed and that they are not interested in things, or respondents who are considered to be in need of support based on the content of their free remarks (such as those who are in need of help, who are severely depressed, who need support for child rearing, who are worried about radiation doses, or who directly made requests or are requiring concrete answers)

Included in this reference material on March 31, 2013
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Pregnancy and Birth Survey: Achievement and Content of Support

[Changes in coverage]

Out of all respondents, for those who were judged to be in need of support from the content of their responses, support has been offered by full-time midwives, etc. by phone or mail.

Fiscal year	Number of people who received support by phone	Percentage of those who received support among all respondents
FY2011	1,401 people	15.0%
FY2012	1,104 people	15.4%
FY2013	1,101 people	15.2%
FY2014	830 people	11.6%
FY2015	913 people	13.0%
FY2016	951 people	13.0%
FY2017	799 people	12.4%
FY2018	711 people	10.7%
FY2019	668 people	10.6%
FY2020	688 people	10.8%

	Number of people who received support by phone	Percentage of those who received support among all respondents
First survey following up the FY2011 survey	375 people	14.7%
First survey following up the FY2012 survey	256 people	12.7%
First survey following up the FY2013 survey	393 people	14.5%
First survey following up the FY2014 survey	380 people	14.0%

	Number of people who received support by phone	Percentage of those who received support among all respondents
Second survey following up the FY2011 survey	421 people	17.9%
Second survey following up the FY2012 survey	386 people	17.7%

[Topics of the consultations by phone]

	Main survey						First follow-up survey		Second follow-up survey	
	FY2011	FY2012	FY2013	FY2014 to FY2017 (the ranking remained unchanged)	FY2018 to FY2019 (the ranking remained unchanged)	FY2020	FY2015 FY2011 survey respondents	FY2016 FY2012 survey respondents	FY2017 to FY2018 (the ranking remained unchanged) FY2013-2014 survey respondents	FY2019 to FY2020 (the ranking remained unchanged) FY2011-2012 survey respondents
1st	Worries over radiation and its effects	Mothers' mental and physical health	Mothers' mental and physical health	Mothers' mental and physical health	Mothers' mental and physical health	Matters concerning child rearing	Mothers' mental and physical health	Mothers' mental and physical health	Mothers' mental and physical health	Mothers' mental and physical health
2nd	Mothers' mental and physical health	Matters concerning child rearing	Matters concerning child rearing	Matters concerning child rearing	Matters concerning child rearing	Mothers' mental and physical health	Worries over radiation and its effects	Matters concerning child rearing	Matters concerning child rearing	Matters concerning child rearing
3rd	Matters concerning child rearing	Worries over radiation and its effects	Children's mental and physical health	Matters concerning family life	Children's mental and physical health	Matters concerning family life	Matters concerning child rearing	Children's mental and physical health	Matters concerning family life	Children's mental and physical health

Matters concerning child rearing include concerns about baby food, night crying, constipation, vaccination, etc.

Prepared based on the material for the 44th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

Immediately after the earthquake, the most frequent topic was worries over radiation and its effects, but the percentage of such consultations is declining over time. Since FY2012, consultations on mothers' mental and physical health and matters concerning child rearing have increased and now rank high.

The percentage of people requiring support found in the main survey has been gradually decreasing.

From the follow-up surveys in FY2013 onward, support was expanded to cover those considered to be in need of support based on the content of their free comments. Accordingly, the percentage of those requiring support found in the first follow-up survey continued to be around 14%.

The percentage of those requiring support found in the second follow-up survey was the highest.

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Pregnancy and Birth Survey

Pregnancy and Birth Survey: What Has Become Clear (1/2)

Latest Survey Results: https://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

[Percentages of premature births, low birth-weight babies, and congenital abnormalities or anomalies]

Percentages of premature births, low birth-weight babies, and congenital abnormalities or anomalies obtained through the Pregnancy and Birth Survey were almost the same as the general level and those obtained through nationwide surveys.

	Percentage of premature births (%)		Percentage of low birth-weight babies (%)		Percentage of congenital abnormalities or anomalies (%)	
	Main survey*	Nationwide survey	Main survey*	Nationwide survey	Main survey	General level
FY2011	4.6	5.7	8.6	9.6	2.85	
FY2012	5.6	5.7	9.2	9.6	2.39	
FY2013	5.2	5.8	9.6	9.6	2.35	
FY2014	5.3	5.7	9.8	9.5	2.30	3 to 5 (based on the Obstetrics and Gynecology Clinical Practice Guidelines: Obstetrics 2020)
FY2015	5.6	5.6	9.4	9.5	2.24	
FY2016	5.3	5.6	9.2	9.4	2.55	
FY2017	5.3	5.7	9.2	9.4	2.38	
FY2018	5.2	5.6	9.0	9.4	2.19	
FY2019	5.1	5.6	9.1	9.4	2.71	
FY2020	4.4	5.5	8.1	9.2	2.21	

* As percentages are retabulated by excluding cases of dead births, values differ from those in the reports on the surveys in FY2011 to FY2018.
Premature births: Babies born at a gestational age from 22 weeks to less than 37 weeks
Low birth-weight babies: Babies born smaller than 2500g
Nationwide surveys: Annual percentages based on the Vital Statistics

Prepared based on the material for the 44th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

Radiation effects on newborn babies had been worried about, but the percentages of premature births, low birth-weight babies, and congenital abnormalities or anomalies in Fukushima Prefecture after the earthquake were found to be almost the same as generally available data, including Vital Statistics collected nationally.

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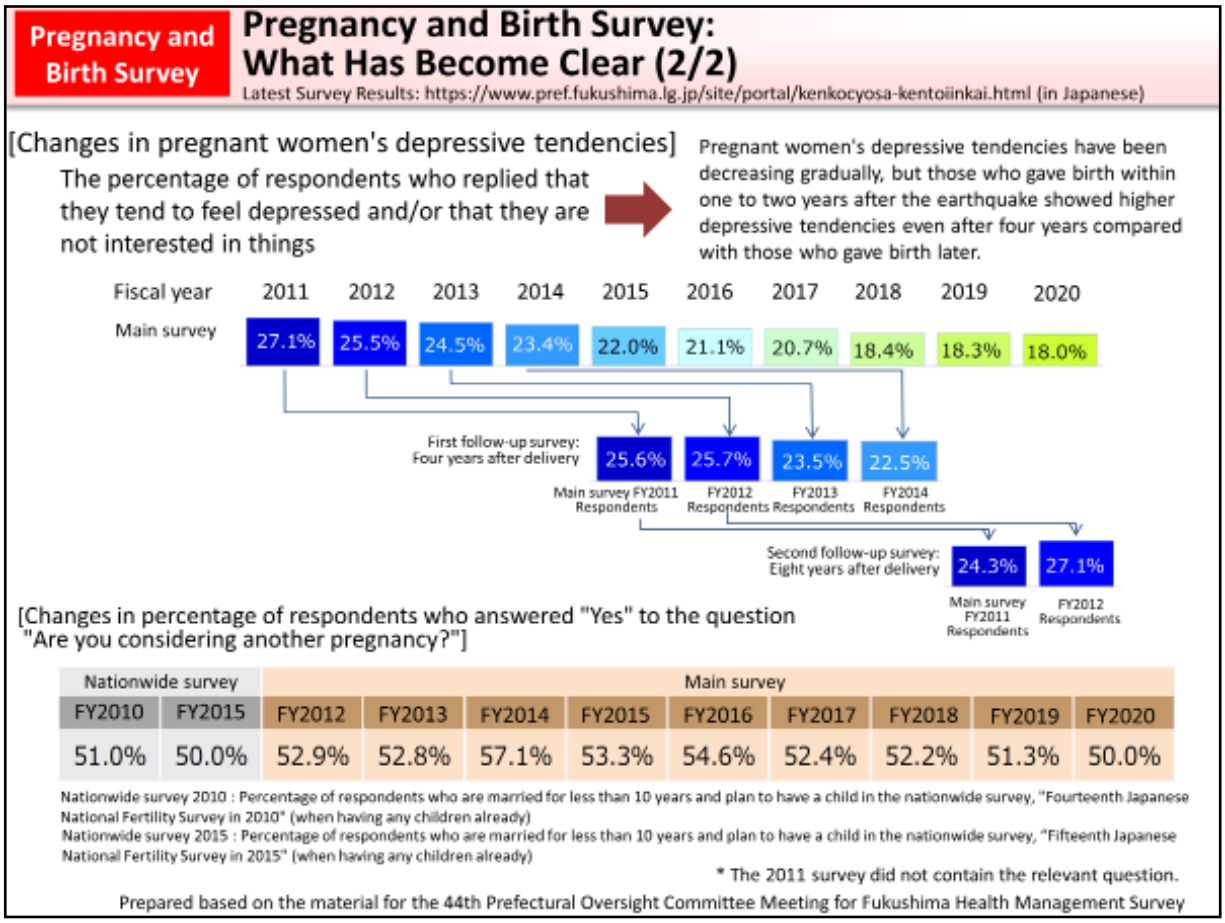

For questions concerning pregnant women's depressive tendencies, respondents who replied that they tend to feel depressed and/or that they are not interested in things have been decreasing. However, those who gave birth within one to two years after the earthquake showed higher depressive tendencies even after four years compared with those who gave birth later.

According to the "Healthy Parents and Children 21" (a national campaign to promote improvement of health standards of mothers and children), the percentage of postnatal depression evaluated using the Edinburgh Postnatal Depression Scale was 8.4% in FY2013 and 9.8% in FY2017 nationwide. The percentage estimated from the results of the FY2020 Pregnancy and Birth Survey was 10.0% (reference used for the calculation: Mishina H, et al. Pediatr Int. 2009; 51: 48).

The FY2020 Pregnancy and Birth Survey also revealed that respondents considering another pregnancy accounted for 50.0%. Since the FY2012 survey, more than half of the respondents wish to have more children. For reference, respondents who have been married for less than ten years and plan to have a child accounted for 60% (or 51% among those who already have any children) in the Fourteenth Japanese National Fertility Survey in 2010 and 57% (or 50% among those who already have any children) in the Fifteenth Japanese National Fertility Survey in 2015.

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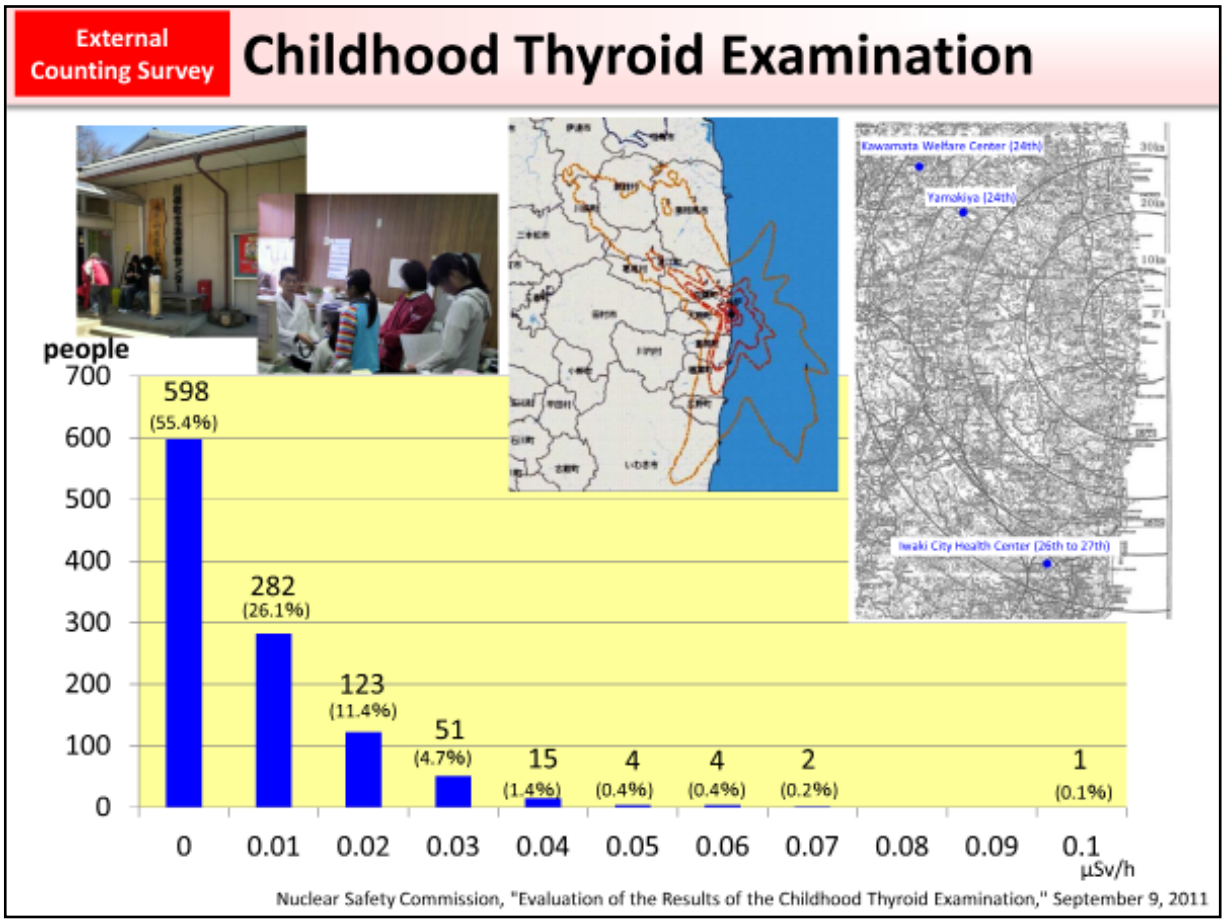
Updated on March 31, 2023



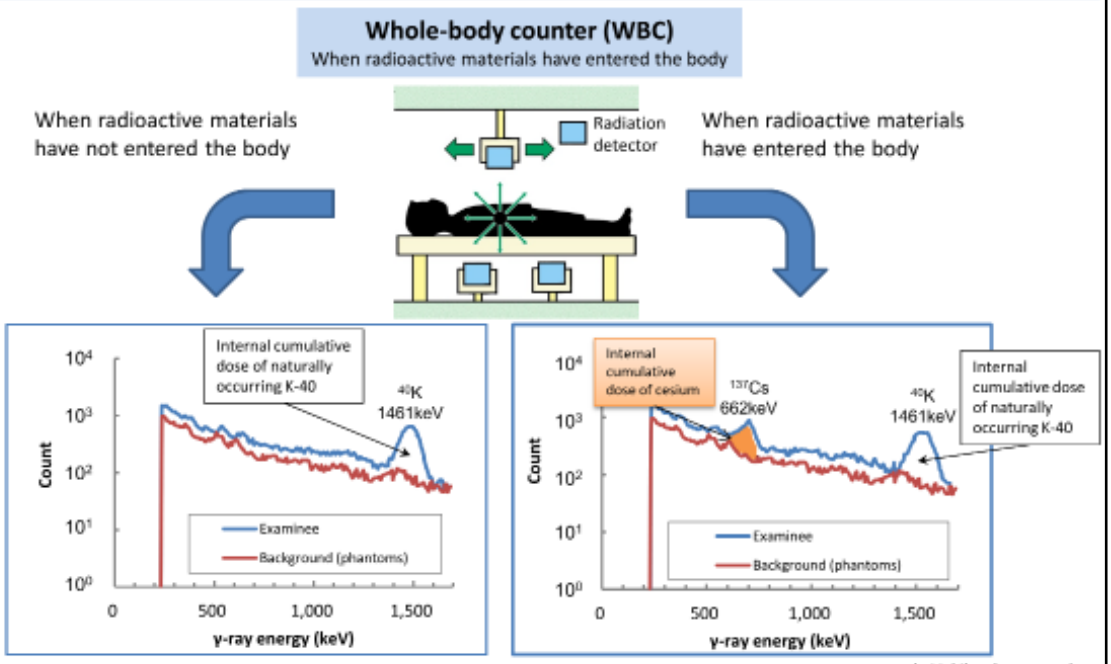
Based on estimates by SPEEDI on March 23, 2011, the Local Nuclear Emergency Response Headquarters conducted the Childhood Thyroid Examination to ascertain health effects of radiation on children in response to a request from the Technical Advisory Organization in an Emergency of the Nuclear Safety Commission of Japan (dated March 23 and 25). The figure shows the results for 1,080 children for whom measurement was conducted properly, out of 1,149 survey targets. The figure excludes the results for 66 children for whom simplified measurement was not appropriate due to environmental doses at their measuring spots (proper evaluation based on simplified measurement was difficult due to high ambient dose rates) and for three children whose ages were unknown. However, for all children who received the examination, measured values were below 0.2 μSv/h, which is set as the standard screening level by the Nuclear Safety Commission of Japan.

Included in this reference material on March 31, 2013
Updated on March 31, 2017

External Counting Survey

Internal Exposure Measurement Using a Whole-body Counter

Whole-body counter (WBC): A device to measure radiation from radioactive materials within the body
It can measure radionuclides emitting γ-rays, such as Cs-134 and Cs-137.



keV: kilo-electron volts

A whole-body counter is a device to measure γ-rays emitted from the body. As γ-ray energy differs by radionuclide, if a specific amount of energy, for example, 1,461 keV, which is the γ-ray energy of radioactive potassium (K-40), is counted, this can be interpreted as γ-rays emitted from K-40 in the body. The γ-ray energy of Cs-137 is 662 keV.

Potassium is an essential element for a living organism and approximately 0.01% of it is radioactive. Radioactive potassium is mainly dissolved in cellular water and exists in muscles but not so much in fat cells that contain little water.

As radioactive cesium spreads all over the body, the internal dose of cesium is measured using a whole-body counter.

(Related to p.60 of Vol. 1, “Instruments for Measuring Internal Exposure”)

Included in this reference material on March 31, 2013
Updated on March 31, 2016

External Counting Survey

Results of the Internal Exposure Measurement Using a Whole-body Counter

Targeting the residents of the Evacuation Areas and the areas where internal and external exposure doses are likely to be higher than in other areas based on the results of the environmental monitoring survey, etc. (Yamakiya District in Kawamata Town, Iitate Village and Namie Town), the internal exposure measurement using a whole-body counter commenced on June 27, 2011. The targeted areas were expanded sequentially, and measurements were conducted for a total of 346,885 people by November 30, 2022. For over 99.9% of them, committed effective doses due to Cs-134 and Cs-137 were below 1 mSv and even the maximum measured value was 3 mSv. Measured values were all unlikely to cause any health effects.

(i) Targeted local governments: All 59 municipalities in Fukushima Prefecture

(ii) Organizations that conducted the measurement
Fukushima Prefecture; Hirosaki University Hospital; Minamisoma City General Hospital; Japan Atomic Energy Agency; Niigata Prefecture Radiation Examination Office; Hiroshima University Hospital; Nagasaki University Hospital; Japanese Red Cross Otsu Hospital; Mori no Miyako Industrial Health Association; National Hospital Organization Kanazawa Medical Center; Ehime University Hospital; and the National Institute of Radiological Sciences

(iii) 'Mobile measurement' using whole-body counter vehicles outside Fukushima Prefecture
Fukushima Prefecture runs whole-body counter vehicles for mobile measurement so that evacuees outside the prefecture can also receive measurement. By March 2016, mobile measurement was conducted in 38 prefectures including the Tokyo Metropolis (other than Aomori, Ibaraki, Niigata, Ishikawa, Shiga, Hiroshima, Aichi and Nagasaki Prefectures), where there is no permanent organization to which Fukushima Prefecture commissions the measurement.

(iv) Measurement results (committed effective doses) (Results up to November 2022 were released on December 15, 2022.)

	Jun. 27, 2011 – Jan. 31, 2012	Feb. 1, 2012 – Nov. 30, 2022	Total
Less than 1 mSv	15,384 people	331,475 people	346,859 people
1 mSv	13 people	1 person	14 people
2 mSv	10 people	Zero	10 people
3 mSv	2 people	Zero	2 people
Total	15,409 people	331,476 people	346,885 people

* Committed effective dose: Assuming that until the end of January 2012, a person ingested radiation once on March 12, 2011, and, from February 2012 onward, a person orally ingested the equal amount of radiation every day from March 12, 2011, to the day preceding the measurement date, the person's lifetime internal doses are calculated by summing up the doses for fifty years in the case of an adult and for the years elapsed until becoming 70 years old in the case of a child.

Prepared based on the website of Fukushima Prefecture, "Results of the Internal Exposure Measurement Using a Whole-body Counter"

Targeting the residents of the Evacuation Areas and the areas where internal and external exposure doses are likely to be higher than in other areas based on the results of the environmental monitoring survey, etc. (Yamakiya District in Kawamata Town, Iitate Village and Namie Town), the internal exposure measurement using a whole-body counter commenced on June 27, 2011. The targeted areas were expanded sequentially, and the measurements were conducted for a total of 346,885 people by November 30, 2022. For over 99.9% of them, committed effective doses due to Cs-134 and Cs-137 were below 1 mSv and even the maximum measured value was 3 mSv. Measured values were all unlikely to cause any health effects.

Included in this reference material on March 31, 2013
Updated on March 31, 2023

External Counting Survey

Internal Exposure due to Foods

- Radioactive cesium is eliminated from the body over time.
- The internal exposure measurement using a whole-body counter being conducted at present examines the effects of radiation that is ingested orally on a daily basis.
- Measured values exceeding 1 mSv are considered to be mostly caused by radiation derived from wild plants or animals. Since March 2012, values exceeding 1 mSv have not been detected.

* Reference:p.86 of Vol. 2, "Mushrooms, Wild Plants and Wild Bird and Animal Meat"

Q. What if the measurement using a whole-body counter detected any value exceeding the detection limit?

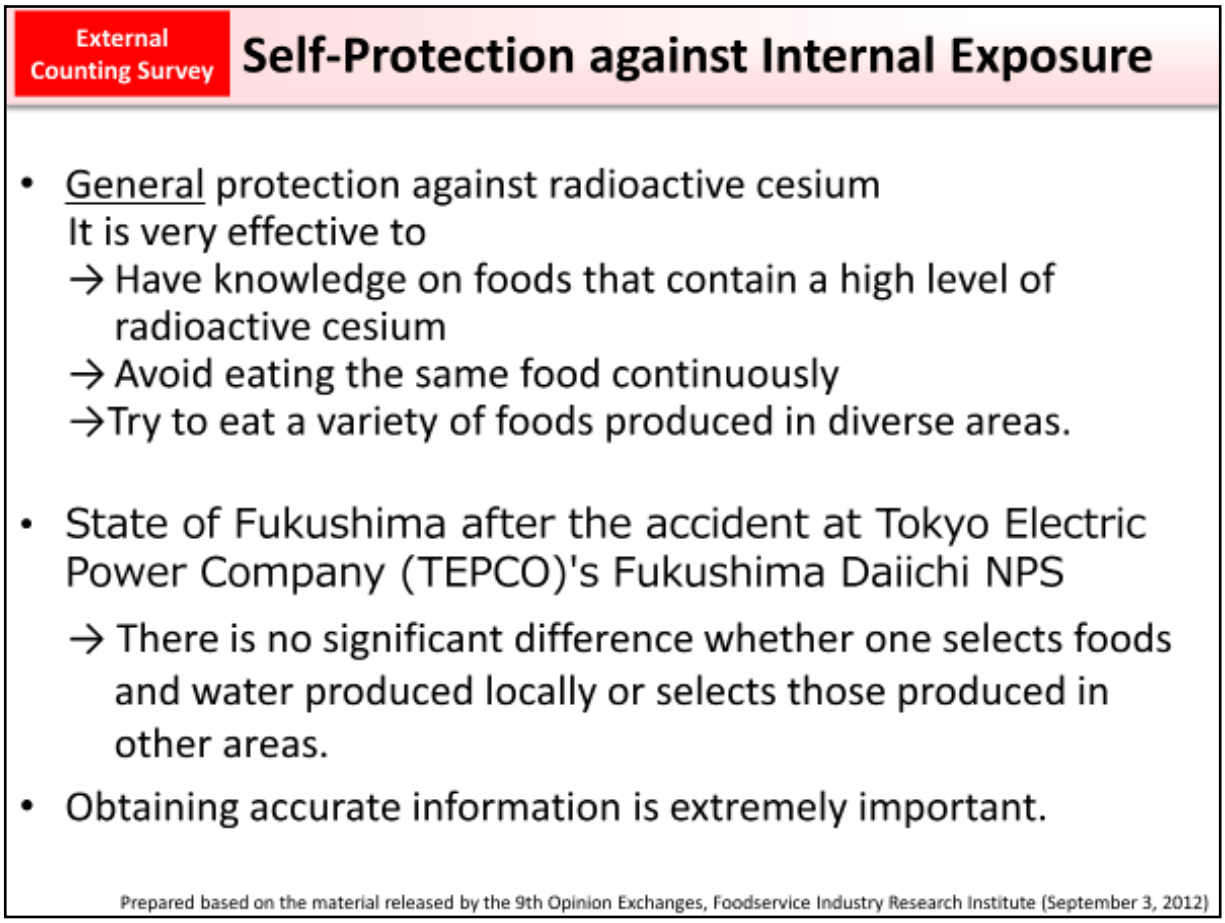
A. The relevant person may have eaten a lot of foods – not allowed in commercial markets – that contain radioactive cesium at high concentrations, e.g., wild mushrooms, wild plants, wild bird and animal meat (wild boars, bears, etc.).

Prepared based on the following:
Masaharu Tsubokura, et.al. "Reduction of High Levels of Internal Radio-Contamination by Dietary Intervention in Residents of Areas Affected by the Fukushima Daiichi Nuclear Plant Disaster: A Case Series," PLoS One. 2014; 9(6): e100302., US National Library of Medicine, National Institutes of Health, Published online 2014 Jun 16

As radioactive cesium is eliminated from the body over time, the radioactive cesium that people ingested immediately after the earthquake has mostly been eliminated.

The internal exposure measurement using a whole-body counter being conducted at present examines the effects of radiation that is ingested orally on a daily basis. Measured values exceeding 1 mSv per year are considered to be mostly caused by radiation derived from wild plants and animals. As long as people eat only foods distributed through regulated commercial marketplaces, their annual internal doses will not exceed 1 mSv. If the annual internal dose exceeds 1 mSv, the relevant person may have eaten a lot of foods – not allowed in commercial markets – that contain radioactive cesium at high concentrations. In particular, cases have been reported where wild mushrooms are suspected to cause high internal doses.

Included in this reference material on March 31, 2013
Updated on December 31, 2017



In order to avoid further internal exposure, it is effective to have knowledge on foods that contain a high level of radioactive cesium, avoid eating same food continuously, and try to eat a variety of foods produced in diverse areas. Obtaining accurate information is extremely important.

Included in this reference material on March 31, 2013
Updated on March 31, 2020