ORIGINAL ARTICLE

Assessment of the level of knowledge of colorectal cancer among public at outpatient clinics in Serdang Hospital: a survey based study

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ABSTRACT

Objectives: Colorectal cancer (CRC) is one of the most common gastrointestinal cancers in the world. In the Asia-Pacific region, it is the fastest emerging gastrointestinal cancer. Level of awareness on CRC warning signs and risk factors in the rural population of Malaysia is reported of very low. The aim of this study was to assess the level of knowledge of CRC among the public at medical outpatient clinics in Serdang Hospital. The association between socio-demographic factors with level of knowledge among the respondents was further studied.

Study design: A study was conducted among the non-CRC patients' relatives accompanying their relatives to the medical outpatient clinics in Serdang Hospital from 1st April to 31st August 2016. The study was carried out with cluster sampling method.

Methods: The respondents were assessed using validated and modified Cancer Awareness Measures (CAM) questionnaire consists of three parts which are knowledge on warning signs, knowledge on risk factors and socio-demographic factors. All data were analysed using IBM SPSS Statistics 21.0.

Results: Altogether 308 subjects completed the questionnaires. It was shown high percentage of good knowledge for warning signs and risk factors of CRC among the respondents. A significant association between age groups and level of income with level of knowledge on warning signs was observed.

Conclusions: The level of knowledge of CRC among the general public in Serdang Hospital was sufficient. The respondents with higher income or younger age had higher level of knowledge regarding CRC.

KEY WORDS:
level of knowledge, colorectal cancer, Cancer Awareness Measures (CAM), Malaysia

INTRODUCTION

Colorectal cancer (CRC) is a major cause of morbidity and mortality throughout the world.[1] It accounts for over 9% of all cancer incidence.[2,3]

In Malaysia, CRC is the most common cancer among males and second most common cancer among females.[4] The overall incidence rate for CRC was 21.32 cases per 100,000, with the 2011 CRC deaths were recorded.[5] CRC has long been considered a disease prevalent in Western developed countries. [2] The risk of developing CRC is influenced by several risk factors, including environmental exposures and co morbid medical conditions. Low fibre diet, obesity, high consumption of red/processed meat, heavy alcohol use, smoking, older age, low physical activity, family history of CRC, diabetes mellitus, and having bowel disease are well-known risk factors of developing CRC. With the dramatic socioeconomic development taking place in the Asian region, it is not surprising that the incidence of CRC in Malaysia is rapidly increasing. [6-8] The data by the Ministry of Health of Malaysia confirmed an increase of CRC admission rates from 8.1% in 1987 to 11.9% in 1995. The 5-year survival rate of CRC can be as high as 90% if the disease is detected early.[9] An earlier study in Malaysia which was conducted among the patients with newly diagnosed CRC in a teaching hospital between 2000 and 2006 has shown that most of the patients presented at advanced stage of CRC. The previous study concluded the near-zero awareness of CRC screening in Malaysia. [10] Therefore, the knowledge and awareness of CRC among the Malaysians are very crucial to be promoted in order to reduce the incidence.

Malaysia is a country with diverse ethnic groups and cultural systems with a population of more than 30 million, portrayed by the three major ethnic groups namely the Malays, Chinese and Indians. Each ethnic group has their own unique lifestyle, religious and cultural practice. Abu Hassan MR et al., mentioned that the Chinese ethnicity had the highest CRC incidence, and the CRC incidence and mortality is higher in males than females.[5] Quite a number of studies conducted in Malaysia have consistently shown that awareness for cancer was low in rural area. [11,12] However, two third of the Malaysians are living at urban area.[12]

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Survey is an easy and effective approach to acquire the status of awareness of certain diseases. It has been widely used to evaluate the requirement for promoting CRC screening and prevention.[13,14] Serdang Hospital Malaysia is located in the urban area of the state of Selangor, Malaysia. This study performed at medical outpatient clinics in Serdang Hospital aimed to assess the level of knowledge of CRC among the public of the urban residents. The collected results would suggest the need of continuing CRC awareness campaigns in Malaysia.

MATERIALS AND METHODS

This questionnaire-based study was conducted at outpatient clinics, Serdang Hospital from 1st April to 31st August 2016. Serdang Hospital was a government-funded multi-specialty, tertiary hospital which is located in Kajang, Selangor.

This study was approved by the by the Ethics Committee of both Universiti Putra Malaysia (FPSK (EXP16-Medi)U035) and Serdang Hospital (Ministry of Health) (NMRR-16-662-30478 (IIR)).

The population of Kajang, Selangor was reported as 480,277 in 2016 and based on the assumptions that 50% of them have adequate knowledge of CRC with 95% confidence interval and 80% power of the study, the calculated sample size was 308 subjects.[1]

The population of this study was Malaysian, who was 18 years old and above, accompanying his/her relatives to the outpatient clinics. The subjects who were already diagnosed with CRC, or whose first degree relatives were diagnosed CRC were excluded. Terminally ill subjects and cognitively impaired patients were also excluded.

The study was carried out by using cluster-sampling method. Two second year medical students conducted the questionnaire with the respondents. Both of the investigators were fluent in both English and Bahasa Malaysia. They were well-trained of the context of the study, proper way of conducting study and standardised method of data entry. Participation in this study was voluntary and the written consents were obtained from the respondents prior to the study. The questionnaires were completed on the spot by the respondents, which took approximate 10 minutes.

The level of CRC knowledge was accessed by using the modified Colorectal Cancer Awareness Measure (Colorectal CAM) questionnaire, which was developed by the Health Behaviour Research Centre, UK. Among the 25 specific questions in original Bowel/Colorectal CAM, we included the prompted questions on warning signs (Question 4) and risk factors of CRC (Question 5), opinion on age related bowel cancer incidence (Question 6) and demographic questions. The Bahasa Malaysia version of the questionnaire was modified based on Su et al.'s study from Centre for Population Health (CePH), Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, which were applied during our study as well.[1]

The questionnaire consisted of three sections as stated below:

1. Knowledge on warning signs of CRC

There were nine prompted (close-ended questions) on warning signs of CRC. The stem question for the knowledge scale of warning signs was phrased as; "The following may or may not be warning signs for bowel cancer. We are interested in your opinion". This was followed by the list of nine warning signs (bleeding from back passage, pain in back passage, persistent pain in abdomen, change in bowel habits, feeling of incomplete emptiness of bowel, blood in stools, tiredness/anaemia, unexplained weight loss, and lump in abdomen). Each question could be given option as "Yes", "No" or "Don't know". Each answer (Yes) was given a point according to the previous study conducted in the UK.[13]

2. Knowledge on risk factors of CRC

There were 10 close-ended questions on risk factors of CRC. The stem question for the knowledge scale of risk factors was phrased as; "The following may or may not increase a person's chance of developing bowel cancer. How much do you agree that each of these can increase a person's chance of developing bowel cancer?" This was followed by the list of ten risk factors (drinking more than one unit of alcohol a day, eating less than five portions of fruit and vegetables a day, eating red or processed meat once a day or more, having a diet low in fibre, being overweight or BMI over 25, being over 70 years old, having a close relative with bowel cancer, doing less than 30 minutes of moderate physical activity five times a week, having a bowel disease e.g. ulcerative colitis and Crohn's disease, having diabetes). Each question could be answered with "Agree", 'Disagree", and "Not sure". One point was given for each answer (Agree).

The other one question covered opinion on age related bowel cancer incidence. The question was used to assess the knowledge on the risk of getting CRC among different age groups, consisting of four answers which are age 20, 40, 60 or unrelated to age.

3. Socio-demographic information

The socio-demographic information including age, gender, ethnicity, level of education, level of income, and having of any cancer for self, partner, family member and friend were further assessed.

Data was entered and analysed using the Statistical Packages for Social Science (SPSS) (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp). The categorical variables were compared using chi squared test. The level of significance was set up at $p=0.05$. All tests were two-sided and the result was considered as significant if $p<0.05$.

RESULTS

A total number of 308 subjects had consented and involved in the study. The study evaluated 159 (51.6%) male and 149 (48.4%) female subjects. The mean age was 36 years old, with 30.5% were from 18-29 years old. Most of the respondents were Malay (61.7%), followed by Chinese (27.3%), Indian (9.1%) and other races (1.9%). Regarding the educational level, almost all of the respondents had received at least

Table I: Socio-dermographic characteristics of the respondents (N=308)

Socio-demographic characteristic		N	Percentages (%)
Age	18 – 29 years old	94	30.5
	30 – 39 years old	86	27.9
	40 – 49 years old	61	19.8
	50 – 59 years old	44	14.3
	60 years old and above	23	7.5
Gender	Male	159	51.6
	Female	149	48.4
Ethnicity	Malay	190	61.7
	Chinese	84	27.3
	Indian	28	9.1
	Others	6	1.9
Education level	Primary	4	1.3
	Secondary	120	98.7
			39.0
	Matriculation/STPM/Foundation	20	6.5
	Diploma	55	17.9
	Degree	86	27.9
	Master	20	6.5
	PHD	3	1.0
Monthly income	Below RM1000	124	40.3
	RM 1000 and above	184	59.7

Table II: Knowledge of warning signs and risk factors regarding CRC among respondents (N=308)

Warning signs and symptoms	Percentage of correct answer (%)
Bleeding from back passage	71.1
Back passage pain	52.3
Abdominal pain	58.1
Change in bowel habit	50.3
Feeling of incomplete emptiness of bowel	31.2
Blood in stool	56.8
Tiredness/anemia	35.1
Unexplained weight loss	50.0
Lump in abdomen	51.0
Risk factors	**Percentage of correct answer (%)**
Alcohol consumption	52.9
Low intake of fruit/vegetables	40.6
High intake of red and processed meat	32.5
Low fibre diet	48.1
Overweight or obese	32.1
Older age	38.0
Family history of having bowel cancer	36.0
Low physical activity	36.0
Having bowel disease	49.0
Having diabetes	19.5

Table III: Level of knowledge on warning signs and symptoms, and risk factors among the respondents (N=308)

Level of Knowledge		Respondents (n=308)	
		n	(%)
on warning signs and symptoms	Good	283	91.9
	Poor	25	8.1
Total		**308**	**100**
on risk factors	Good	165	53.6
	Poor	143	46.4
Total		**308**	**100**

secondary school education. More than half (59.7%) of the respondents had monthly income higher than RM1000 (around USD222). The description of the study respondents is presented in (Table I).

Knowledge of warning signs

Among 308 respondents, "bleeding from back passage" was the most commonly recognised warning sign for CRC where 71.1% of them could answer correctly. Otherwise, more than 50% of them answered "abdominal pain", "blood in stool", "back passage pain", "lump in abdomen", "change in bowel habit", and "unexplained weight loss" correctly. Only about one third of the respondents managed to answer "feeling of incomplete emptiness of bowel" and "tiredness/anaemia" correctly. The knowledge of warning sign is summarised and presented in (Table II). Based on Table III, 91.9% of the non

Table IV: Socio-demographic variance of knowledge score on warning signs (N = 308)

Variables	Level of Knowledge, n (%)		Total, n (%)
	Poor	Good	
Age (years)			
18-29	38 (40.4)	56 (59.6)	94 (30.5)
30-39	35 (39.5)	52 (60.5)	86 (27.9)
40-49	36 (59.0)	25 (41.0)	61 (19.8)
50-59	20 (45.5)	24 (54.5)	44 (14.3)
60 and above	15 (65.2)	8 (34.8)	23 (7.5)
Gender			
Male	76 (47.8)	83 (52.2)	159 (51.6)
Female	67 (45.0)	82 (55.0)	149 (48.4)
Ethnicity			
Malay	85 (44.7)	105 (55.3)	190 (61.7)
Chinese	36 (42.9)	48 (57.1)	84 (27.3)
Indian	19 (67.9)	9 (32.1)	28 (9.1)
Others	3 (50.0)	3 (50.0)	6 (1.9)
Level of income			
< RM 1000	68 (54.8)	56 (45.2)	124 (40.3)
≥ RM 1000	75 (40.8)	109 (59.2)	184 (59.7)
Level of Education			
Primary	4 (100.0)	0 (0.0)	4 (1.3)
Secondary	56 (46.7)	64 (53.3)	120 (39.0)
Matriculation/STPM/ Foundation	11 (55.0)	9 (45.0)	20 (6.5)
Diploma	28 (50.9)	27 (49.1)	55 (17.9)
Degree	37 (43.0)	49 (57.0)	86 (27.9)
Master	6 (30.0)	14 (70.0)	20 (6.5)
PhD	1 (33.3)	2 (66.7)	3 (1.0)

Table V: Socio-demographic variance of knowledge score on risk factors (N = 308)

Variables	Level of Knowledge, n (%)		Total, n (%)
	Poor	Good	
Age (years)			
18-29	8 (8.5)	86 (91.5)	94 (30.5)
30-39	4 (4.7)	82 (95.3)	86 (27.9)
40-49	3 (4.9)	58 (95.1)	61 (19.8)
50-59	8 (19.2)	36 (81.8)	44 (14.3)
60 and above	2 (18.2)	21 (91.3)	23 (7.5)
Gender			
Male	15 (9.4)	144 (90.6)	159 (51.6)
Female	10 (6.7)	139 (93.3)	149 (48.4)
Ethnicity			
Malay	16 (8.4)	174 (91.6)	190 (61.7)
Chinese	5 (6.0)	79 (94.0)	84 (27.3)
Indian	3 (10.7)	25 (89.3)	28 (9.1)
Others	1 (16.7)	5 (83.3)	6 (1.9)
Level of income			
< RM 1000	7 (5.6)	117 (94.4)	124 (40.3)
≥ RM 1000	18 (9.8)	166 (90.2)	184 (59.7)
Level of Education			
Primary	0 (0.0)	4 (100.0)	4 (1.3)
Secondary	10 (8.3)	110 (91.7)	120 (39.0)
Matriculation/STPM/ Foundation	3 (15.0)	17 (85.0)	20 (6.5)
Diploma	7 (12.7)	48 (87.3)	55 (17.9)
Degree	3 (3.5)	83 (96.5)	86 (27.9)
Master	2 (10.0)	18 (90.0)	20 (6.5)
PhD	0 (0.0)	3 (100.0)	3 (1.0)

CRC patients' relatives demonstrated good knowledge regarding the warning signs of CRC.

Knowledge of risk factor
"Alcohol consumption" was the most commonly recognised risk factor for CRC where 52.9% of the respondents could answer correctly. However, only 19.5% of the respondents could answer "having diabetes" can increase the chance of getting CRC. The knowledge of risk factors is summarized and presented in (Table IV). Based on Table III, 53.6% from the non-CRC patients' relatives showed a good knowledge regarding the risk factors that lead to CRC.

Factors associated with the level of the knowledge on warning signs of CRC
The socio-demographic variance of knowledge score on warning signs was shown in (Table IV).

For age groups, the respondents from 30-39 years (60.5%) had good knowledge regarding the warning signs of CRC, while only 34.8% of those from group aged 60 and above had good knowledge.

Gender was not significantly associated with knowledge of CRC (p=0.351).

The ethnicity was not significantly associated with the level of knowledge on warning signs (p=0.119).

Respondents earning RM1000 and above monthly (59.2%) had better knowledge regarding the warning signs of CRC, compared to those with monthly income less than RM 1000 (45.2%), (p=0.020).

Respondents who had post-secondary education had better knowledge on warning signs of CRC. All four respondents with primary school level of education had poor level of knowledge.

Factors associated with the level of the knowledge on risk factors of CRC
Our study concluded that the age, gender, ethnicity, level of income, and level of education were not significantly associated with the level of knowledge on risk factors of CRC, as shown in (Table V).

Opinion on age related bowel cancer incidence
Among 308 respondents, 55.5% of the respondents claimed that CRC was not related to age as they mentioned the increasing incidence of other cancer among the youngsters nowadays. 21.85% of the respondents answered age 60 and above would have greater risk of getting CRC, followed by people who were in their forties (17.5%) and people who were in their twenties (5.2%).

DISCUSSION

The ratio of male vs female was comparable with the general Malaysian population as reported for 2014-2016.[14] From this study, Malay dominated the percentage of the respondents. This was mainly due to the distribution of ethnicity in Malaysia that comprise majority of Malay ethnic. The ethnic composition of this study was similar to Malaysia's population.[14] As shown in Table I, the majority of the participants of the current study were relatively younger (mean age= 36) than a previous study conducted among rural population in Malaysia (mean age = 51).[1] This could be due to the universal urbanisation that more young adults migrating from rural areas to big cities as the job demand and opportunity was higher in the cities.[17,18] This may also explain that the participants involved in this study generally received higher level of educations in comparison with the study carried out in rural Malaysia. [1,17] The rural:urban income inequality remains around 1:1.5-1.6 since 2000 to Ninth Malaysia Plan (2006-2010). This agrees with our observation (59.7% earning > RM1000) as compared with the rural study (55.9% earning > RM1000).[19]

Table III showed 91.9% of the non-CRC patients' relatives have good knowledge regarding the warning signs of CRC. Nevertheless, Rashid et al. had published a local study showing that anaemia and weight loss were the most common presentations of CRC among Malaysian patients.[18] Among our study population, only 35.1% and 50.0% (see Table II) of the population agreed that anaemia and weight loss as warning signs of CRC. This may lead to delay in seeking medical professional advice even when they have signs or symptoms.[20] On the other hand, only 53.6% (see Table III) of them demonstrated good knowledge regarding the risk factors of CRC. CRC is one of the commonest cancer among Malaysian. The fact is that, like other diseases, prevention is better than cure. However, limited knowledge of CRC was found in a study evaluating barriers to flexible sigmoidoscopy in the UK. Due to the public fear of the invasiveness, and diagnosis, the development of the national CRC screening programme had been spurred. CRC can be prevented with a high success rate if we take necessary steps to promote the public's awareness and knowledge on both warning signs, risk factors and screening techniques of CRC. This has been proved to be useful in other countries.[21] An organised screening was implemented by the government of Czech Republic in 2000, and there has been a general trend of earlier CRC detection.[22] Public screening has been shown to reduce the morbidity and mortality from CRC.[23,24]

As shown in Table IV, younger age was highly associated with better level of knowledge on CRC. One possible reason contributed to such finding includes universal access of most Malaysian children from preschool through to upper secondary school level that they have the chance to expose to the health education or awareness. Moreover, with the advanced development and implementation of information technology and telemedicine in urban area, the citizens are more prone to be emphasized about the healthy lifestyles and well-being programs.[19,25]

It was reported that Chinese had the highest prevalence of developing CRC compared to others in Malaysia.[26] National Cancer Registry 2006 also commented that the incidence of CRC was the highest among the Chinese with the incidence rates of 2.8 per 10,000 populations.[12] However, the ethnicity was not significantly associated with the level of knowledge (Table IV) observed in this study. One of the possible reasons contributed to such findings could be the information from

the national registry are based on patients who seek treatment which may be under-represented by other ethnic group who did not seek for medical treatment. Alternatively, majority of available health information including cancer in public facilities are in English and Malay, and therefore other ethnic groups, who could not speak both languages, may not be educated sufficiently.[27,28]

With a population that is both knowledgeable and motivated, the incidence of CRC should be reduced. Then, in the incidence, morbidity and mortality of CRC will be decreased while the cost of the country's health care may be contained within reasonable limits. Therefore, a structural screening programme should be considered for Malaysia.

Several findings in the current study were inconsistent with what was reported by Su et al.[1] Few factors could contribute to such differences. Firstly, the education level of the participants recruited by the two studies were different. Secondly, the majority of the participants of the current study were relatively younger (mean age= 36) than the other study (mean age = 51). Last but not least, this study was conducted at Serdang Hospital which is at urban area, and it was much more facilitated compared with Su et al.'s study, which was conducted at rural area. Collectively, all these factors potentially influenced participants' ability to access the CRC knowledge. Nevertheless, the varied findings might be due to the limitations of the current study. The data were collected from the outpatient clinics in a tertiary hospital. The number of the participants could be small due to the short duration of the study, and the limited human resource in conducting the survey. As the sample was taken from a single hospital in Selangor, and was thus not a true random sampling method, not all groups may have been equally represented. The findings of our study limits to urban population and cannot be generalized to the whole Malaysian population. Future studies should involve the various types of health care institutions such as general health clinics, polyclinics, private clinics and hospitals, or even public areas.

CONCLUSION

By conducting this questionnaire survey, the level of understanding of Malaysian on CRC was obtained. The level of understanding of the respondents from an urban teaching hospital appeared good. Furthermore, this study provides a valuable basis of information toward the formulation of relevant CRC prevention strategies in non-urban areas of the country, by involving multiple parties such as counsellors, educators, and health care staffs.

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