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Presentation of benefits and harms in cancer screening guidelines for Koreans: a systematic review protocol

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ABSTRACT

Introduction Cancer screening guidelines should be based on the best available evidence, presenting both the benefits and harms of screening in a manner applicable to stakeholders. How the potential benefits and harms of screening are presented determine the intent of guideline developers and the delivery of recommendations. Therefore, we will systematically review the cancer screening guidelines for Koreans to evaluate the presentation and detailed ways of the benefits and harms of the recommended cancer screening practices.

Methods and analysis To identify cancer screening guidelines for Koreans, we will search international electronic databases, including MEDLINE, Embase and domestic literature databases (Korean Studies Information Service System, Research Information Sharing Service, KoreaMED, Korean Medical Database, National Assembly Library and Korea Institute of Science and Technology Information) as well as guideline databases (Guideline International Network, National Institute for Health and Care Excellence, Turning Research Into Practice medical database, WHO guidelines and Korean Medical Guideline Information Center), from inception to November 2022. We will include cancer screening guidelines for healthcare practitioners and patients. Furthermore, we will focus on the most updated guidelines when multiple versions of guidelines are available for a specific intervention and cancer pairs from the same development group. Two reviewers will independently and in duplicate conduct reference screening and data extraction. Data will be extracted based on recommendations from each guideline and how their benefits and harms are presented. The general characteristics of cancer screening guidelines, including cancer type, recommended screening methods, certainty of evidence, direction and strength of recommendation, will be collected. In addition, we will obtain key information on the presentation of the benefits and harms of screening interventions, including quantification of their relative and absolute effects of screening interventions. Finally, our findings will be presented descriptively, and a summary of the results will be provided.

Ethics and dissemination Ethics approval is not required as we will only use published materials. We will disseminate our findings through publication in peer-reviewed journals.

STRENGTH AND LIMITATIONS OF THIS STUDY

⇒ This study will be conducted using an internationally recognised rigorous methodology, including a comprehensive search to identify cancer screening guidelines for Koreans, reference screening, data collection and calibration exercises to ensure replicability and transparency.
⇒ The potential heterogeneity of standards for guideline development and presentation among guideline developers or institutions might limit comparisons of the benefits and harms of screening.
⇒ Our focus on the latest version of the guidelines from the same development group does not guarantee that the guidelines have had the greatest impact on the stakeholders.

INTRODUCTION

In 1999, the Korea National Cancer Screening Programme (NCSP) started screening for gastric, breast and cervical cancer for medical aid beneficiaries.[1] Since then, the screening range of recipients and cancer types has continuously expanded. The NCSP has conducted screening for six major cancers (stomach, liver, colorectal, breast, cervical and lung) for the general public and high-risk groups. In addition to the NCSP, various types of cancer and screening methods have been conducted through private screening. Screening rates for stomach, liver, breast, colorectal, and cervical cancer have steadily increased to 72.8%, 26.2%, 63.1%, 58.4% and 55.6%, respectively, in 2018.[2]

Cancer screening guidelines provide evidence-based recommendations for the early detection of cancer in potential recipients to assist healthcare providers in providing appropriate evidence-based care and optimising health outcomes. Clinicians should explain the benefits and harms of screening to potential recipients and make decisions using these guidelines. When clinicians discuss with patients, their awareness of the magnitude of the benefits and harms helps them understand the intent of the guideline developer and make decisions.[3] Therefore, guidelines should include

statements of direction and strength of recommendations, along with the rationale on which these recommendations are based.

The grading of recommendations, assessment, development and evaluation (GRADE) method explicitly addresses the factors that determine the direction and strength of recommendations, including the certainty of the evidence, resources and values and preferences of stakeholders.[4] In addition, both the desirable (benefit) and undesirable (harm) consequences of the intervention and their balance must be considered.[5] Even if a desirable effect, such as a reduction in mortality, is evident from screening, if the harm of the screening itself and unnecessary treatment due to overdiagnosis is large enough, it is likely to make a weak recommendation for the screening, and informed decision-making would be warranted.

The GRADE suggests that for decision-making in a specific population, the absolute and relative effects should be evaluated. Unlike the relative effect, which is known to be consistent across different populations, the absolute effect of the intervention could vary according to different baseline risks in the populations. Therefore, recommendations on whether a particular population group will adopt that intervention is substantially influenced by its absolute effect.[6]

Patients, physicians and policymakers perceive relative risk reductions as greater and more convincing than the absolute risk reduction.[7] Therefore, guidelines for making recommendations, such as the GRADE method, agree on the importance of presenting information on absolute and relative effects.[6] If the cancer guidelines do not present the potential benefits and harms of cancer screening in a balanced or applicable way, this could lead to inadequate screening recommendations and unnecessary treatment due to under-use or over-use.

Of the 55 cancer screening and prevention recommendations in the USA, 25% and 29% did not mention any benefits and harm, 47% and 58% did not quantify the benefits and harm and 40% and 42% presented absolute effects of the benefits and harms, respectively.[8]

There is no systematic summary of how the benefits and harms are presented in the cancer screening guidelines in Korea. Therefore, this study aims to investigate whether the cancer screening guidelines for Koreans explain both benefits and harms when presenting recommendations. We will evaluate whether the harms and benefits are quantified and presented in a balanced way. Furthermore, in this protocol, our research plan will be described in detail to ensure transparent research transmission.

METHODS

We will report this review protocol in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocol statement.[9]

Guideline search

We will conduct a systematic search of international electronic literature databases, including MEDLINE, Embase and Korean literature databases, including the Korean Studies Information Service System, Research Information Sharing Service, KoreaMED, Korean Medical Database, National Assembly Library and Korea Institute of Science and Technology Information, to identify eligible cancer screening guidelines for Koreans. We will also search guideline databases, including the Guideline International Network,[10] National Institute for Health and Care Excellence,[11] Turning Research into Practice medical database,[12] WHO guidelines[13] and Korean Medical Guideline Information Center.[14]

Because we will not place any restrictions on the publication format of the screening guidelines, the websites of the National Cancer Information Center,[15] academic societies and search engines (eg, Google) will be manually searched.

Guidelines published in Korean or English will be included, and no data publication restrictions will be applied. The search strategy is presented in online supplemental appendix 1.

Guideline selection process

Guidelines addressing the early detection of cancer among Koreans with or without specific health conditions (eg, chronic liver diseases due to hepatitis B virus, more than 30 pack-years history of smoking) will be included.

No limits will be placed on cancer-type screening methods and target cancers. However, if the same development group has published multiple versions of a guideline, only the latest version will be considered. This is because the latest guideline will most likely be based on the most recent available evidence and recommended methodologies.

Guidelines for both Koreans and others will be excluded unless separate guidelines for Koreans are provided. We will exclude studies referring to clinical practice guidelines for cancer treatment or related adverse effects (eg, secondary cancer management among patients with cancer and cancer treatment guidelines). However, if the clinical practice guidelines have a separate chapter for early detection or screening, we will include it. In addition, conference abstracts, editorials, letters and opinions will be excluded.

Pairs of reviewers will conduct title and abstract screening independently and in duplicate. Next, the teams of reviewers will then review the full text for potentially eligible references and record the reason for exclusion. Any discrepancies will be resolved by consensus or consultation with a third reviewer. Calibration exercises will be conducted before each stage to ensure consistency and replicability.

Data abstraction

After the calibration exercises, teams composed of two reviewers will collect the following information

independently and in duplicate for all included references using a prepiloted data extraction form. Disagreements will be resolved through discussion or consultation with a third reviewer when necessary.

1. General characteristics of the guidelines: guideline name, publication year, publication type (journal, report, website and others), version (first, version number), guideline developers (national, academic society and others), recommendation statements, target cancer type (eg, gastric, liver and lung), target audience/users for the guideline (clinician, patients and others), target population for screening (eg, age group and health conditions), number of recommendations, primary screening method, secondary screening method if available, screening interval, funding source (governmental, institutional, not-for-profit, and others) and conflicts of interest (yes or no).
2. Guideline development process: guideline panel members (institution of panel members, number of panels and organisation of panel members, including methodologist and expert on guideline development process), source of evidence (not described, prior systematic review, de novo systematic review, both prior and de novo systematic review, non-systematic review and others), presentation of certainty of evidence (yes or no), certainty of evidence assessment method (not described, yes with GRADE and yes with others), certainty of evidence assessment domain (eg, risk of bias, inconsistency and indirectness), presentation of the strength of recommendation (yes or no), the strength of recommendation assessment method (not described, yes with GRADE and yes with others) and strength of recommendation assessment domain (eg, balance of desirable and undesirable consequences, certainty of evidence and resource).
3. Presentation of cancer burden: incidence of target cancer (if reported, timeframe and incidence denominator), mortality of target cancer (if reported, timeframe and mortality denominator) and (quality-adjusted) life years lost due to target cancer.
4. Presentation of benefits and harms of recommended cancer screening interventions
   - Presentation of benefits (yes or no), type of benefits (eg, mortality, incidence, patient-important and surrogate), quantification of benefits (yes or no), effect measure of benefits (relative, absolute effects or both) and location of benefit formation (main text, main table, appendix and others).
   - Presentation of harm (yes or no), type of harm (eg, false-positive results, overdiagnosis and screening method complications), quantification of harm (yes or no), effect measure of harm (relative, absolute effects or both) and location of the harm information (main text, main table, appendix and others).

Common examples of relative effect measures include the relative, odds and hazard ratios. Common examples of absolute effect measures include the number needed to invite, screen, treat or harm; natural frequencies (eg, number per 1000 people); absolute percentages and (quality-adjusted) life year gains or losses per population.

The diagnostic accuracy of the screening methods will not be considered a benefit in this review. However, any negative consequences resulting from screening methods will be considered harmful.

Analysis

Descriptive statistics of the included guidelines regarding their general characteristics and relevant key information will be presented. Guideline characteristics using descriptive statistics, such as frequencies, percentages, means and SD, will be summarised. A summary of the findings in the tables, including the presentation of the benefits and harms of cancer screening guidelines, will be provided.

Patient and public involvement

Patients or the public will not be involved in designing, conducting, reporting or dissemination planning of this research and will not be involved in the research outlined by this protocol.

DISCUSSION

This study will be the first to identify current cancer screening recommendations and report the potential benefits and harms of cancer screening in Korea. The cancer screening guidelines recommended for Koreans will be systematically reviewed. The benefits and harms of screening and whether and how they are presented will be summarised.

The strengths of this study include adherence to internationally recognised method standards, including comprehensive searches to identify cancer screening guidelines for Koreans, duplicate screenings, data collection and calibration exercises to ensure reproducibility and transparency.

A potential limitation is the heterogeneity of guideline development and presentation standards between guideline developers and institutions, which might limit the comparison of how they provide the benefits and harms of the screening presented. In addition, critical appraisal of the overall methodological quality of the guidelines, such as the scope, purpose and rigour of development, is beyond the scope of this study.

If the same development group has published multiple versions of a guideline, we will focus only on the latest version, which does not guarantee that the guideline was the most influential for stakeholders. Intervals between guideline updates, the number of guideline announcements on websites and academic conferences might have influenced the acceptance of guidelines.

We will evaluate whether they explain benefits and harms when presenting their recommendations to stakeholders and explain them appropriately rather than evaluating whether benefits and harms were considered at the time of developing recommendations. However, there would be few that do not explain these, although

the benefits and harms were considered important in the development of the guidelines.

Guidelines should be made based on evidence in compliance with international standards and presented to users in a practical way to communicate the intention of the development group clearly, maximise the potential benefits and minimise the harms of screening. The results of this study will serve as a guide for future screening guideline development and presentation and will be used to educate guideline developers and users.

Ethics and dissemination

Ethics approval will not be required as this study will only use published materials from the literature search. We will disseminate our findings through publication in peer-reviewed journals.

Contributors MAH, JHJ and ECH: substantial contributions to the conception or design of the work; drafting the work or revising it critically for important intellectual content; final approval of the version to be published; agreement to be accountable for all aspects of the work to ensure that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

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