

EPH237

Age-specific Balance of Benefits and Harms for Cancer Screening Programs in Japan

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Background

- In Japan, five cancer screening programs are implemented as national programs for gastric, lung, colorectal, breast, and cervical cancers.
- Gastric and cervical cancer screening began in 1983, followed by the introduction of the other programs by 2000. When these programs were introduced, the target population was determined arbitrarily, without sufficient supporting evidence.
- However, cancer incidence and mortality rates have changed with population aging and advances in medical care over the past several decades.
- Therefore, at present, initiating cancer screening at younger ages and continuing screening without an upper age limit may not contribute to reducing mortality from the cancers targeted by these programs and may instead cause harm through unnecessary screening.

Objective

To avoid unnecessary screening, we evaluated the balance of benefits and harms of cancer screening across different age groups.

Methods

- Using data from a national survey in 2023, I estimated the expected benefits and harms per 10,000 individuals. This approach was used to assess the balance between the benefits and harms of each cancer screening program in real-word setting.
- The benefit was defined as the number of screen-detected cancers, whereas the harm was defined as the number of individuals requiring further diagnostic examinations following a positive screening result.
- For cervical cancer screening, the target lesions included cervical intraepithelial neoplasia 3(CIN3) in addition to cervical cancer.

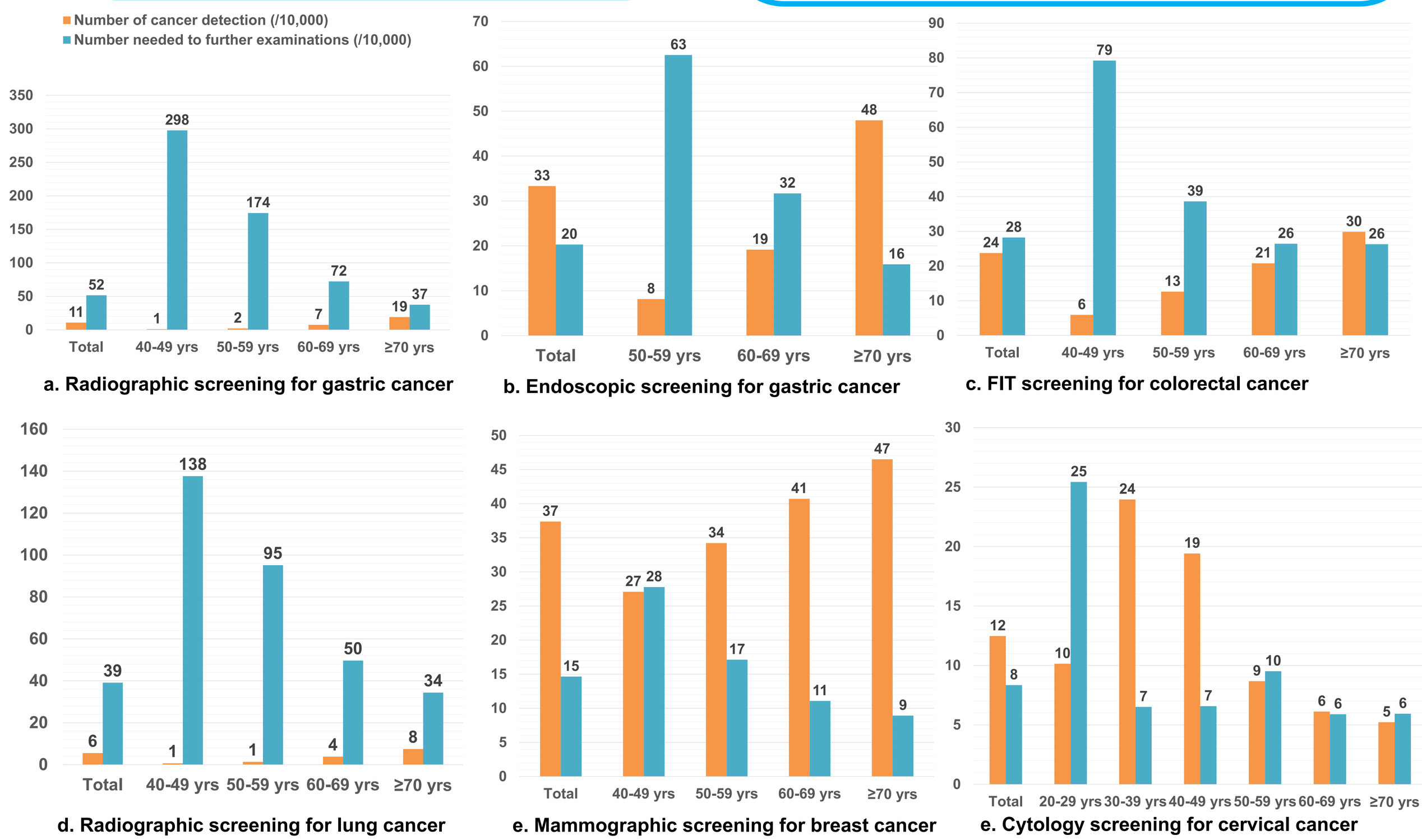

Figure. Balance of benefits and harms of cancer screening programs

Results

- As shown in the following examples, for lung cancer screening, the number of benefits and harms per 10,000 participants was 6 and 39, respectively. For gastric cancer screening using endoscopy, the corresponding numbers were 33 and 20, respectively. For colorectal cancer screening, they were 24 and 28, respectively. In both lung and gastric cancer screening, benefits outweighed harms among individuals aged 70 years or older, whereas this pattern was not consistently observed among those younger than 60 years.
- For breast cancer screening, the numbers of benefits and harms per 10,000 participants were 37 and 15, respectively. Among participants in their 40s, benefits and harms were nearly equivalent, whereas benefits increased with age among those aged 50 years or older.
- For cervical cancer screening, the number of benefits and harms per 10,000 participants were 12 and 8, respectively. Although the benefits outweighed the harms among individuals aged 30-49 years, in contrast to previous examples, the harms outweighed the benefits among those aged 20 years.

Conclusion

Considering the balance between benefits and harms, the appropriate starting ages for cervical, colorectal, lung, and gastric screening warrant reconsideration.