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Author(s)	Ishihara, Kazuko; Tomioka, Tsutomu; Imanaka, Etsuko; Okuma, Keiko; Matsumoto, Mari; Shimizu, Yuka; Katahono, Kuniko; Oshikawa, Yoko; Kanematsu, Takashi; Sumida, Sumiko
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# Issues involving long term non-participants in a mass screening program from one town.

Kazuko ISHIHARA<sup>1</sup>, Tsutomu TOMIOKA<sup>1</sup>, Etsuko IMANAKA<sup>1</sup>, Keiko OKUMA<sup>1</sup>,  
Mari MATSUMOTO<sup>1</sup>, Yuka SHIMIZU<sup>1</sup>, Kuniko KATAHONO<sup>1</sup>, Yoko OSHIKAWA<sup>1</sup>,  
Takashi KANEMATSU<sup>2</sup>, Sumiko SUMIDA<sup>3</sup>

**Abstract** A mass screening program for cancer has been carried out in the town of Naru in Nagasaki Prefecture since 1971.

According to the data obtained from the general mass screening between 1985 and 1995, the mortality rate of all cancers in the late period (1991-1995, 27.3%) in Naru town was significantly lower than in the early period (1985-1990, 31.1%,  $P < 0.005$ ) and also the rate was lower for all Japan in the late period (28.5%) <Table 1>.

We thus concluded this long term general mass screening program to be an effective community measure for reducing the mortality rate of cancers.

However, various issues remain regarding non-participants in the mass screening program among inhabitants who live in such a medically depopulated area.

We carried out a questionnaire survey and an interview both by telephone and home visits, on a total of 882 individuals (males:427, females:455) who had not participated in the mass screening program for at least 5 years and were all over 40 years of age and residents of Naru town. The objective of this story was to evaluate the non-participants in this mass screening program.

**Table 1** The mortality rate of all cancers, the population, the area in the model area Naru and four neighboring towns

Towns		Naru	A	B	C	D
The population(in 1995)		4,535	2,425	4,453	4,290	7,052
The area (km <sup>2</sup> )		25.2	68.4	85.2	33.8	49.4
The mortality rate (%)	Early period 1985~1990	31.1	23.2	24.0	27.2	26.9
	Late period 1991~1995	27.3	30.3	24.3	33.9	30.3

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**Key Words** : Mass screening, Non-participants, Mortality rate

## I. Introduction

Numerous mass screening programs are now being conducted in Japan since they are thought to be an effective community measure for detecting cancers in the early stage, in order to reduce the mortality rate of cancers and also decrease medical costs. Needless to say, the purpose of mass screening is to detect cancers from many subjects, especially in the early stage. Nagasaki Prefecture has many isolated

small islands and thus tends to be a medically depopulated area. Mass screening is therefore an especially appropriate system for inhabitants who live in such a medically depopulated area. The members of The Second Department of Surgery, Nagasaki University School of Medicine have continually conducted a mass screening annually since 1971 in Naru town<sup>1, 2)</sup>.

We found this long term general mass screening

1 School of Allied Medical Sciences, Nagasaki University

2 Department of Surgery II, Nagasaki University School of Medicine

3 The Public Health Center of Naru

program to be an effective community measure for reducing the mortality rate of cancers. However, the number of non-participants remains large <Figure 1>. Between 1985 and 1995, the rate of the screenees gradually decreased and numbered only 37.7% of the inhabitants, while non-participants numbered approximately 62.3%.

We carried out a questionnaire survey and an interview by both telephone and with home visits, on a total of 882 individuals (males:427, females:455) who had not participated for at least 5 years and were all over 40 years of age and residents of Naru town.

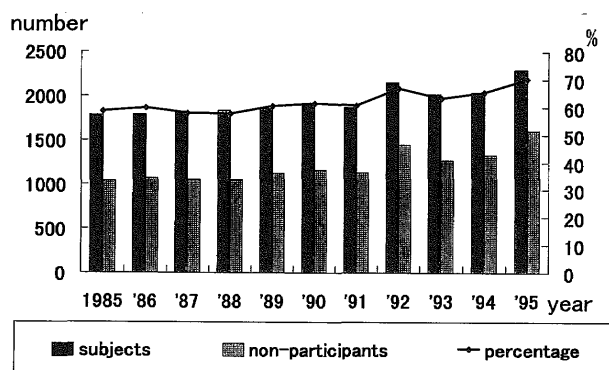


Fig. 1 The changes of the non-participants in the mass screening program

## II. Subjects and Methods

### 1. The area of mass screening

A mass screening program has been performed since 1971 in Naru town, which had a population of 4,517 and covers an area of 25.2 square kilometers on a small island in Nagasaki Prefecture <Figure 2>. An ultrasonographic examination was included since 1982, especially for identifying liver, biliary and pancreas diseases. In 1985, for heart diseases, gastric, breast, uterus, kidney diseases was also added. Screening for other organs has also been gradually

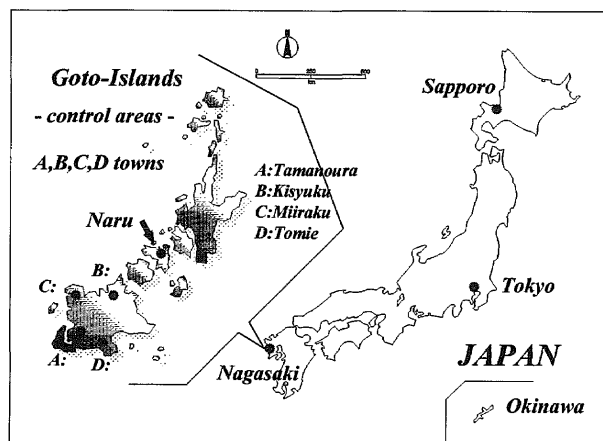


Fig. 2 The area of mass screening

included along with screening for colorectal diseases in 1988, and ophthalmic diseases in 1995<sup>2)</sup>.

### 2. The subjects participating in a questionnaire survey

Since the non-participants numbered 62.3%, we carried out a questionnaire survey and an interview by telephone or home visits including a total of 882 individuals (males:427, females:455) who were all over 40 years of age and residents of Naru town and had not participated in the mass screening program for at least 5 years.

The age distribution of the subjects was 27.9% in their 60's, 25.9% in their 40's, 21.8% in their 50's, 18.7% in their 70's for males and 29.5% in their 60's, 21.8% in their 70's, 19.3% in their 40's, 15.4% in their 50's for females <Table 2>.

Table 2 The aged distribution of the subjects for males and females

males age	subjects	percentage	females age	subjects	percentage
40's	111	25.9%	40's	88	19.3%
50's	93	21.8%	50's	70	15.4%
60's	119	27.9%	60's	134	29.5%
70's	80	18.7%	70's	99	21.8%
80's	20	4.7%	80's	60	13.2%
90's	4	0.9%	90's	4	0.9%
total	427	100%	total	455	100%

### 3. The survey and a questionnaire methodology

- 1) The first survey was a questionnaire conducted by post card.

Table 3 The items of the questionnaire survey (multiple answers)

<p><b>1. Please state the main reasons for not participating in the mass screening program.</b></p> <p>①too busy with work                      ②presently fit, no problems                      ③not at home during mass screening                      ④no transportation to the health center                      ⑤do not wish to participate                      ⑥presently physically handicapped                      ⑦the screening time takes too long                      ⑧afraid of physical examinations                      ⑨screening costs too much                      ⑩presently being treated at a local hospital                      ⑪plan to undergo another health check-up                      ⑫a fear of being diagnosed to have "cancer"                      ⑬other reasons</p> <p><b>2. Are you willing to participate in this year's mass screening program</b></p> <p>①yes ②no</p> <p><b>3. Do you have any particular requests regarding the mass screening program ?</b></p>
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- 2) The second survey was an interview of the non-responders to the post card either by telephone or by home visits.
- 3) The questionnaire results are shown in <Table 3>.

**4. The time periods of the survey**

The first survey was conducted for one week from July 7 to July 13, 1997. The second survey as conducted for two days from August 7 to August 8, 1997.

**5. Analysis of the survey**

All data collected were analyzed by computer using a software package named Relational Data Base "Kiri Ver.5" developed by the Management Engineering Research Institute Co., and were analyzed by the  $\chi^2$  test with  $P < 0.01$  considered to indicate statistical significance.

**III. Results**

**1. The overall response rate and the rate based on age and set**

The response rate was 26.2% (231 out of 882 respondents) in the first survey. The total response rate was 37.3% (329 out of 882 respondents) including 79 respondents by telephone and 19 respondents based on a home visit.

The rate regarding age or sex is shown in <Table 4>, and included 152 of males and 177 of females. The aged distribution of the respondents was 51.3%

in their 70's, 40.3% in their 60's, 40% in their 80's and 26.9% in their 50's for males, 48.5% in their 60's, 43.4% in their 70's, 36.7% in their 80's and 31.4% in their 50's.

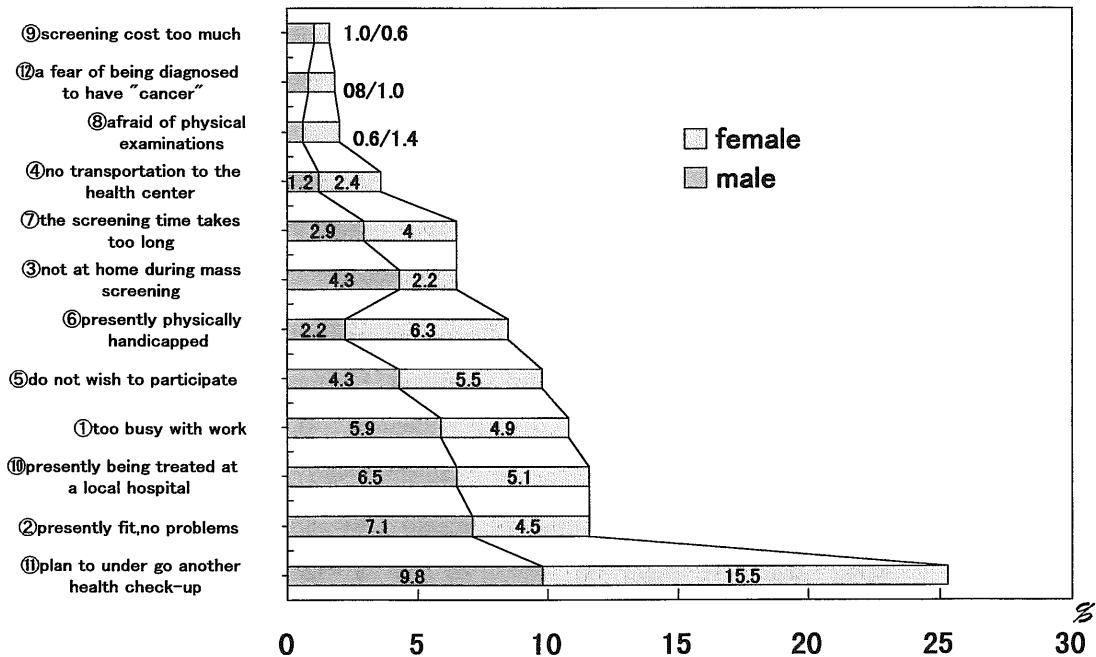
**Table 4** The aged distribution of the respondents for males and females

males aged	respondents	percentage	females aged	respondents	percentage
40's	28	25.2%	40's	24	27.3%
50's	25	26.9%	50's	22	31.4%
60's	47	40.3%	60's	64	48.5%
70's	41	51.3%	70's	42	43.4%
80's	8	40.0%	80's	22	36.7%
90's	1	25.0%	90's	2	50.0%
total	150	35.1%	total	176	38.7%

**2. The reasons for non-participants for males and females (multiple answers)**

Among males the reasons for non-participation included ① "they were presently being regularly treated at a hospital" : 48 (20.2%), ② "they were fit, and had no problems" : 35 (14.7%), ③ "they had other planned health check-ups" : 32 (13.4%) and ④ "were too busy with work" : 29 (12.2%). On the other hand, the reasons for non-participating females included : ① "they were presently being regularly treated at a hospital" : 76 (27.7%), ② "were physical handicapped" : 31 (11.3%), ③ "did not want to participate" 27 (9.9%) and ④ "they had received other planned health check-ups" : 25 (9.1%) <Figure 3>. The highest rate comprised 70.4% who responded either

**Fig. 3** The reasons of the non-participants for males and females (multiple answers)



that : in "they were presently being regularly treated at a hospital" or "they had received other planned health check-ups". However, 26.1% demonstrated a lack of understanding regarding the purpose and goals of mass screening. Such reasons included : "not wanting to participate", "fear of undergoing a physical examination", "a fear of being diagnosed with cancer", and so on.

### 3. The reasons for non-participation by age.

The age distribution of the subjects was approximately 50% in their 60's and 70's.

Regarding individuals in their 60's and 70's the main reasons for non-participation were "already being treated at a local hospital": 45 (36.3%) for those in their 60's and 36 (29.0%) for those in their 70's. In addition, the answer "presently healthy, no problems" was also higher rate 20 (35.1%) in their 60's, in the group of individuals in their 60's and 70's and 15 (26.3%) in their 70's. Regarding "plan to have another health check-up" the highest rate was for those in their 60's and the answer "too busy with work" was also the highest for those in their 60's: 17 (32.0%).

### 4. The willingness to participate in future mass screening

A total of 82 individuals showed a willingness to participate in future mass screening, and included 38 males and 44 females. On the other hand, 73 were unwilling to participate in future mass screening, and consisted of 34 males and 39 females. In addition 90 individuals gave no answer.

## IV. Discussion

According to the survey, we identified the main reasons for non participation in mass screening. A total of 70.4% including those who did not participate due to "presently being treated at another hospital" and "they planned to have another health check-up". That is to say, over 70% of the non-participants were receiving some kind of medical treatment. In addition, more coordination is called for among those receiving "another planned health check-up" and those undergoing "mass screening".

Regarding the ways to improve the percentage of participants in mass screening ; the most important factors are: ① provide free transportation to the health center, ② reducing the time required for the

screening test.

More difficult problems that need to be solved, include ① a fear of being diagnosed to have "cancer", ② being afraid of physical examinations, ③ presently healthy no problems. We consulted with the local government regarding these issues and it was thus decided to provide buses and move the starting time of mass screening up to 7:30 or one hour earlier than before. It was also decided to review the local government plans to improve the overall health education of the local residents in order to better explain the need for mass screening to help detect cancers, especially in the early stage, so that such patients can be successfully treated. If cancer can be detected at an early stage the overall successful treatment rate will improve<sup>3-12)</sup>.

To improve the mass screening program the following steps are considered to be necessary ; 1. to regularly evaluate the health needs of the local residents, 2. to regularly confer with the local government, 3. to provide good medical advice to the local residents, 4. to improve health education for all local residents.

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## 離島集団検診における未受診者の課題

石原 和子<sup>1</sup>・富岡 勉<sup>1</sup>・今中 悦子<sup>1</sup>・大熊 恵子<sup>1</sup>・松本 麻里<sup>1</sup>  
志水 友加<sup>1</sup>・片穂野邦子<sup>1</sup>・押川 陽子<sup>1</sup>・兼松 隆之<sup>2</sup>・隅田 澄子<sup>3</sup>

- 1 長崎大学医療技術短期大学部
- 2 長崎大学医学部第二外科学教室
- 3 奈留町保健センター

**要 旨** 五島奈留町において昭和46年から毎年継続して集団検診を行ってきて、平成10年で27年になる。総合検診が確立した昭和60年から平成7年までの11年間の集団検診のデータを基に調査を行い、昭和60年から平成2年の6年間の前期、平成3年から平成7年の5年間の後期とした。癌死亡率の推移を見ると、前期平均31.1%、後期平均27.3%と有意 ( $P < 0.005$ ) に漸減傾向を示した。平成7年の全国平均28.5%に比べても有意 ( $P < 0.01$ ) に低い値を示した。これは長期集団検診の効果として一応の結論を見た。しかし、離島の地域住民の健康維持増進に効果を与えるはずの集団検診に未受診者が多いという問題が提起された。そこで、5年間で一度も受診しなかった40歳以上の882名(男427名:女455名)を対象に未受診の理由に関するアンケート調査と電話・訪問面接を実施し、未受診者への対策と効果的な集団検診のあり方について考察した。

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**Key Words** : 集団検診, 未受診者, 癌死亡率