

RESEARCH ARTICLE

Editorial Process: Submission:08/25/2017 Acceptance:09/02/2018

Knowledge and Awareness of Colorectal Cancer among General Public of Kuwait

Raed Saeed Saeed*, Yousif Yacoub Bakir, Khalid Hussain Alkhalifah, Layla Mohammed Ali

Abstract

Colorectal cancer (CRC) is the third most common type of cancer and also the fourth most common cause of cancer related death in both men and women worldwide. The CRC is considered to be the second killer in Kuwait after breast cancer. **Aim:** to assess and identify the level of knowledge and awareness of colorectal cancer with regards to risk factors, symptoms and screening/imaging procedures among general public in the State of Kuwait. **Method:** A total of 1000 questionnaires were distributed and 675 questionnaires were completed, thus giving a response rate of 67.5%. The questionnaire was split into 4 categories representing demographic variables, risk factors, symptoms of CRC and awareness of diagnostic procedures. Statistical analysis was carried out using non-parametric test K-W. **Results:** It showed that 75% of the participants had heard about CRC. The most frequent risk factor that was chosen was the genetic factors and family history (73.5%) with $P < 0.05$; however, the minimal risk factor was diabetes (31%). Most of the symptoms found to be related to colon rectal cancer were bloody stool, lower abdominal pain, obstructed intestine, and change in the nature of the exit but the least common symptom was due to anemia (33%). MRI was identified to be the most frequent diagnostic procedure (36%) followed by CT scan (31%). On the other hand, there were 187 (27.7%) of the participants who had limited knowledge about these different diagnostic procedures. **Conclusion:** The need for public awareness about diabetes as an important risk factor of CRC is necessary. Public seminars, school visits and social media will have important role in educating the public with regards to symptoms and diagnostic procedures of CRC.

Keywords: Colorectal cancer- knowledge- awareness

Asian Pac J Cancer Prev, **19** (9), 2455-2460

Introduction

Colorectal cancer (CRC) is the third most common type of cancer and also the fourth most common cause of cancer related death in both men and women worldwide (Ferlay et al., 2010). The CRC is considered to be the second killer in Kuwait after breast cancer. According to Kuwait cancer registry, the number of colorectal cancer cases was 1,392 between years 2000-2009 (Elbasmy, 2010). Furthermore, 205 CRC cases were registered in 2010 (Elbasmy, 2011). The annual report of Kuwait cancer registry showed that 186 and 218 patients were diagnosed with CRC in 2011 and 2012 respectively (Elbasmy, 2012; Elbasmy, 2013). The disease distribution was equal in both genders for Kuwaiti population whereas, for non-Kuwaiti population the male cases were 66% (Elbasmy, 2013).

CRC is defined as cancer arising from the epithelium (lining) of the colon or rectum (Scottish Intercollegiate Guidelines Network, 2011). As a result of tumor growth, the intestine starts bleeding and gets obstructed (American Cancer Society, 2014). There are many symptoms

that might explain the possibility of having CRC such as, a change in bowel habitus such as diarrhea, constipation that lasts for more than few days, rectal bleeding, weakness and fatigue, unintended weight loss, cramping or abdominal pain (American Cancer Society, 2014). An urge to have a bowel movement when bowel is empty, decreased appetite and unintentional weight loss are also common symptoms (American Cancer Society, 2014).

There are several factors that may increase the risk of having CRC. For example, high red meat diet such as (beef, pork, lamb or liver), and low fiber intake diet was found to stimulate the growth of CRC (American Cancer Society, 2014). In general, elderly people above 50 years have a higher chance of developing colorectal cancer (American Cancer Society, 2014). Overall, CRC incidence and mortality rates are higher in males than in females (American Cancer Society, 2014). People with first degree relatives who were diagnosed with CRC, have a greater risk of developing the disease by 2 to 3 times, compared to individuals with no family history (American Cancer Society, 2014). In addition, literature has also shown

that there is a strong link between other risk factors and CRC such as smoking, high alcohol consumption, certain medication, diabetes, being overweight and an inactive lifestyle (American Cancer Society, 2014).

Early CRC stages are asymptomatic, i.e. showing no evidence of disease, which makes screening very crucial at that stage. There are different screening and imaging modalities to diagnose CRC. Fecal occult blood test (FOBT) or blood in stool test is the first test that is performed on a patient suspected with CRC. FOBT is unable to localize the site and cause of bleeding. Therefore, it is recommended to undergo colon screening and implement different imaging modalities (American Cancer Society, 2014).

Colonoscopy is the most common and sensitive screening test used today (American Cancer Society, 2014). Although this technique suffers from some limitations, it is still considered to be a powerful diagnostic and therapeutic procedure (Ignaton et al., 2014). Double contrast barium enema (DCBE), which is a radiographic examination of the large intestine, is an alternative for patients who cannot undergo colonoscopy. The indication of DCBE is to differentiate between CRC and other abnormalities (Ignaton et al., 2014).

Furthermore, when colonoscopy is contraindicated, colonography using computed tomography (CT) is another imaging modality which can be used (Scottish Intercollegiate Guidelines Network, 2011). CT has several advantages, for example, it is a noninvasive technique that provides detailed 3D cross sectional images of an entire colon (Dobos and Rubesin, 2002). Conversely, the patient is exposed to a high radiation dose and the image produced is of poor spatial resolution.

A multimodality imaging (PET/CT) using CT combined with positron emission tomography (PET) is the most advanced technique for the detection, staging, restaging and follow up post therapy of CRC. In this, detailed anatomical information is provided by CT and the cancerous tissue uptake is investigated by PET (Griffeth, 2005). In addition, magnetic resonance imaging (MRI) is used as a diagnostic tool for the detection of CR (Ignaton et al., 2014).

The level of awareness and knowledge of colorectal screening among populations in many countries was assessed by many authors. A study was conducted in Saudi Arabia in 2015 on 1070 patients that aimed to evaluate the public awareness of CRC in Riyadh (Zubaidi et al., 2015). Results showed that 34.8% of all participants believed that a family history is considered as a personal risk of the disease. The study revealed that participants with higher education had general knowledge about the disease (Zubaidi et al., 2015). Another study showed that the majority of participants identified bleeding per rectum as a possible symptom of CRC (McVeigh et al., 2013). In addition, 57% of the participants admitted that family history was considered as a risk factor. A study was conducted by the Chinese university of Hong Kong and the results showed that the mean knowledge of symptoms and risk factors were 3.23 and 4.06 respectively. As a result, an educational interference was recommended by this study to reach the desired knowledge (Wong et

al., 2013).

To our knowledge, public awareness of CRC has not been investigated among the population in Kuwait. Therefore, the purpose of this study is to assess and identify the level of knowledge and awareness of colorectal cancer with regards to risk factors, symptoms and screening/imaging procedures among general public in the State of Kuwait.

Materials and Methods

In this cross-sectional study, a survey was conducted in public, on random individuals, with the purpose of evaluating their level of awareness and knowledge of CRC. This had taken place in February and lasted until May 2016. The individuals were approached in several places, including shopping malls, hospitals, schools and companies. A total of 1,000 questionnaires were distributed, and every uncompleted questionnaire was disregarded. A number of 675 questionnaires were completed, thus giving a response rate of 67.5%. The questionnaire was split into 4 categories (A, B, C, and D). A represents the demographic variables (Table A), and consists of six questions, including 'age of respondents', 'nationality', 'education level', as well as 'personal and family history of CRC'. The remaining 32 questions (Table 1) within B, C, and D were related specifically to risk factors. Most importantly, associated participants were informed that their confidentiality would be maintained. Ethical approval for the study was waived by the ethical committee at the Faculty of Medicine. Data analysis was performed using SPSS version 17.0 (SPSS Inc. Chicago, III, USA). Validity and reliability was investigated and confirmed by an academic doctorally radiologic technologist and a radiologist who were experts in CRC. Reliability refers to the property of a measurement instrument that causes it to give similar or correlated results for similar inputs. The list of questions were analyzed by Cronbach's Alpha (α) in order to show the correlation by α inter-comparison estimates that exist between questions, where α_1 (risk) = 0.712, α_2 (symptoms) = 0.797, α_3 (knowledge) = 0.705, α for all themes = 0.81 which conclude that consistency exists between all questions conducted in this study. For any research questionnaire, it is preferable to apply a non-parametric test for K-independent variables, namely Kruskal-Wallis samples.

Results

Demographic variables are shown in Table (A), including the frequency (N), percentage (%), mean, and standard error (SE). Over two-thirds, 543 participants were aged between 20 and 40 years. 132 (20%), were 41 years and above. More than three quarters of the sample, 550 (80%) are Kuwaiti while the remaining are non-Kuwaiti. 492 (73%) of the sample, hold a high education level (university and above), and the rest hold a diploma or less. Out of the 280 (42%) participants who were diagnosed with cancer, 118 (18%) were diagnosed with colon cancer. Furthermore, 507 (75.1%) were aware of colon cancer,

Table A. Demographic Variables

Characteristics	N	%	Mean	SE
Age (yrs.)			0.71	0.038
20 - 30	386	57.2		
31 - 40	157	23.3		
41 - 50	71	10.5		
+50	61	9.0		
Total	675	100.0		
Nationality			0.19	0.015
kuwaiti	550	81.5		
non-kuwaiti	125	18.5		
Total	675	100.0		
Education			0.73	0.017
undergraduate	183	27.1		
graduate	492	72.9		
Total	675	100.0		
Diagnosed with CRC				
no	394	58.4	1.41	0.03
don't know	163	24.1		
yes	118	17.5		
Total	675	100		
Diagnosed with cancer			1.00	0.035
no	279	41.3		
don't know	116	17.2		
yes	280	41.5		
Total	675	100.0		
Hear about CRC			0.38	0.027
no	88	13.0		
don't know	80	11.9		
yes	507	75.1		
Total	675			

which strengthened the conclusions of this study.

Descriptive data shown in Table (1) which includes the frequency and percentage of responses for each question in the three dimensions assigned for CRC. It was revealed that 73% of respondents linked CRC to genetic factors and family history. The other highest agents responsible of CRC are smoking, alcohol, and prior colon diseases contribute each to almost 70%. The remaining risk factors' responses were less than 50%, for example: age (46%), x-ray repetition rate (47%), obesity (45%), diet (37%), lack of vegetables and fruits intake (49%), inactivity (50%), and diabetes (31%).

Most of the symptoms related to colon rectal cancer were bloody stool (55%), lower abdominal pain (57%), obstructed intestine (54%), and change in the nature of the exit (56%). The least common symptoms due to CRC were general weakness (37%), abundance of gases (40%), anemia (33%), and uncomfortable sensation of non-full dump of waste (42%).

Most of the participants (73%) had heard of LC screening, more than 50% had knowledge of various imaging modalities (x-ray, CT, endoscopy, MRI, NM), and

32% had known that the nuclear medicine examination has side effects. Most of the respondents (around 60%) in this study were unable to pinpoint the best modality or test that can be used with great accuracy of diagnosis and satisfaction.

In Table 2, this study showed statistically significant differences ($P < 0.05$) in participants' opinions for all questions except the education level which was independent ($P = 0.245$) of knowledge about symptoms. The knowledge of the best age group recommended to do colonoscopy procedure has no correlation with any demographic variables. All demographic variables except age and nationality of participants have shown significant correlation with the best imaging modality to conduct ($P \ll 0.05$).

Tables 1 and 2, show the rate of maximum/minimum risk factors and the main symptoms which accompany CRC, among all participants, given in terms of yes/no. The highest positive risk agents are the genetic factors and family history (73%), while diabetes ranked the lowest (30%), showing that statistically significant figures ($P < 0.05$) for all risk factors except for smoking ($P = 0.333$) and alcohol ($P = 0.725$). The results showed that the highest responses related to symptoms, are losing weight (59%), change in bowel habits and abdominal pain (56%); all these responses independent of participant age groups ($P > 0.05$). All data related to education is given in Table 2, for symptoms which are not statistically significant ($P > 0.05$) except for anemia.

About half of the participants (47%) identified age of over 40 years as a major reason to check for abnormalities of the colon, through various clinically analytical tests. Table 2 shows responses in terms of descriptive N (%) and statistical inference (P-value) for age, nationality, education, family history and knowledge associated with either cancer of any type or colon rectal cancer. Most of the participants are unable to pinpoint the best CRC diagnosis.

Discussion

As stated earlier and to the best of our knowledge, public awareness of CRC has not been investigated among the general public in Kuwait yet. Therefore, the purpose of this study is to assess and identify the level of knowledge and awareness of CRC with regards to its risk factors, symptoms and screening/imaging procedures. 75% of all participants had heard about CRC, which reflects that their responses were not based on random answers, but based on their knowledge and experiences with their family diseases.

Our results showed that public awareness about family history and genetic as risk factor were higher than other countries in the region although 17% of participants have experienced CRC (Zubaidi et al., 2015). This might be explained by the fact that the state of Kuwait is a small country where information is easily exchangeable. People are also influenced by social media and gathering among family members.

Diabetes as a risk factor has not been recognized by the

Table 1. Descriptive Statistics

Theme 1: Colon Cancer Agents	No	%	Don't know	%	Yes	%
Q1. Genetic factors and Family history	46	6.8	133	19.7	496	73.5
Q2. Age	153	22.7	210	31.1	312	46.2
Q3. X-ray repetition rate	94	13.9	263	39.0	317	47.0
Q4. Smoking	60	8.9	144	21.3	471	69.8
Q5. Alcohol	38	5.6	166	24.6	471	69.8
Q6. Obesity	108	16.0	260	38.5	307	45.5
Q7. High red meat diet	94	13.9	330	48.9	251	37.2
Q8. Lack of vegetables and fruits	101	15.0	244	36.1	330	48.9
Q9. Inactivity	113	16.7	227	33.6	335	49.6
Q10. Diabetes	124	18.4	344	51.0	207	30.7
Q11. Prior colon diseases	30	4.4	174	25.8	471	69.8
Theme 2: ColonCancer Symptoms	No	%	Don't know	%	Yes	%
Q12. Stool with blood	78	11.6	227	33.6	370	54.8
Q13. Abdominal pain	100	14.8	191	28.3	384	56.9
Q14. Losing weight suddenly	53	7.9	221	32.7	401	59.4
Q15. General weakness	102	15.1	326	48.3	247	36.6
Q16. Abundance of gases	122	18.1	286	42.4	267	39.6
Q17. Obstructed intestine	37	5.5	272	40.3	366	54.2
Q18. Change in the nature of the exit	57	8.4	237	35.1	381	56.4
Q19. Anemia	130	19.3	324	48.0	221	32.7
Q20. Sensation of non-full dump of waste	78	11.6	313	46.4	284	42.1
Theme 3 :						
A. Knowledge breast cancer	No	%	Don't know	%	Yes	%
Q21. Fecal occult blood test	351	52.0	165	24.4	159	23.6
Q22. Hearing about L.C. screening	90	13.3	95	14.1	490	72.6
Q23. Hearing about X-ray dye exam	200	29.6	130	19.3	345	51.1
Q24. Painful X-ray exam	146	21.6	363	53.8	166	24.6
Q25. Hearing about CT and endoscopy	154	22.8	144	21.3	377	55.9
Q26. Hearing about MRI	63	9.3	101	15.0	511	75.7
Q27. Safety of examination	71	10.5	279	41.3	325	48.1
Q28. Hearing about NM exam	120	17.8	147	21.8	408	60.4
Q29. Side effects of NM exam	62	9.2	398	59.0	215	31.9
Q30. Anxiety/fear of exams	86	12.7	141	20.9	448	66.4
B. Opinion about age	20-30	%	31-40	%	40+	%
Q31. At what age the colon must be checked	146	21.6	211	31.3	318	47.2
C. Best imaging and testing modality	No	%	Don't know	%	Yes	%
Q32a. NM	516	76.4	0	0	159	23.6
Q32b. CT	465	68.9	0	0	210	31.1
Q32c. MRI	432	64.0	0	0	243	36.0
Q32d. Ba rium	462	68.4	0	0	213	31.6
Q32e. Laboratory	476	70.5	0	0	199	29.5
Q32f. Clinical test	595	88.1	0	0	80	11.9
Q32g. Don't know	488	72.3	0	0	187	27.7

majority of the participants (31%). This would emphasize the need for public awareness about diabetes since it is an important risk factor of CRC (Mihaita et al., 2015). In addition, diabetes in the state of Kuwait has been categorized as one of the second among the world

(Badran and Laher, 2012) which makes public awareness necessary and crucial.

Table 1 reveals that the sudden loss of weight without apparent reason, abdominal pain and change in the nature of bowel habitus were considered as common

Table 2. Descriptive and Statistical Inference for Responses Over Demographic Variables

	N (%)	P	N (%)	N(%)	N(%)	N(%)	P1	P2	P(3A)	P(3B)	P(3C)
Themes (1, 2, 3A) Age groups											
Q1 to Q30		0.000***	20 - 30	31-40	41-50	50+	0.003**	.000***	0.002**	000***	0.802
0. No	15.1		16.6	11.9	13.9	15.2					
1. Don't know	33.9		33.1	36.6	31.5	34					
2. Yes	51.0		50.2	51.5	54.6	50.8					
		MEAN=	0.66	0.6	0.6	0.64					
		SE=	0.007	0.01	0.016	#####					
Themes (1, 2, 3A) Nationality											
Q1 to Q30		0.000***	K	NK			0.008**	0.019*	0.000***	0.49	0.453
0. No	15.1	23.8	15.4	14							
1. Don't know	33.9	33.0	34.6	30.3							
2. Yes	51.0	43.3	50	55.7							
		MEAN=	0.65	0.58							
		SE=	0.006	0.012							
Themes (1, 2, 3A) Education											
Q1 to Q30		0.000***	UG	G			0.001**	0.245	0.000***	0.11	0.000***
0. No	15.1		13.9	15.6							
1. Don't know	33.9		38.4	32.2							
2. Yes	51.0		47.7	52.3							
		MEAN=	0.66	0.63							
		SE=	0.01	0.006							
Themes (1, 2, 3A) Cancer diagnosis											
Q1 to Q30		0.000***	No	Don,t	Yes		0.000***	0.000***	0.000***	0.37	0.003**
0. No	15.1		17.9	11.5	13.8						
1. Don't know	33.9		33.9	39.5	31.5						
2. Yes	51.0		48.1	49.1	54.7						
		MEAN=	0.7	0.63	0.59						
		SE=	0.008	0.012	0.008						
Themes (1, 2, 3A) Colon cancer diagnosis											
Q1 to Q30		0.000***	No	Don,t	Yes		0.000***	0.000***	0.000***	0.11	0.027*
0. No	15.1		17.5	11.1	12.5						
1. Don't know	33.9		32.6	37.9	32.4						
2. Yes	51.0		49.8	50.9	55.1						
		MEAN=	0.68	0.6	0.57						
		SE=	0.007	0.01	0.012						
Themes (1, 2, 3A) Hearing about Colon cancer											
Q1 to Q30		0.000***	No	Don,t	Yes		0.000***	0.000***	0.000***	0.04	0.000***
0. No	15.1		17.7	10.3	15.4						
1. Don't know	33.9		43.1	36.3	31.9						
2. Yes	51.0		39.2	53.4	52.7						
		MEAN=	0.79	0.57	0.63						
		SE=	0.014	0.014	0.006						

NS (Not Significant "P">0.05); * S (Significant "P"≤0.05); ** HS (Highly Significant "P"≤0.005), *** VHS (Very Highly Significant "P"≤0.0005)

symptoms from participants. Such result is in agreement with other studies globally (McVeigh et al., 2013; Wong et al., 2013). It is obvious that the participants have connected the abdominal pain and loss weight as a reason of changing in the nature of bowel habitus which was documented in the literature too (Ferlay et al., 2010;

McVeigh et al., 2013; Wong et al., 2013).

It was found that participants' knowledge was the highest with regards to MRI as an imaging modality. The literature has documented that MRI is an effective imaging modality to choose when examining abdomen with no radiation dose to the patient. On the other hand,

small number of participants (24%) has recognized nuclear medicine imaging as another option. This was in an agreement with the literature which demonstrates the high sensitivity and specificity of PET/CT in the localization, staging, restaging and follow up treatment of CRC and its metastasis (Griffeth, 2005). Some people had little or unpleasant experience of the colonoscopy, therefore awareness on the advantages/benefits of the entire procedure of colonoscopy on detecting CRC at early stage should exist. Therefore, knowledge of various diagnostic procedures should be reinforced during public campaign and educational program is needed to raise up the public awareness on the imaging modalities focusing on the advantages and disadvantages of each.

There is a campaign in all poly clinics around Kuwait to encourage the patients who are of the age 40 and above to do rectal endoscopy regardless the presence of CRC symptoms. CRC is a disease that we all try to avoid. Therefore, increasing the awareness of the public in the community is very important. Such step could be achieved by exposing the public more to the educational resources such as TV's shows posters, information leaflets distributed in public places and maintaining public seminars.

References

- American Cancer Society (2014). Cancer facts and figures 2014-2016. American Cancer Society, Inc.
- Badran M, Laher I (2012). Type II diabetes mellitus in arabic-speaking countries. *Int J Endocrinol*, **2012**, Article ID 902873.
- Dobos N, Rubesin S (2002). Radiologic imaging modalities in the diagnosis and management of colorectal cancer (US). *Hematol Oncol Clin North Am*, **16**, 875-95.
- Elbasmy A (2010). Kuwait cancer registry ten years report: 2000-2009. Kuwait: Kuwait Ministry of Health.
- Elbasmy A (2011). Kuwait cancer registry annual report: 2010. Kuwait: Kuwait Ministry of Health.
- Elbasmy A (2012). Kuwait cancer registry annual report: 2011. Kuwait: Kuwait Ministry of Health.
- Elbasmy A (2013). Kuwait cancer registry annual report: 2012. Kuwait: Kuwait Ministry of Health.
- Ferlay J, Shin HR, Bray F, et al (2010). Estimates of worldwide burden of cancer in 2008: Globocan 2008. *Int J Cancer*, **127**, 2893-917.
- Griffeth LK (2005). Use of PET/CT scanning in cancer patients: technical and practical considerations. The department of radiology. *BUMC Proc*, **18**, 321-30.
- Ignaton V, Kolev K, Tonev A, et al (2014). Diagnostic modalities in colorectal cancer-endoscopy, CT and PET scanning, magnetic resonance imaging (MRI), endoluminal ultrasound and intraoperative ultrasound. <http://dx.doi.org/10.5772/57508>
- McVeigh T, Lowery A, Waldron R, et al (2013). Assessing awareness of colorectal cancer symptoms and screening in a peripheral colorectal surgical unit: a survey based study. *BMC Surg*, **13**, 20
- Mihaita P, Petruț N, Raluca C, et al (2015). Diabetes mellitus and colorectal cancer – a revealed connection. *Romanian J Mil M*, **2**, 13-6.
- Scottish Intercollegiate Guidelines Network (SIGN) (2011). Diagnosis and management of colorectal cancer. Edinburgh: SIGN publication no.126.

- Susanna CL, Nicola O, Alicja W (2005). Diabetes mellitus and risk of colorectal cancer: A meta-analysis, Sweden. *J Natl Cancer Inst*, **97**, 1679 – 87.
- Vicki Brower (2012). Illuminating the diabetes-cancer link. *JNCL*, **104**, 1048-50
- Wong MC, Hirai HW, Luk AK, et al (2013). The knowledge of colorectal cancer symptoms and risk factors among 10,078 screening participants: Are high risk individuals more knowledgeable?. *PLoS One*, **8**, e60366.
- Zubaidi A, AlSubaie N, AlHumaid A, et al (2015). Public awareness of colorectal cancer in Saudi Arabia: A survey of 1,070 participants in Riyadh. *Saudi J Gastroenterol*, **21**, 78-83.



This work is licensed under a Creative Commons Attribution-Non Commercial 4.0 International License.