Predictors of Colorectal Cancer Knowledge among Adults in the United Arab Emirates

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Abstract

Objective: To assess knowledge regarding colorectal cancer (CRC) and to identify its predictors in the UAE. Materials and Methods: A cross sectional study was conducted among subjects ≥ 50 years-old, using a validated self-administered questionnaire. Awareness of CRC risk factors, warning signs/symptoms (S/S), and screening methods was evaluated with a level of knowledge score for various areas. Low (poor) knowledge was defined as a score below the corresponding average value. The Chi-square test and logistic regression were used in the statistical analysis. Results: The percentage of respondents who had poor knowledge score concerning risk factors, warning S/S and screening were 81.7%, 84.7% and 94.1% respectively. Male and lower education level subjects had significantly higher probability of low knowledge related to risk factors and warning S/S. Also, respondents without a family history of CRC or personal history of polyps had a significantly higher probability of low knowledge concerning warning S/S compared to those who had a positive history. Significantly higher probability of low knowledge concerning screening methods was noted among non-Arabs and subjects with a lower education level. Conclusion: Most of the respondents had poor knowledge. Gender, education level, family and personal history and ethnicity were found to be significant predictors of CRC knowledge.

Keywords: Colorectal cancer- knowledge- adult

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Introduction

Globally, colorectal cancer (CRC) is the 3rd most common cancer (IARC 2012) with an increasing prevalence in some countries (Center et al., 2009). In the Gulf countries, the disease is the second prevalent cancer and data on cancer incidence between 1998-2007 indicated late first diagnosis for about 60% of the registered patients (Al-Madouj et al., 2011). In the United Arab Emirate, CRC is respectively the 2nd and 4th most prevalent cancer among national males and females for the same period (Al-Madouj et al., 2011), and in both genders combined, it was the 2nd most common cancer at 2008 (Loney et al., 2013).

Screening for colorectal cancer is an effective measure for decreasing mortality, improving the quality of life and reducing the burden of the disease in the population (Leddin et al., 2004; Zauber, 2015). Researchers Hewitson et al., (2008) and Zauber (2015) demonstrated the success of screening with fecal occult blood test (FOBT) in bringing down colorectal mortality. Systematic reviews indicated a 16% reduction in the risk of CRC death by FOBT method (Hewitson et al., 2008). However, effectiveness of any screening test depends on the test uptake by the target population (Commonwealth of Australia, 2005; Weller et al., 2009). Public awareness about CRC risk factors, warning signs, and screening tests would have significant impacts on the uptake of screening programs (McCaffery et al, 2003; Zheng et al., 2006; Koo et al., 2012; Bradley et al, 2015).

In the United Arab Emirates, the CRC screening program is implemented in 2014. Health Authority of Abu Dhabi (HAAD, 2014) suggested a desirable level for CRC screening uptake to be more than 65%. Increased public awareness about CRC can improve compliance to available screening services (Gimeno Garcia et al., 2014). Before developing any CRC awareness programs, it is essential to identify the level of public knowledge about cancer and screening tests. This study aimed to evaluate the knowledge about colorectal cancer and to assess factors associated with cancer awareness among adults in the UAE.

Materials and Methods

This cross sectional study included adults aged 50 years or older, living in the UAE and attending Thumbay Hospital in Ajman, UAE. Convenience sampling approach

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was used to recruit the participants. A self-administered questionnaire was developed and its’ content was validated by three experts in the field. The questionnaire consisted of questions related to the socio-demographic characteristics and family history of CRC or colonic polyps. The knowledge about CRC was examined for three areas namely the risk factors (18 items), warning signs/symptoms (9 items) and screening methods (10 items). The knowledge score in each area was assessed. Poor knowledge is defined as a knowledge score below the average value for each corresponding domain. The SPSS version 21 was used for statistical analysis. Chi-square test, simple and multiple logistic regression analysis were used. The study was approved by Ethics Committee of the Gulf Medical University and informed consent was obtained before enrollment of participants in the study.

Results

The study included 404 participants with a mean (SD) age of 55.01 (5.21) ranging between 50 and 77 years. Table 1 Shows participants characteristics. Respondents were mostly 50-54 years old (60.3%), males (80.2%), Arabs (51.2%), non-Arabs (93.6%), married (93.6%), having secondary level of education (45.8%), and health insurance (54.4). Family history of CRC and personal history of polyp were reported by 6.6% and 2.7% of the participants, respectively.

Table 1. Participants’ Characteristics

| Variables          | Sub-Categories     | Number | %    |
|--------------------|--------------------|--------|------|
| Gender             | Males              | 324    | 80.2 |
|                    | Females            | 80     | 19.8 |
| Ethnicity          | Arab               | 207    | 51.2 |
|                    | Non-Arab           | 197    | 48.8 |
| Nationality        | Emirati            | 26     | 6.4  |
|                    | Non Emirati        | 378    | 93.6 |
| Marital status     | Unmarried          | 23     | 6.4  |
|                    | Married            | 336    | 93.6 |
| Education level    | ≤ Secondary        | 237    | 61   |
|                    | Graduate/PG        | 152    | 39   |
| Age (years)        | 50-54              | 243    | 60.3 |
|                    | 55-59              | 96     | 23.8 |
|                    | ≥60                | 65     | 15.9 |
| Family history of CRC | Yes              | 26     | 6.6  |
|                    | No                 | 369    | 93.4 |
| Personal history of polyp | Yes   | 11     | 2.7  |
|                    | No                 | 381    | 97.2 |

Table 2. Distribution of Participants by Knowledge about Risk Factors for Colorectal Cancer

| Risk Factors Items                  | Correct knowledge | Incorrect/ don’t know |
|-------------------------------------|-------------------|-----------------------|
|                                     | No    | %    | No    | %    |
| Aging                               | 101   | 25.7 | 292   | 74.3 |
| Family history of CRC               | 67    | 17.4 | 318   | 82.6 |
| Alcohol consumption                 | 120   | 30.2 | 278   | 69.8 |
| Smoking                             | 105   | 27   | 284   | 73   |
| Obesity, overweight                 | 63    | 16.4 | 321   | 83.6 |
| Low physical activity               | 61    | 15.9 | 323   | 84.1 |
| Low Fruit and vegetable intake      | 86    | 22.4 | 298   | 77.6 |
| Low fiber intake                    | 88    | 23   | 295   | 77   |
| High fat intake                     | 90    | 23.5 | 293   | 76.5 |
| Red and processed meat              | 90    | 23.3 | 296   | 76.7 |
| Intake of smoked foods              | 63    | 16.4 | 290   | 75.7 |
| Intake of salt cured food           | 58    | 15.1 | 325   | 84.9 |
| Family history of multiple cancers  | 110   | 28.1 | 281   | 71.9 |
| Personal history of chronic bowel disease | 117  | 30.1 | 227   | 69.9 |
| Familial History of a grape-like growth on the inside wall of the colon or rectum | 69    | 17.9 | 317   | 82.1 |
| Personal history of grape-like growth on the inside wall of the colon or rectum during the teen years | 66    | 17.2 | 318   | 82.8 |
| Personal history of breast cancer   | 101   | 26   | 288   | 74   |
| Personal history of diabetes        | 27    | 7    | 361   | 93   |

The association between poor knowledge scores about colorectal cancer risk factors, warning signs/ symptoms and screening methods and demographic variables is shown in Table 5. Significant associations are found between poor knowledge and: gender (higher proportion warning symptoms or signs for CRC.

Analysis of knowledge scores about colorectal cancer in different domains showed that the percentage of participants who had poor knowledge scores for CRC risk factors, warning signs and screening methods were 81.7%, 84.7% and 94.1% respectively.

Table 3. Distribution of Participants by Knowledge about Warning Signs for CRC

| Warning Signs Items                                                   | Correct knowledge | Incorrect/ don’t know |
|----------------------------------------------------------------------|-------------------|-----------------------|
|                                                                     | No    | %    | No    | %    |
| Rectal bleeding                                                      | 100   | 24.8 | 304   | 75.2 |
| Blood in stool (bright red, black or very dark)                      | 95    | 23.5 | 309   | 76.5 |
| Change in bowel habit, especially in the shape of the stool          | 59    | 14.6 | 345   | 85.4 |
| A lump in the abdomen                                                | 30    | 7.4  | 374   | 92.6 |
| Unexplained extreme tiredness                                        | 39    | 9.7  | 365   | 90.3 |
| Weight loss without dieting                                          | 56    | 13.9 | 384   | 86.1 |
| Feeling that bowel does not completely empty after using the lavatory' | 28    | 6.9  | 376   | 93.1 |
| Cramping pain in the lower abdomen                                  | 81    | 20   | 323   | 80   |
| Pain in back passage                                                 | 51    | 12.6 | 353   | 87.4 |
Colorectal Cancer Knowledge

Logistic regression analysis was done (Table 6) to find factors that can influence the probability of having poor knowledge scores for colorectal cancer risk factors, warning signs and screening methods after adjusting for the confounding effects of other variables included in the models. The present study showed that gender, education level, family and personal history and ethnicity are significant predictors of CRC knowledge while age was not a significant predictor of CRC knowledge.

The present results showed that after adjusting for the confounding effect of other variables, in comparison to females, males had 3.4 and 7.3 times higher probability of poor knowledge scores for risk factors and warning signs respectively. Moreover, in comparison to higher educational level participants, lower education level subjects had 3.6; 4.8 and 5.9 times higher probability of poor knowledge scores for risk factors, warning signs and screening methods respectively. Non-Arabs had three times higher probability of having poor knowledge for screening methods compared to Arabs. Participants who had no family history of CRC and personal history of polyp had 11.1 and 5.8 respectively higher probability of having poor knowledge for warning signs respectively.

Discussion

Public awareness about colorectal cancer is an essential element in the prevention of the disease (CDC, 2017). The present results demonstrated great lack of awareness about CRC. The majority of participants were not aware about CRC risk factors and warning signs (59.4% and 74.8% in males vs. females), education level (higher proportion in lower vs. higher education level), family history of CRC (higher proportion in persons who didn’t have history vs. that in persons who had history of CRC). Ethnicity is significantly associated with poor knowledge scores about colorectal cancer warning signs/symptoms and screening methods (higher proportions in non-Arab vs. Arab in both domains). The Age has not demonstrated significant association with knowledge scores in all domains.

Table 4. Distribution of Participants by Knowledge about CRC Screening

| CRC Screening Items | Correct knowledge | Incorrect/ don’t know |
|--------------------|-------------------|----------------------|
|                    | No    | %    | No    | %    |
| Heard about CRC Screening program/tests | 116   | 28.7 | 288   | 71.3 |
| Know the methods used for Screening | 31    | 7.7  | 373   | 92.3 |
| Heard about FOB test | 65    | 16.1 | 339   | 83.9 |
| Know the appropriate age to start FOB test | 8     | 2.0  | 396   | 98   |
| Know how often FOB test be performed | 2     | 0.5  | 402   | 99.5 |
| Know who are to be included in FOBT | 117   | 29.0 | 287   | 71   |
| Heard about Colonoscopy | 155   | 38.4 | 249   | 61.6 |
| Know the appropriate age to start Colonoscopy | 15    | 3.7  | 389   | 96.3 |
| Know how often Colonoscopy be performed | 2     | 0.5  | 402   | 99.5 |
| Specify other methods for screening of CRC | 5     | 1.2  | 399   | 98.8 |

The proportion of poor knowledge (shown) Vs non-poor knowledge was tested; *P<0.05; PG: Postgraduate

Table 5. The Association Poor Knowledge Scores about Colorectal Cancer Risk Factors, Warning Signs/ Symptoms and Screening Methods and Demographic Characteristics

| Variables            | Sub-Categories | Total No. | Risk Factors | No. (%) | Warning Signs/ Symptoms | No. (%) | Screening Methods | No. (%) |
|----------------------|----------------|-----------|--------------|---------|-------------------------|---------|-------------------|---------|
| Gender               | Males          | 324       | 276 (85.2) * | 288 (88.9) | 308 (95.1) |
|                      | Females        | 80        | 54 (67.5)   | 54 (67.5) | 72 (90.0) |
| Ethnicity            | Arab           | 207       | 163 (78.7)  | 166 (80.2) | 189 (91.3) * |
|                      | Non-Arab       | 197       | 167 (84.8)  | 176 (89.3) | 191 (97.0) |
| Nationality          | Emirati        | 26        | 19 (73.1)   | 21 (80.8) | 24 (92.3) |
|                      | Non Emirati    | 378       | 311 (82.3)  | 321 (84.9) | 356 (94.2) |
| Marital status       | Unmarried      | 23        | 20 (87.0)   | 21 (91.3) | 23 (100.0) |
|                      | Married        | 336       | 265 (78.9)  | 277 (82.4) | 313 (93.2) |
| Education level      | ≤ Secondary    | 237       | 211 (89.0)  | 217 (91.6) | 232 (97.9) * |
|                      | Graduate/PG    | 152       | 104 (68.4)  | 110 (72.4) | 133 (87.5) |
| Age (years)          | 50-54          | 243       | 198 (81.5)  | 205 (84.4) | 228 (93.8) |
|                      | 55-59          | 96        | 76 (79.2)   | 80 (83.3) | 90 (93.8) |
|                      | ≥60            | 65        | 56 (86.2)   | 57 (87.7) | 62 (95.4) |
| Family history of CRC | Yes           | 26        | 13 (50.0)   | 7 (26.9)  | 25 (96.2) |
|                      | No             | 369       | 309 (83.7)  | 326 (88.3) | 346 (93.8) |
| Personal history of polyp | Yes      | 11        | 8 (72.7)    | 5 (45.5)  | 9 (81.8) |
|                      | No             | 381       | 312 (81.9)  | 325 (85.3) | 359 (94.2) |

The proportion of poor knowledge (shown) Vs non-poor knowledge was tested; *P<0.05; PG: Postgraduate
Factors, Warning Signs/ Symptoms and Screening Methods

Table 6. Logistic Regression Analysis: Predictors of Lower Knowledge Scores for Colorectal Cancer (CRC) Risk Factors, Warning Signs/ Symptoms and Screening Methods

| Predictors of knowledge about risk factors (Multiple logistic regression model prediction =81.4%) | N   | COR   | 95% CI          | P     | AOR   | 95% CI          | P     |
|-------------------------------------------------------------------------------------------------|-----|-------|-----------------|-------|-------|-----------------|-------|
| Gender                                                                                                                                                   |     |       |                 |       |       |                 |       |
| Female                                                                                         | 80  | 1     | 1               | <0.001| 3.409 | 1.842-6.307     | <0.001|
| Male                                                                                           | 324 | 2.769 | 1.582-4.843     | <0.001| 3.409 | 1.842-6.307     | <0.001|
| Education level                                                                               |     |       |                 |       |       |                 |       |
| Graduate/Postgraduate                                                                         | 152 | 1     | 1               | 0.012 |       |                 |       |
| Secondary or less                                                                             | 237 | 3.746 | 2.200-6.376     | <0.001| 3.678 | 2.075-6.517     | <0.001|
| Family history of CRC                                                                         |     |       |                 |       |       |                 |       |
| Yes                                                                                           | 26  | 1     | 1               | 1     | 1.147 | 29.379         | 0.003 |
| No                                                                                             | 369 | 5.15  | 2.275-11.658    | <0.001|       |                 |       |

Predictors of knowledge about Warning Signs/ Symptoms
(Multiple logistic regression model prediction =88.1%)

| Gender                                                                                                                                                  |     |       |                 |       |       |                 |       |
|---------------------------------------------------------------------------------------------------------|-----|-------|-----------------|-------|-------|-----------------|-------|
| Female                                                                                                  | 80  | 1     | 1               |       |       |                 |       |
| Male                                                                                                    | 324 | 3.852 | 2.152-6.895    | <0.001| 7.391 | 3.413-16.007   | 0.001 |
| Education level                                                                                         |     |       |                 |       |       |                 |       |
| Graduate/Postgraduate                                                                                   | 152 | 1     | 1               | 1     | 4.816 | 2.307-10.055   | <0.001|
| Secondary or less                                                                                       | 237 | 4.143 | 2.320-7.398    | <0.001| 4.816 | 2.307-10.055   | <0.001|
| Family history of CRC                                                                                   |     |       |                 |       |       |                 |       |
| Yes                                                                                                     | 26  | 1     | 1               |       |       |                 |       |
| No                                                                                                      | 369 | 20.578| 8.176-51.796  | <0.001| 11.189| 3.682-33.999   | <0.001|
| Personal history polyp                                                                                    |     |       |                 |       |       |                 |       |
| Yes                                                                                                     | 11  | 1     | 2.056-23.595   | 0.002 | 1     | 1.147-29.379   | 0.033 |
| No                                                                                                       | 381 | 6.964 | 5.806          |       |       |                 |       |
| Ethnicity                                                                                                 |     |       |                 |       |       |                 |       |
| Arab                                                                                                     | 207 | 1     | 1               |       |       |                 |       |
| Non Arab                                                                                                 | 197 | 2.07  | 1.174-3.650    | 0.012 |       |                 |       |

Predictors of knowledge scores about Screening Methods
(Multiple logistic regression model prediction =93.8%)

| Education level                                                                                         |     |       |                 |       |       |                 |       |
|---------------------------------------------------------------------------------------------------------|-----|-------|-----------------|-------|-------|-----------------|-------|
| Graduate/Postgraduate                                                                                   | 152 | 1     | 1               |       |       |                 |       |
| Secondary or less                                                                                       | 237 | 6.629 | 2.419-18.162   | <0.001| 5.907 | 2.065-16.895   | 0.001 |
| Ethnicity                                                                                                 |     |       |                 |       |       |                 |       |
| Arab                                                                                                     | 207 | 1     | 1.178-7.805    | 0.022 | 1     | 1.113-8.258    | 0.03  |
| Non Arab                                                                                                 | 197 | 3.052 | 3.032          |       |       |                 |       |

respectively). Cancer awareness in our study, is poorer than those reported in Malaysia, where 38% and 32% of participants demonstrated no knowledge about warning signs and risk factors, respectively (Su et al., 2013). Only 7% of the studied respondents were aware that diabetics have higher risk of developing CRC, in agreement with the results of Almadi et al., 2015 study in Saudi Arabia. The present data showed that 25.7% knew that aging is a risk factor for CRC, this is lower than that reported in a study in Saudi Arabia (Almadi et al., 2015). Population percentages are lower than the corresponding values of earlier studies in Turkey (45%) (Gulten et al., 2012) and Spain (38.5%) (Carrasco-Garrido et al., 2014).

We found that gender (being males compared to females) and lower education level were significant predictors of lower CRC knowledge, this finding is comparable with a survey in Saudi Arabia (Zubaidi et al., 2015) where better knowledge was found among women and higher education level respondents. Similarly, in a survey done in the UK (Power et al., 2011), women were also found to have significantly higher knowledge of signs and symptoms than men. It should be stated here, that the previously mentioned survey (Power et al., 2011), demonstrated that in addition to gender, ethnicity was also a significant predictor of CRC knowledge, a finding that is consistent with the current study. The latter finding indicated that the education tools that are to be used to increase awareness of the public about CRC, should consider the ethnic specific structure of the population.

The present data showed that age is not a significant predictor of CRC knowledge and this agrees with a survey in the Western Region of Saudi Arabia (Khayyat and Ibrahim, 2014).

In line with others findings Yim et al., (2012); Wong et al., (2013) family history of CRC and personal history of polyps are identified as a significant predictor for CRC knowledge. Yim et al., (2012) found that patients with a personal history of polyps and family history of CRC were predictors of better knowledge and perceptions regarding
CRC screening.

Limitation

Results of this study cannot be generalized since it includes only patients attending one health care setting. However, it provides baseline information for directing future educational activities with regard to CRC screening.

In conclusion, most of the respondents had poor knowledge about CRC and screening tests. Gender, education level, family and personal history and ethnicity are significant predictors of CRC knowledge.

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