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Barriers and Facilitators to Gastric Cancer Screening Adherence

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Research Article

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ABSTRACT

The aim of this systematic review was to determinate the barriers and facilitators to Gastric Cancer (GC) screening adherence. Combination keywords including gastric cancer, screening, adherence, barriers, and facilitators were used to search articles in PubMed, Web of Science, Cochrane Library, MEDLINE Complete, and CINAHL Complete. Articles were searched from their inception to September 30, 2021. Full-text original studies in English dealing with barriers and facilitators to gastric cancer screening adherence were included. A total of 16 articles were included in this review. The most commonly reported barriers were poor financial condition, lack of symptoms, dislike of the screening procedure, fear of the result, and lack of time. The most identified facilitators were high income, high education level, and history of gastric problems or current symptoms. These results highlight the urgent need for educational programs to increase intention and adherence of GC screening. And it is vital to take gastric cancer screening into the health care system in some countries with high incidence.

INTRODUCTION

Gastric cancer is the fifth most prevalent malignancy and the fourth leading cause of cancer-related death. GC is a tough challenge for the global cancer burden which adds over one million new cases and almost 769,000 deaths in 2020[1]. Statistics showed that the incidence of GC is high in high-income Asia Pacific region, and relatively low in

high-income North America and southern and eastern sub-Saharan Africa[2]. Approximately 44.1% of the new cases and 49.9% of the deaths are in China, making gastric cancer a particularly challenging malignancy[3]. What's more, the incidence of GC has been increasing among young adults in both high-risk and low-risk countries, which has caused heavy disease burden globally [1].

The prognosis and survival rate of GC are closely related with cancer stages. Compared with the advanced stage, there is a significant improvement in the five-year survival rate of patients with GC in the early stage [4]. Therefore, the early detection and treatment of GC are of great significance. Endoscopic screening is cost-effective in countries with high incidence of GC, which can increase the rate of early detection and early treatment of GC to slow down its progression to improve GC survival. However, the national GC screening program is carried out in a few countries with high incidence of GC such as Korea and Japan. In Singapore, the GC screening is targeted at high-risk populations. The national GC screening program is lacking in China and many other countries especially for those with relatively low incidence [5].

The previous studies revealed that the GC screening adherence was relatively low [6,7]. The adherence of GC screening is influenced by many factors such as cultural differences, national policies, and personal related factors. However, few studies have comprehensively investigated the influencing factors of GC screening adherence.

Aim

The purpose of this study is to identify the barriers and facilitators to GC screening adherence to establish references in designing the effective and comprehensive health interventions to improve the intention and adherence of GC screening to promote the prevention of gastric cancer.

METHODS AND METHODOLOGY

Registration and protocol

The framework of this review was basing on the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA). The protocol of this study was registered with the International Prospective Register of Systematic Reviews (PROSPERO) (Registration number: CRD42021241193) on July 06, 2020.

Eligibility criteria

Articles were included basing on the following criteria: (i) Original peer-reviewed research; (ii) Describing the influencing factors of GC screening; (iii) Published in English. The studies would be excluded if the literature information is unclear. And the literature reviews, conference abstracts, and editorials would be excluded.

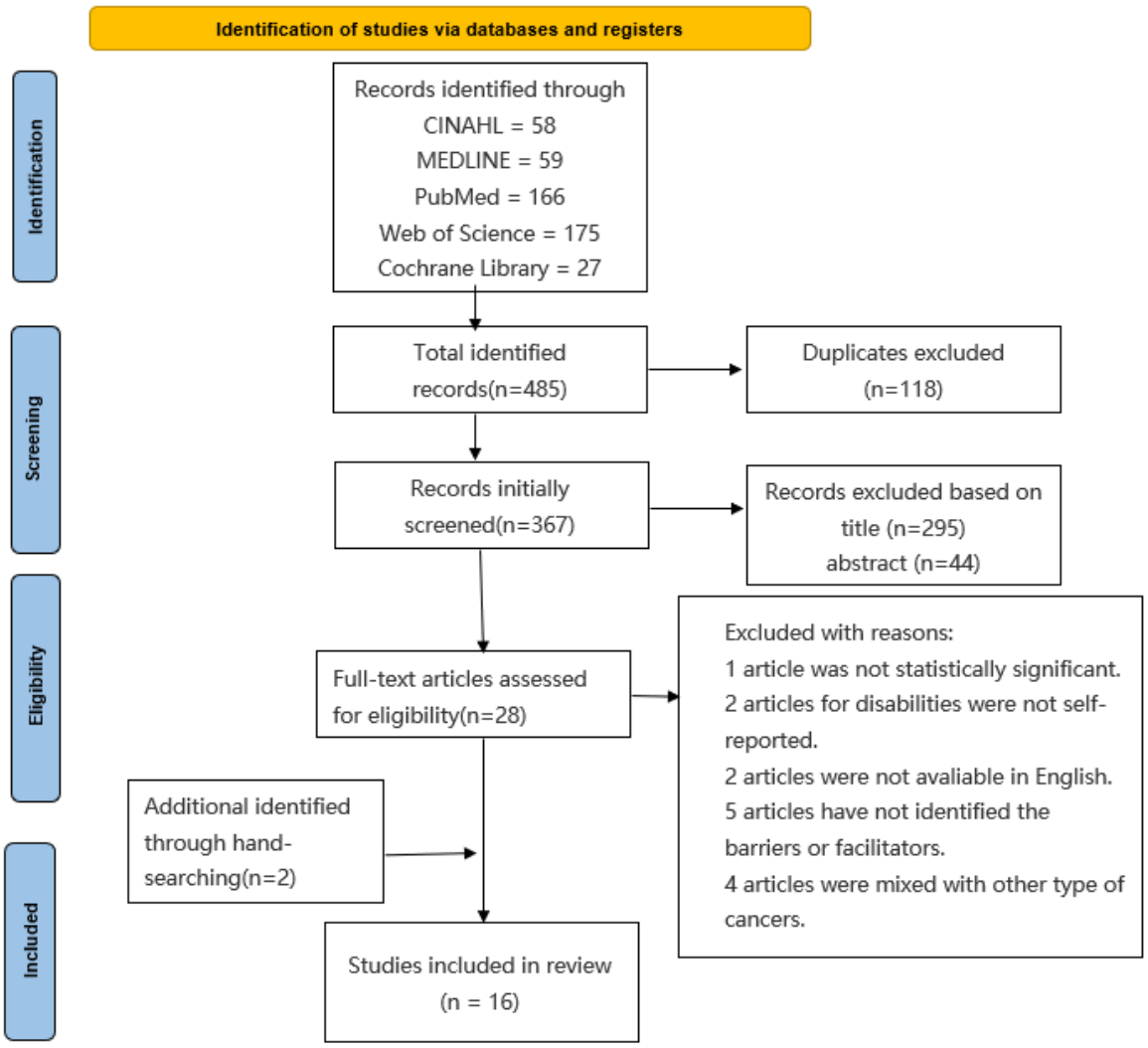
Search strategy

The following electric databases were searched: PubMed, Web of Science, Cochrane Library, MEDLINE complete, CINAHL Complete. The search terms mainly include: Stomach Neoplasms, Screening, barriers, facilitators, awareness, attitude, knowledge, etc. The retrieval strategy was mainly based on the combination of subject words and free words. In addition, the references of the final retrieved literature have been searched manually to ensure that no literature has been missed. The detailed search strategy in PubMed is provided in “Supporting Information Appendix” as examples.

Study selection

Two researchers conducted the literature search referring to the above search strategies and one researcher removed the duplicates by Endnote. Two independent investigators screened the retrieved studies basing on the title and abstract by the eligibility criteria. Then, the same two researchers conducted the full-text screening. Reasons for excluding are recorded and the disagreement is resolved by team discussion. The PRISMA flow diagram is displayed in Figure 1.

Figure 1. The PRISMA flow diagram.



Risk of bias in individual studies

The risk of bias in each study was appraised by two researchers independently. The cross-sectional studies were apprised by tools from the Agency for Healthcare Research and Quality (AHRQ). And the Qualitative Assessment and Review Instrument (QARI) by JBI were used to estimate the risk of bias in the qualitative studies.

Data collection process and synthesis of results

A pre-prepared checklist was used for characteristic extraction of the include studies, including the first author's last name, year of study, study location, type of the study, kind of the population, sample size, and the quality assessment (Table 1). The barriers and facilitators identified are displayed in (Table 2). Any different opinions in any period were resolved by team discussion.

RESULTS

A total of 16 articles were included. Three studies were qualitative research and the remaining were quantitative studies. One study was conducted in China, one in Oman, three in the USA, and the rest were conducted in Korea.

Table 1. The characteristic and quality assessment of each study.

Author, Year	Study location	Type of Study	Kind of the population	Sample size
Cho et al., 2006	USA	Cross-sectional	General population, aged ＞45 years	73
Hahm et al.,2008	Korea	Cross-sectional	General population, aged＞40 years	1509
Kwon et al.,2009	Korea	Cross-sectional	General population, aged＞40 years	4593
Oh et al.,2009	Korea	Cross-sectional	General population, aged＞19 years	2014
Kye et al., 2010	Korea	Cross-sectional	General population, aged＞40 years	650
Hahm et al., 2011	Korea	Cross-sectional	General population, aged 40-70 years	1517
Shin et al.,2011	Korea	Qualitative	Cancer survivors, aged＞40 years	13
Park et al.,2011	Korea	Cross-sectional	General population, aged 30-75 years	4056
Shin and Lee et al., 2012	Korea	Cross-sectional	General population, aged >40 years	4464
Suh et al.,2013	Korea	Cross-sectional	General population, aged >30 years	4131
Kim et al.,2015	Korea	Cross-sectional	General population, aged >40 years	15723
Park et al.,2017	Korea	Cross-sectional	Lung cancer survivors, aged >40 years	2049
Sin & Kim et al., 2017	USA	Qualitative	Korean Americans, aged 23-77 years	50
Al-Aziri et al., 2019	Oman	Cross-sectional	General population, aged >18 years	405
Liu et al.,2019	China	Cross-sectional	General population, aged >18 years	1200
Bea et al.,2020	USA	Qualitative	Navajo Cancer Survivors,The mean age was 56.9 ± 12.3 years	32

Patient-related factors

Social-demographic factors such as age, education level, household income, insurance and employment are identified as influencing factors. Shin pointed out that the acceptance of GC screening increased with age [8]. However, Al-Azri et al. identified age as barrier because of their difficulty in making appointments [9]. Financial condition (household income, insurance, and employment) was the most identified factor in eleven studies, the better financial condition is a strong predictor of GC screening [8,10-15]. High education level was identified as a facilitator in four studies [9,16-18], and one study shows that low education level would hinder GC screening [9].

The knowledge and awareness of GC screening are strong predictors. However, most of the extracted studies revealed that the knowledge and awareness of GC screening are lacking in general population. Five of the extracted articles showed that fear or dislike of the screening procedure, and the fear of the result would hinder the screening [6,9,12,19,20]. If they have been screened or are familiar with the screening procedure, they would be more willing to go on GC screening [11,21]. The attitude towards GC screening was identified as an influencing factor in six studies. Believing that screening could find diseases early and is beneficial to their health and would promote their screening-seeking behaviors [10,16,19]. However, some people believe that the GC is unpreventable and the screening is useless, and their negative attitude toward GC screening would be a barrier [8,12,13]. Eight studies revealed that having symptoms is a driver of GC screening [6,8-10,12-14,19]. What is more, four studies identified being busy and having no time as barriers, which indicated their ignorance of the necessity of screening [8,10,12,14]. For the cross-culture group, traditional culture has a strong influence on the adherence of screening. Three studies identified that some Korean believe in traditional folk deeply, avoiding contact with health care system, believing that cancer is unpreventable[19-21] and Cho found that 41% of participants could not speak English which has hindered their screening [10].

Health system related factors

The physician plays an essential role in choosing whether to screen. Four studies showed that having not received the screening recommendation from their physician is the main reason for their absence from screening [12,13,18,19]. Sin and Kim found that the acceptance of GC screening would increase if there is new technology available [19]. Meanwhile, the national media advocacy of GC screening in Korea was identified as a facilitator by Korean American. The complaint of the inconvenient health system and the uncertainty about the quality of national screening program were barriers to GC screening [13,19].

Table 2. The barriers and facilitators to gastric cancer adherence.

Author, Year	Barriers	Facilitators
Cho et al.,2006	No symptoms; Lack of time; Language barrier; The cost of screening	Positive attitude towards GC screening; Free of charge; Having someone translate for you
Hahm et al.,2008	The cost of screening	Free of charge; Previous experience with GC screening
Kwon et al.,2009		High income; High education level; Positive attitude towards GC screening
Oh et al.,2009	No symptoms; Being busy; Fear of the result; Financial burden; Fear of the procedure	
Kye et al.,2010	Avoiding contact with the health care system	Perceived risk of GC; Previous screening experiences
Hahm et al.,2011		High household income
Shin et al., 2011	No symptoms; Lack of time; Financial burden; Fear of the procedure; Fear of the result; Distrust the function of screening	
Park et al.,2011	Lack of information from physician; The cost of screening; Uncertainty about the national screening program	
Shin and Lee et al., 2012		High education level; The elderly; High household income
Suh et al.,2013	No symptoms; Lack of time; Financial burden; Fear of the procedure; Fear of the result; Distrust the function of screening	
Kim et al.,2015		National policy
Park et al., 2017		Physician recommendation; High education level
Sin & Kim et al., 2017	Lack of knowledge; Financial burden; Fear of the result; The inconvenient health care system; Lack of culturally related knowledge; Fear of the procedure; Believing the cancer is unpreventable; No symptoms; Traditional folk	Exposure to Korean media; Previous history of GC diseases; Positive attitude towards the screening policy of Korea; Physician recommendation; Better technology; The advertising from church
Al-Aziri et al., 2019	Fear of the procedure; Fear of the result; Low education level; Having difficulty in making appointments	High education level; Current symptoms
Liu et al.,2019	No symptoms; Fear of the procedure; Fear of the result	High income; Previous history of GC diseases
Bea et al., 2020	Fear of the result; Financial burden; Limited access to health care system; Language barrier; Traditional belief	

DISCUSSION

Identifying the barriers and facilitators to gastric cancer screening adherence can help to develop the effective intervention to improve the intention and adherence of GC screening. Overall, the most commonly reported barriers were poor financial condition, lack of symptoms, dislike of the screening procedure, fear of the result, and lack of time. The most identified facilitators were high income, high education level, and history of gastric problems or current symptoms.

Financial condition is the most identified factor in the adherence of GC screening. Similar to the previous studies, the low-income, uninsured and unemployed people are less likely to have screening [22]. These results may lie in the personal financial burden of screening and their lack of awareness. And it is essential to cover GC screening into the medical insurance and establish the national GC screening program to reduce the personal financial burden of GC screening [23]. Meanwhile, advertising the necessity of the GC screening is vital to increase the adherence of GC screening.

High education level is associated with high acceptance of GC screening, which is similar in other cancers [24,25]. Generally, people with high education level would be more likely to access health education and have better GC screening knowledge. This may explain their high acceptance and uptake of screening [26].

Shin et al. pointed out that the age of over 45 is a facilitator factor because of their high susceptibility to GC [8]. Having difficulty in making appointments was identified as a barrier among the elderly[27],the language was identified as a barrier for screening. This reveals that there is an urgent need to establish the GC screening program for high risk groups which could identify and remind high risk people to take GC screening. To increase the adherence of GC screening, the health workers should contact with those who have not been screened and identify the reasons for their absence. For those who have trouble in making appointments or have language barrier, the health workers could make appointments for them and inform them of when and how to get screened by phone or other methods. Meanwhile, health education about GC screening should be offered to general population to increase knowledge of GC screening.

Traditional culture also plays an important role in deciding whether to take part in GC screening. This correlation has been reported in breast cancer screening [28]. Because of the deep-rooted traditional thought, some bicultural individuals hold the view that cancer is unpreventable and they would rather take their traditional folk than consult health care system. Moreover, this partly reflects their distrust of the function of screening. This highlights the importance of cultural targeted interventions for bicultural individuals. And for individuals with religious belief, the GC screening-related health message from the church would be more amenable.

The result of this systematic review shows that the awareness of the necessity of GC screening and the related knowledge is relatively lacking among the general population. Many people may not be aware of the importance of GC screening until they have symptoms. And some people use “lack of time” as an excuse for not attending screening. Moreover, fear of the screening result is commonly identified as a barrier to GC screening. This finding is consistent with the screening of prostate cancer and diabetic retinopathy [29,30]. Similar to the previous studies [31], Hahm et al. pointed out that those who have been screened would be more willing to take part in GC screening because they have benefited from screening and are aware of the importance of screening [11]. These results reveal

the large-scale health education activities on GC screening are needed to increase their screening-related knowledge and improve GC screening adherence.

Fear of the screening procedure is a frequently cited screening influencing factor in our study. Gastroscopy is the most common GC screening method. Previous studies revealed that the worry on the complication of endoscopy and the side-effect such as nausea and vomiting are the main reasons for their absence in screening [32]. The discomfort associated with gastroscopy is inevitable to some extent, but strengthening the training of endoscopists and providing psychological support during the procedure may help minimize the reluctance of GC screening. What is more, Sim found that most people would have GC screening if there is better screening technology. And the non-invasive screening methods are more acceptable [33]. Hence, it is of great importance to strengthen the training of the endoscopists and optimize the existing screening methods to minimize the reluctance of GC screening and improve the adherence of GC screening.

Similar to the previous studies, the screening recommendation from physician is important in the process of decision-making [34], As the reliable and professional health knowledge communicators, physicians should provide screening-related health education to patients to increase their awareness of screening. The national policy should be responsible for advocating the necessity and reliability of screening through advertising, health booklets, and other methods. The construction of the primary health care institutions are needed so that the health system can be more accessible and convenient.

Certain limitations do exist in this study. First, the including studies were limited in English and the papers published in other languages may be excluded, leading to the result of this study may be under-represented. Then, the investigation about the influencing factors of GC screening adherence is lacking in some countries with high incidence and this may require further investigation. Finally, influencing factors of GC screening adherence are complex and could not be completely quantified which require additional qualitative studies.

CONCLUSION

The most identified barriers and facilitators to GC screening adherence in this systematic review were patient-related factors such as financial condition and the screening-related knowledge. Therefore, some suggestions are offered to raise the adherence of GC screening. First of all, social media should be utilized for the educational programs to raise the awareness of the necessity of GC screening and reduce the fear of it. Secondly, the health workers should enhance the health education about screening for the general population, with special attention given to bi-culture and socially disadvantage groups. Thirdly, it is vital to strengthen the training of endoscopists and optimize the existing screening methods to make it more acceptable. Lastly, GC screening should be covered under medical insurance to reduce personal financial burden in countries with high incidence.

DECLARATION

Conflict of interest

The authors declare that they have no competing interests.

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Contributions

Study design: Ying Zeng, Jin-yu Zou, Ying-xue Sun, and Tian Tang; Data collection: Jin-yu Zou, Ying-xue Sun, Tian Tang, Ying-xin Wang, and Qian-qian Yue; Data analysis: Ying Zeng, Jin-yu Zou, Ying-xue Sun, and Tian Tang; Manuscript writing: Ying Zeng, Jin-yu Zou, Ying-xue Sun, and Tian Tang.

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