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A Comprehensive Approach including Mailed FITs and Nurse Navigation for Colorectal Cancer Screening: A Pilot Study in a Rural Municipality in Japan

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Background

- Colorectal cancer (CRC) is a heavy burden worldwide, and CRC screening has been implemented nationally in developed countries.
- The guaiac fecal occult blood test (gFOBT) has been the primary screening modality for CRC screening, but it has recently been replaced with fecal immunochemical testing (FIT).

Colorectal cancer screening in Japan

- CRC screening was incorporated into the national program in 1992. The method employed is FIT, with a screening interval of one year. Since its introduction, the two-sample method has been maintained.
- The participation rate, including both community-based and workplace screening, has remained below 50% over the past decade.
- Individuals who undergo FIT are required to bring their samples to clinics or hospitals directly. Mailing FIT has generally been prohibited, but some municipalities have implemented it, excluding this option only in the summer.

Objective

- CRC screening using FIT has been available in Japan since 1992. However, the low participation rate and follow-up rate after positive results present challenges.
- To address these issues, we implemented a comprehensive approach that included mailing FITs and providing nurse navigation support.

Methods

- A total of 13,855 subjects were selected from individuals in Mito City, Japan, who had no history of CRC screening in the previous two years.
- Individuals were invited to participate in research-based screening in two rounds. The first round of invitations was sent in 2021 to individuals aged 62 and 63, respectively. In 2022, individuals aged 67 to 69 were invited. After obtaining informed consent and reconfirming the screening history, a one-sample FIT kit was mailed to 1,064 participants. Nurses provided navigation support to individuals with positive FIT results.
- In the subsequent year, only an invitation letter was sent to those with negative FIT results.
- Differences in percentage points in the results of CRC screening between the baseline and subsequent screenings were compared using the chi-square test.

Results

- Among the 1,064 individuals who returned FIT kits, 83 (8.0%) had positive results, and 73 (88.0%) underwent a follow-up colonoscopy. As a result, ten cases of CRC and seven advanced adenomas were diagnosed.
- In subsequent years, the total number of participants remained at 168 (16.8%), representing a decrease of 83.2 percentage points among individuals with negative FIT results from the first year. The positive rate reached 6.9% (11/160). The follow-up colonoscopy rate was 72.7% (8/11), which decreased when there was a lack of nurse navigation, but this was not statistically significant (p = 0.169).

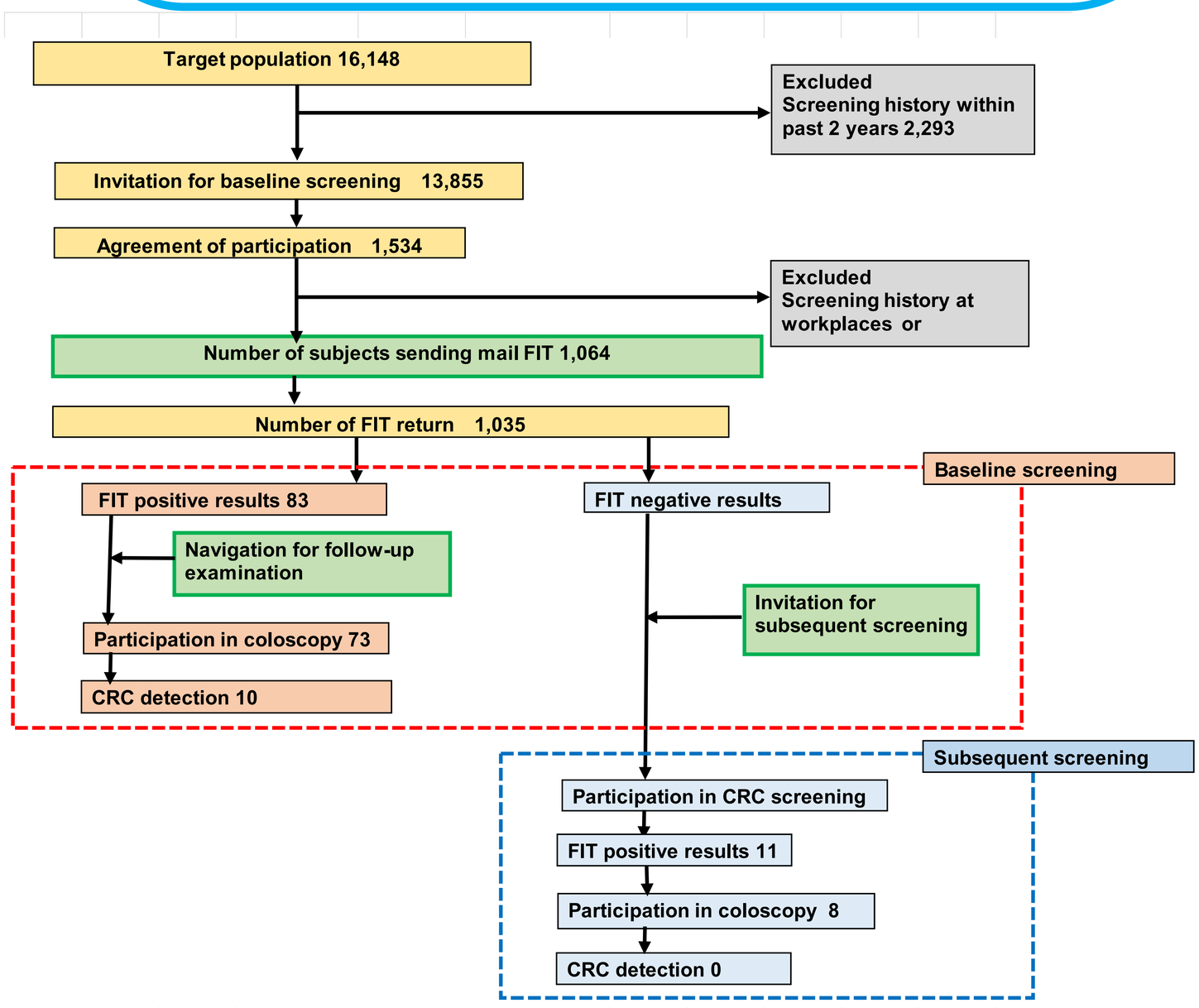

Figure. Flow-chart of research screening

Discussion

- The implementation method has not changed in Japan since its introduction, despite technological improvements.
- With newly developed FIT devices, hemoglobin concentration can be maintained even at high temperatures in summer.
- Mailing FIT can be used to invite individuals to screening, and navigation support is also effective in increasing participation in follow-up examinations.
- These approaches have already been introduced in some European countries for greater convenience, leading to increased participation and contributing to establish the effectiveness of CRC screening in real world settings.

Conclusion

- The results suggest that mailed FITs increase participation in CRC compared to routine invitation. Nurse navigation may be effective in encouraging individuals with positive FIT results to undergo a follow-up colonoscopy.
- These approaches could be adapted to Japanese settings.

Table. Comparison of the CRC screening results between baseline and subsequent screening

	Baseline screening	Subsequent screening	% point difference	P value
Number of participants	1,035	160		
Participation rate (95%CI)	100.0	16.8 (13.8,19.8)	-83.2 (-86.2, -80.2)	<0.001
Positive rate (95%CI)	8.0 (6.4, 9.7)	6.9 (3.0,10.8)	-1.1 (-4.5, 2.2)	0.62
Further examination rate (95%CI)	88.0 (81.0, 94.9)	72.7 (46.4, 99.1)	-15.3 (-42.5, 12.0)	0.17
Colorectal cancer detection rate (95%CI)	0.97 (0.4, 1.6)		NA	NA