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## Original Research Article

# Barriers to colorectal cancer screening in Asia: A systematic review

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### Abstract

**Purpose:** Colorectal cancer (CRC) is among the top five cancers afflicting both men and women globally. Once predominantly a Western disease, it has begun to rise in Asian countries as well. This systematic review aims to compile and analyze the various barriers towards colorectal cancer screening in Asia, and to determine if the barriers are consistent throughout the continent.

**Methods:** Article Inclusion criteria for based on year of publication from year 2008 till 2015, has been conducted in Asia, and written in English language. A total of 23 studies were included in this review, chosen via primary search of journal websites and databases, and a secondary search through the reference lists of eligible articles.

**Results:** It was found that major barriers of colorectal cancer screening are; poor education/knowledge, negative perceptions towards screening, aversion to test results, financial constraints, time constraints, lack of physicians' recommendation, limited/difficult access to screening locations, fatalistic beliefs, low perceived risks, language barriers, confidence in traditional medicine/distrust in Western medicine, ignorance and old age.

**Conclusion:** Lack of knowledge/education is the most critical barrier that is linked to a majority of other barriers that can hinder a person from undergoing CRC screening for early prevention, detection and treatment. Majority of these barriers encountered regarding the poor rates of CRC screening are similar across countries in Asia.

**Keywords:** Colorectal cancer screening, Barrier, Knowledge, Criteria for eligibility

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## INTRODUCTION

According to the World Health Organization, cancer is among the major contributors of morbidity and mortality globally, and colorectal cancer (CRC) lies among the top 5 most common cancers among both men and women. Up to the year 2012, colorectal cancer has claimed 694,000 lives around the world, being

fourth in rank after lung, liver and stomach cancers [1]. It involves the formation of malignant tumors within the colon or rectum, with a majority of the tumors arising from certain types of polyps known as adenomas [2]. Colorectal cancer used to be a more pressing concern for those in Western countries, but of late incidences has been on the rise in Asian countries as well [3]. Hence, it is clear that there

is a need for the Asian population to undergo screening for early detection and hence treatment for colorectal cancer.

These screening tests are not only effective in the early discovery of malignant tumors, but also serves as a preventive procedure whereby polyps that could potentially become malignant can be found and removed before becoming cancerous. Among the available screening tests include fecal occult blood test (FOBT), sigmoidoscopy, optical colonoscopy, virtual colonoscopy, double-contrast barium enema and many more. Screening is recommended for individuals 50 years of age and above, or at an even younger age if the individual is at a higher risk of developing colorectal cancer, such as having a family history, excessive alcohol intake, smoking, physical inactivity and an unhealthy diet [4].

Despite the prevalence of colorectal cancer and the many screening tests available, the number of people going for these screening tests are very low [5]. This is rather alarming and many studies have been conducted worldwide to discover and analyze the causes of low turnout for colorectal cancer screening. This systematic review aims to compile and review such studies conducted in the Asian region in recent years to evaluate the barriers influencing Asians from undergoing such screenings, and to see if the findings from different regions of Asia have similar presentations or differing outcomes.

## METHODS

Literature search was done regarding the barriers preventing individuals from undergoing colorectal cancer screening, with no study design limitations. Primary search was conducted using journal websites and databases, which include Pubmed, Google Scholar, BMC Public Health, Science Direct and SAGE Journals. Reference lists of qualified study articles found via these sources were scanned for a secondary search. Search limitations include studies conducted within Asian countries, publishing date was from the year 2008 till 2015, and written in the English Language. Search keywords were include 'barriers', 'colorectal cancer', 'screening', 'Asia (or names of individual Asian countries)', 'behavior', 'perspective' and 'knowledge'. Keywords were linked using the Boolean operator 'and'. Words with similar meaning to the aforementioned keywords have also been tried.

Primary screening involved reading the titles and abstracts of the articles, as well as a quick scan

through the results and discussion sections. Secondary screening was conducted by detailed reading of the full text of articles that passed primary screening.

## RESULTS

A total of 23 articles were eligible for review, including 8 articles from Malaysia, 3 from Hong Kong, 3 from Iran, 2 from Singapore, and 1 each from China, Saudi Arabia, South Korea, Turkey, Indonesia and Jordan respectively. An article on a multicenter study that included various regions across the Asia Pacific region was also included. The following table summarizes key barriers and the studies that reported these barriers.

## DISCUSSION

A majority of the studies found that the largest barrier towards colorectal cancer screening is the poor knowledge of the general public towards the risk factors, symptoms and screening tests available for CRC. There are many factors that lead to this poor awareness. Few Asian countries have established nationwide CRC awareness and screening programs, with Taiwan, Korea, Singapore and Japan being the only Asian countries that have existing national CRC screening guidelines and programs [23]. Such guidelines and programs are excellent methods to reach out to the public to educate and involve them in CRC education and screening. With regards to this, the people also have less access to such information via the fundamental sources of information, such as media, schools and public campaigns [12]. Other than that, those with poor educational backgrounds are more likely to have language and communication barriers, and have a harder time understanding materials or recommendations (9). This contributes to a lower health literacy. Many Asian nations are still developing countries, hence there is still a substantial number of poorly educated individuals to render this a notable barrier that requires a solution. Loh *et al* [10] also identified being the male gender to have poorer CRC knowledge, as females have better health knowledge due to their traditional role as carers. Another major factor of poor knowledge within the population is the severe lack of physician's recommendation to do CRC screening. Some physicians even stated that screening was not necessary [22]. This is of extreme importance as many people are highly influenced by physicians in health decision making [14,18]. Interestingly, Leung *et al* [13] discovered that the poor dissemination of CRC information among the

**Table 1:** Key barriers to colorectal screening and studies that report such barriers

Barrier	Studies reporting barriers	Total
Poor knowledge on CRC and its screening tests	Sung <i>et al</i> [6], Farooqui <i>et al</i> [7], Hilmi <i>et al</i> [8], Kong <i>et al</i> [9], Loh <i>et al</i> [10], Yusoff <i>et al</i> [11], Koo <i>et al</i> [5], Harmy <i>et al</i> [12], Leung <i>et al</i> [13], Foo <i>et al</i> [14], Deng <i>et al</i> [15], Javadzade <i>et al</i> [16], Khayyat <i>et al</i> [17], Tastan <i>et al</i> [18], Salimzadeh <i>et al</i> [19], Salimzadeh <i>et al</i> [20], Abdullah <i>et al</i> [21], Ahmad <i>et al</i> [22]	18
Negative perspective towards screening methods (fear, pain, embarrassment, health damage, lack of confidence in test efficacy, inconvenient)	Sung <i>et al</i> [6], Farooqui <i>et al</i> [7], Loh <i>et al</i> [10], Yusoff <i>et al</i> [11], Harmy <i>et al</i> [12], Foo <i>et al</i> [14], Javadzade <i>et al</i> [16], Wong <i>et al</i> [23], Khayyat <i>et al</i> [17], Tastan <i>et al</i> [18], Wong <i>et al</i> [24], Abdullah <i>et al</i> [21], Ahmad [22]	13
'Ostrich strategy'-aversion to facing test results	Sung <i>et al</i> [16], Loh <i>et al</i> [10], Yusoff <i>et al</i> [11], Harmy <i>et al</i> [12], Foo <i>et al</i> [14], Javadzade <i>et al</i> [16], Wong <i>et al</i> [23], Bae <i>et al</i> [25], Tastan <i>et al</i> [18], Wong <i>et al</i> [24], Ahmad [22]	11
Financial constraints, lack of insurance coverage	Sung <i>et al</i> [6], Farooqui <i>et al</i> [7], Yusoff <i>et al</i> [11], Koo <i>et al</i> [5], Harmy <i>et al</i> [12], Foo <i>et al</i> [14], Deng <i>et al</i> [15], Wong <i>et al</i> [23], Tastan <i>et al</i> [18], Wong <i>et al</i> [24], Abdullah <i>et al</i> [21], Ahmad [23]	12
Time constraints	Sung <i>et al</i> [6], Loh <i>et al</i> [10], Yusoff <i>et al</i> [11], Koo <i>et al</i> [5], Harmy <i>et al</i> [12], Foo <i>et al</i> [14], Wong <i>et al</i> [24], Ahmad [22]	8
Lack of physician's recommendation	Sung <i>et al</i> [6], Hilmi <i>et al</i> [8], Yusoff <i>et al</i> [11], Koo <i>et al</i> [5], Harmy <i>et al</i> [12], Foo <i>et al</i> [14], Javadzade <i>et al</i> [16], Wong <i>et al</i> [23], Khayyat <i>et al</i> [17], Tastan <i>et al</i> [18], Salimzadeh <i>et al</i> [19], Salimzadeh <i>et al</i> [20], Abdullah <i>et al</i> [21], Ahmad [22], Al-Dubai <i>et al</i> [26]	15
Limited/difficult access to screening tests	Sung <i>et al</i> [6], Hilmi <i>et al</i> [8], Kong <i>et al</i> [9], Koo <i>et al</i> [5], Wong <i>et al</i> [24]	5
Low perceived risk	Sung <i>et al</i> [6], Farooqui <i>et al</i> [7], Yusoff <i>et al</i> [11], Koo <i>et al</i> [5], Hashim <i>et al</i> [27], Foo <i>et al</i> [14], Deng <i>et al</i> [15], Wong <i>et al</i> [23], Bae <i>et al</i> [25], Tastan <i>et al</i> [18], Salimzadeh <i>et al</i> [19], Salimzadeh <i>et al</i> [20], Abdullah <i>et al</i> [21], Ahmad [22], Al-Dubai <i>et al</i> [26]	15
Language barrier	Farooqui <i>et al</i> [7], Kong <i>et al</i> [9]	2
Confidence in traditional medicines or beliefs/ distrust in Western medicine	Kong <i>et al</i> [9], Khayyat <i>et al</i> [17]	2
Ignorance	Loh <i>et al</i> [10], Yusoff <i>et al</i> [11], Koo <i>et al</i> [5], Javadzade <i>et al</i> [16], Hashim <i>et al</i> [27]	5
Old age related barriers: -declining memory leading to poor recall of symptoms -false positive symptoms -less awareness	Loh <i>et al</i> [10], Koo <i>et al</i> [5]	2

study subjects, who comprised of Chinese people, were partly attributable to the cultural aversion towards topics regarding the bowel, displaying fecal aversion behavior. This is particularly eminent among the elderly folk. While yet to be linked, this may be the answer to the findings of several Malaysian studies that noted that despite the higher prevalence of CRC

among the Chinese compared to the other races in the country, the Chinese display the lowest awareness and perceived susceptibility towards CRC [8,10,26].

There are many people who do not perceive that they are at risk of getting CRC. This low perceived risk is attributable to several factors,

such as not having a family history of CRC, not experiencing any signs or symptoms, living a healthy or low-risk lifestyle or being free from health problems in general. In fact, just feeling healthy seems to rule out feeling at risk, as can be seen via a statement of a subject in the study of Farroqui *et al* [7] mentioned that she never thought of getting cancer due to being healthy, despite having two immediate family members dying from cancer. Low health motivation and ignorance also becomes a barrier to some, who could not be bothered with activities that can ensure better health outcomes for themselves. However, ignorance could be attributed to poor knowledge regarding CRC [11].

Another barrier that many studies report is the negative perception towards screening methods, with a more negative view towards more invasive procedures such as endoscopic-based procedures. Among the negative views reported were fear, pain experienced or perceived pain towards screening procedures, feeling of embarrassment, health damage, inconvenience and lack of confidence in screening efficacy. One of the reasons for these negative views could be poor knowledge and understanding towards these tests. The feeling of embarrassment, in particular, could be attributed to cultural beliefs, such as the fecal aversion as stated by Leung *et al* [13].

With particular focus to Malaysia, a multiracial country, the language barrier becomes a prominent problem. Subjects have complained of the limited language diversity in cancer screening awareness material [7]. It is also noted that the language barrier makes it difficult for affected individuals to navigate the medical system and have effective communication with healthcare providers, hence result in poorer understanding [9]. This in particular would be a problem for the older generation, as many are less multilingual than the younger generation; and this becomes a large problem as CRC has a higher prevalence amongst those above 50 years of age.

A notable category of barriers that people face that hinders them from CRC screening participation is access barriers. One of them is financial constraints. Many view the tests as too costly; this is particular to those who do not have health insurance coverage and self-finance their own healthcare [6,7,15,18,22]. Another is time constraint. Many stated that they were too busy, or the tests were too time consuming. Thirdly, there is limited access to centers that provide such screening tests. There are those who do not even know where they could get tested; and even those who knew had difficulty accessing

these locations, due to distance or transportation problems [9]. All these barriers could be overcome with the implementation of government-subsidized nationwide population screening, with the provision of more accessible screening times such as having them available during non-working hours or non-working days, as suggested by Sung *et al* [6].

However, even if the abovementioned barriers have been overcome, it would not solve the problem if the people inherently do not wish to participate due to certain psychological barriers that are more difficult to tackle. Amongst these is the fatalistic belief that their lives are in the hands of fate or God. They believe that if it is destined that they are to have cancer, there is nothing they can do about it and early detection of cancer would not benefit them.

While rationally, the increase in knowledge and understanding towards CRC and its screening tests could overcome the negative views towards screening and inform them of the benefits, and hence increase the uptake of CRC screening, some studies reported the opposite [6,23,25]. This is due to the fear of the results of the tests, and they would rather be in the dark than to discover that they have cancer. Sung *et al* [6] described this as the 'ostrich strategy'. Therefore, there ought to be heavier emphasis on the fact that with early detection the tumors can be removed and their lives can be saved. Subsequently, there are still some that have a distrust for Western medications and would opt for traditional healing methods to tackle any health-related issues, which either results in them never seeking treatment from modern medicine or presenting their cancer at a later stage. All three barriers mentioned above need more psychological interventions and more studies ought to be conducted regarding these areas in order to find solutions.

Lastly, there is a set of barriers that are more exclusive for the elderly population which are linked to their advanced age. Due to progressive cognitive decline their ability to recall signs and symptoms of CRC would be poorer, and therefore they may not recognize the warning signs when presented. Also, due to their advanced age they are more likely to have a greater lifetime experience of possible cancer symptoms that later proved benign, hence they may attribute the presentation of further symptoms to benign causes as well [10]. Another factor is that CRC is less prevalent in the past and has only become a larger concern in more recent years, hence the elderly may be less aware of this relatively recent disease [5].

Identification and understanding of the various barriers that hinder CRC screening allows us to come up with ideas and solutions to tackle them. Mass screening events have been proposed by various studies, particularly in locations outside of the hospital, such as schools and workplaces [5,7,8]. Educational programs, such as road shows and campaigns, have also been proposed. It should be emphasized that these events should be culturally or linguistically appropriate in order to truly reach the population, with more focus on high risk groups [10]. To overcome financial constraints, discounted rates can be given in general, or financial aids can be provided for more needy populations by local authorities or the government. As for time constraints, conducting screening programs at non-working hours or days would allow the working community to have more flexibility in arranging for a screening [6]. A good way to incorporate all these ideas into one is for the government to come up with a nationwide population-screening program, as mentioned early.

Since many rely on healthcare providers in the provision of counseling and advice of health related issues, the knowledge and attitudes of healthcare providers, in particular physicians as they have very high influence on the public, need to be assessed [8]. Latest guidelines need to be available for them so that they can give the best advice and recommendations to respective patients. It has been suggested for primary care physicians to be recruited for active dissemination of CRC screening information [14]. While there are few effective methods to tackle the psychological barriers, Sung *et al* [6] has recommended the use of lay health advisors who have previously recovered from CRC, as this gives the population a more relatable person. As for defeatist beliefs, some studies have reported success in the usage of interventions that are culturally orientated and faith based [14].

### Limitations of the study

Study methodology limited to systemic review only, meta-analysis is required to predict the effect size of each barrier. Due to limited time and resources, specific time frame limit is used to select the studies, for more pronounced findings it is suggested to involve at least 10 years of time frame. Furthermore, educational program should be design and implemented to evaluate the effect of knowledge on the screening behavior for colorectal cancer among patients.

## CONCLUSION

There are multiple barriers that can hinder a person from undergoing CRC screening for early prevention, detection and treatment. Majority of these barriers encountered regarding the poor rates of CRC screening are similar across countries in Asia, except for specific barriers that are due to unique circumstances. Lack of knowledge/education is the most critical barrier that is linked to a majority of other barriers. Continuous effort is important to reduce CRC-related morbidity and mortality.

## DECLARATIONS

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### Conflict of Interest

No conflict of interest associated with this work.

### Contribution of Authors

The authors declare that this work was done by the authors named in this article and all liabilities pertaining to claims relating to the content of this article will be borne by them.

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