Knowledge about Cancer Screening among Medical Students and Interns at University of Jeddah and King Abdul-Aziz University

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General Note

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ABSTRACT

Background: Cancer screening has been a significant factor leading to reduce the burden of morbidity and death from cancer. Screening is described as presuming identification of an unknown disease with examinations, tests, or other methods that can be applied quickly and easily in a healthy asymptomatic population. Unfortunately, there is no proper focus on cancer screening and tumor markers in addition to the poor awareness about the importance of early detection of cancers. This study aims to evaluate Knowledge about Cancer Screening among medical students and interns at the University of Jeddah and King Abdulaziz University. *Material and method*: a cross-sectional study which was conducted from December 2019 to February 2020 among medical students and interns at the University of Jeddah and King Abdulaziz University in Jeddah, Saudi Arabia. By using a validated questionnaire, the questionnaire-based survey contained 15 questions and demographic data Distributed among medical students and interns to assess the knowledge regarding tumor markers, method of screening, initiation age of screening and frequency of screening. *Result*: a total of 212 participants included in the study, males were more than females (58.5% versus 41.5%). Participant's level of knowledge was poor (less than 50% had adequate knowledge). The best knowledge is shown in clinical years students (4th, 5th, 6th year) compare to pre-clinical (2nd, 3rd year) and interns, they have better knowledge in all types of cancer screening methods, the initiation age of screening and frequency. *Conclusion*: This study found that medical students and interns at the University of Jeddah and King Abdulaziz University in Jeddah have not received adequate knowledge and training in cancer screening modalities, Therefore, our recommendations for future researches are applying the study on many medical schools with different curricula, increasing the sample size, including post-graduate residents, and to increase the number of questions that is related to cancer screening.

Keywords: Cancer, morbidity and mortality, colorectal cancer, Pap smear

1. INTRODUCTION

Cancer is One of the major causes of morbidity and mortality, the worldwide cancer incidence is estimated to have risen to 18.1 million new cases, 9.6 million deaths and 43.8 million people living with cancer (within 5 years of diagnosis) in 2018 (WHO, 2018). It is expected that the total number of new cases to increase by 29% in the developed countries and an increase of 73% is expected in developing countries, largely as a result of aging, expansion, and change in eating habits by 2020. Developing countries contribute by 53% of the incidence and by 56% of cancer deaths (Sedrak et al., 2016). Screening is described as presuming identification of unknown disease with examinations, tests or other methods that can be applied quickly and easily in an apparently healthy asymptomatic population (Gümüştakim et al., 2019).

Cancer screening has been a significant factor lead to reduce the burden of morbidity and death from cancer. For most other cancers, however, the effects of screening have been greatly reduced, and there has been increasing recognition of screening-related harms (Habbema et al., 2012). While standard screening programs are a secondary prevention example, in which cancer incidence is not decreased but cancer mortality, screening approaches, for example those of colorectal and cervical cancer, which detect early cancers as well as pre- lesions, provide both primary and secondary prevention (Byers et al., 2016). In specific cases, such as cervical cancer, the mortality and effects have been dramatic decreasing more than 80% after the implementation of screening with pap smear in the United States (Habbema et al., 2012).

A previous study was done in 2008 at five different medical schools in Mexico City using questionnaire-based survey completed by medical students and internal medicine residents' final sample of 451 participants and the result was low level of Knowledge of screening guidelines among medical students and residents (Villarreal-Garza et al., 2010). Another study was done in Nigeria between September 2014 and September 2015 involved 316 Workers at Delta State University Teaching Hospital using questionnaire include the breast, cervical and prostate cancers, found that a knowledge and attitude to cancer screening was respectively, fair and good towards all the 3 cancers, but the knowledge about these cancers were significantly decreased with an increase in years since graduation (Eze & Obiebi, 2019). In 2016, There was a study done in Egypt about cancer Screening

Knowledge and Attitudes of Under- and Post-Graduate Students (interns and residents) and their sample size were 300 undergraduate medical students and 150 postgraduates, and the result showed a relatively low to moderate level of knowledge (Sedrak et al., 2016).

In 2019 study was done at King Abdullah international medical center among 581 medical students and they said Saudi medical students have limited knowledge and poor altitude to Colorectal cancer screening (CRC) (Althobaiti & Jradi, 2019). Unfortunately, there is no proper focus on cancer screening and tumor markers on addition to the poor awareness about the importance of early detection of cancers. The aim of this study is to evaluate Knowledge about Cancer Screening among medical students and interns at king Abdulaziz University and University of Jeddah.

2. METHODS

Study design and setting

Study design is a cross-sectional study which was conducted from December 2019 to February 2020 among medical students and interns at the University of Jeddah and King Abdulaziz University in Jeddah, Saudi Arabia. A final sample of 212 participants completed the survey, participants included medical students from second to sixth year and interns, to obtain a representative sample for medical students of Jeddah two public universities were selected (university of Jeddah, King Abdulaziz University), so all other private universities were excluded.

Study instrument

Study done by using a validated questionnaire obtained from a published resource about cancer screening of breast, cervix, prostate, and colon (Villarreal-Garza et al., 2010), the questionnaire-based survey contained 15 questions and demographic data Distributed among medical students and interns to asses knowledge regarding tumor markers, method of screening, initiation age of screening and frequency of screening, An anonymous questionnaire was used and distributed as an electronic form using Google forms and the data was collected by spread excel sheet.

Statistical analysis

Data was analyzed by IBM SPSS Statistics program for Windows, version 23 (IBM SPSS, IBM Corp., Armonk, N.Y., USA). Data expressed as number (%). Differences between groups were made using Person Chi- Square test. P- Value <0.05 was significant.

Ethical approval

The study was approved by the Institutional Review Board of the medical college at King Abdulaziz University Hospital (IRB No.740-19). Also, this research didn't receive funding and has no conflict of interests.

3. RESULTS

Table 1 shows demographic characteristics of all participants. Participants were more from king Abdulaziz University than University of Jeddah (55.2% versus 44.8%). males were more than females (58.5% versus 41.5%). Most of participants were from 5th grade (28.8%), then 4th grade (26.4%), 2nd grade (12.7%), 6th grade (11.8%), interns (10.8%) and from 3rd grade (9.4%).

Table 1 Demographic characteristics of all the participants (n= 212).

Data	Value
Medical college	
King Abdulaziz university (KAU)	117 (55.2%)
University of JEDDAH (UOJ)	95 (44.8%)
Gender	
Male	124 (58.5%)
Female	88 (41.5%)
Current level in medical school	
2nd year	27 (12.7%)
3rd year	20 (9.4%)

4th year	56 (26.4%)
5th year	61 (28.8%)
6th year	25 (11.8%)
Intern	23 (10.8%)

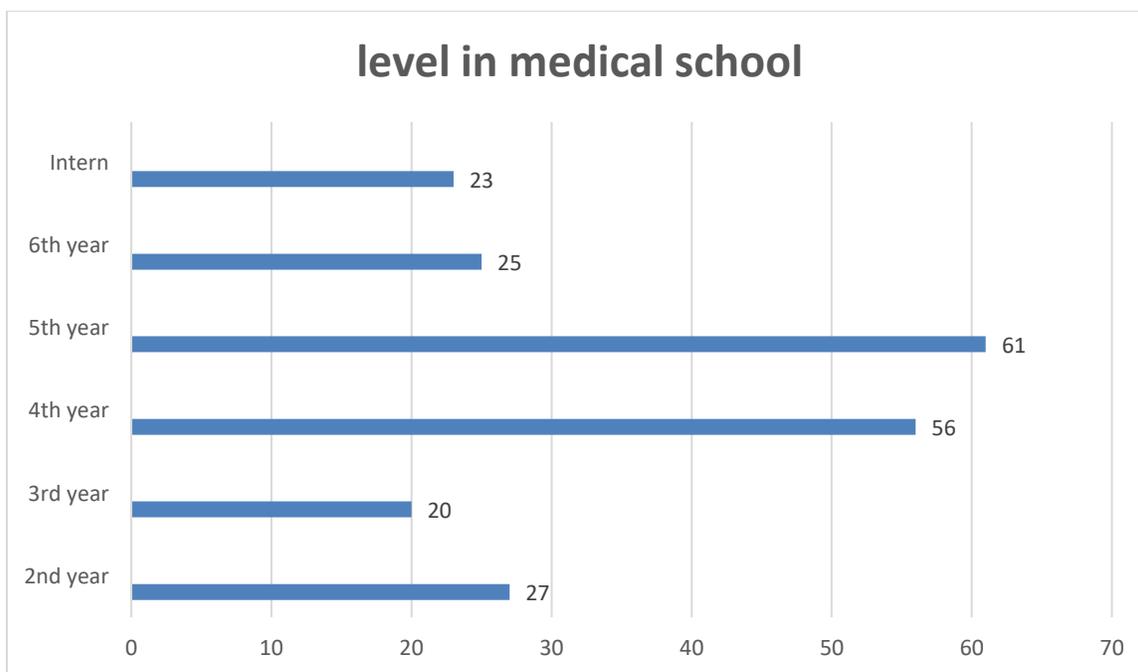Data are expressed as numbers (%).

Chart 1 Distribution of all respondents by level in medical school (n = 212)

Participants level of knowledge was poor (less than 50% choose correct answers) in knowing the type of tumor marker useful for screening purposes (14.6%); what is the next step to follow in case the mammography is reported as BI-RADS 0 (18.9%); knowing which tumor markers that increase in non-malignant conditions (22.8%); which is NOT a recommended screening technique for the detection of colon cancer (26.4%); the recommended age to start prostate cancer screening (33.0%); When is screening for cervical cancer recommended not to continue (49.5%); how frequently prostate cancer screening is recommended in the general population (40.6%). Meanwhile, knowledge of participants were good (≥ 50% choose correct answers) in knowing the meaning of BI-RADS (57.1%); what age should breast cancer screening begin with an image study in the general population (58.5%); what age colon cancer screening is recommended to begin in the general population (59.9%); is Pap smear recommended in a woman with total hysterectomy for non-malignant causes (61.8%); how frequently the screening with an image study for breast cancer is recommended (65.6%); When screening with Pap smear for cervical cancer detection is recommended to initiate (70.8%); what is the screening method recommended for prostate cancer detection (71.2%); what is the screening method recommended for the detection of early breast cancer (81.6%) (Table 2).

Table 2 Participants knowledge about cancer screening (n=212).

Data	Value
1. Which tumour marker (s) is (are) useful for screening purposes?	
A. Ca 15-3	16 (7.5%)
B. Ca 19-9	17 (8.0%)
C. CEA	8 (3.8%)
D. PSA	31 (14.6%)

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E. All of the above	140 (66.0%)
2. Which tumour marker (s) can increase in non-malignant conditions?	
A. Ca 125	32 (15.1%)
B. Ca 19-9	28 (13.2%)
C. CEA	23 (10.8%)
D. PSA	81 (38.2%)
E. All of the above	48 (22.8%)
3. At what age should breast cancer screening begin with an image study in the general population?	
A. 20 years	28 (13.2%)
B. 30 years	55 (25.9%)
C. 50 years	124 (58.5%)
D. 70 years	5 (2.4%)
E. 80 years	
4. Which is the screening method recommended for the detection of early breast cancer?	
A. Breast ultrasound	21 (9.9%)
B. Breast MRI	11 (5.2%)
C. Mammogram	173 (81.6%)
D. Ca 15-3	4 (1.9%)
E. Breast CT	3 (1.4%)
5. How frequently is the screening with an image study for breast cancer recommended?	
A. Every 6 months	19 (9.0%)
B. Every 1 to 2 years	139 (65.6%)
C. Every 3 years	29 (13.7%)
D. Every 5 years	22 (10.4%)
E. Every 10 years	3 (1.4%)
6. What does BI-RADS mean?	
A. Method used by radiologists to standardize the results of screening breast techniques	121 (57.1%)
B. Maximum dose of radiation utilized in every mammographic study	19 (9.0%)
C. Mammography of double image employed for the detection of early breast cancer	57 (26.9%)
D. Target therapy utilized for Her-2 positive breast cancer	14 (6.6%)
E. Imaging study used for bisexuals to detect early breast cancer	1 (0.5%)

7. In case the mammography is reported as BI-RADS 0, what is the next step to follow?	
A. Ask for a new mammography in 1 year	96 (45.3%)
B. Ask for a new mammography in 5 years	47 (22.2%)
C. Refer to breast surgeon for a breast biopsy	25 (11.8%)
D. Ask for a complementary imaging breast study	40 (18.9%)
E. Refer to breast surgeon for radical mastectomy	4 (1.9%)
8. When is the screening with Pap smear for the detection of cervical cancer recommended to initiate?	
A. 10 years	6 (2.8%)
B. After 21 years of age or after 3 years after having vaginal intercourse	150 (70.8%)
C. 35 years	32 (15.1%)
D. After menarche	8 (3.8%)
E. After marriage	16 (7.5%)
9. When is screening for cervical cancer recommended not to continue?	
A. Until 40 years, after 3 consecutive normal pap-smears	36 (17.0%)
B. Until 50 years, after 3 consecutive normal pap-smears	45 (21.2%)
C. Until 70 years, after 3 consecutive normal pap-smears	105 (49.5%)
D. Until satisfied parity	14 (6.6%)
E. Until sexual life continues	12 (5.7%)
10. Should a Pap smear be recommended in a woman with total hysterectomy for non-malignant causes?	
A. Yes	81 (38.2%)
B. No	131 (61.8%)
11. At what age is screening for colon cancer recommended to begin in the general population?	
A. 30 years	23 (10.8%)
B. 40 years	54 (25.5%)
C. 50 years	127 (59.9%)
D. 60 years	8 (3.8%)
E. 70 years	-
12. Which is NOT a recommended screening technique for the detection of colon cancer?	

A. Ambulatory FOBT in consult each year	72 (34.0%)
B. 2 samples of 3 consecutive stool samples each year	56 (26.4%)
C. Flexible sigmoidoscopy every 5 years	17 (8.0%)
D. Double contrast enema every 5 years	41 (19.3%)
E. Colonoscopy every 10 years	26 (12.3%)
13. At what age is screening for prostate cancer recommended to initiate?	
A. 40 years	80 (37.7%)
B. 50 years	70 (33.0%)
C. 60 years	45 (21.2%)
D. 70 years	14 (6.6%)
E. 80 years	3 (1.4%)
14. Which is the screening method recommended for prostate cancer detection?	
A. PSA and digital rectal examination	151 (71.2%)
B. Alkaline phosphatase	5 (2.4%)
C. Transrectal prostate ultrasound	34 (16.0%)
D. Prostate CT	8 (3.8%)
E. Prostate MRI	14 (6.6%)
15. How frequently is the screening for prostate cancer recommended in the general population?	
A. Every 6 months	17 (8.0%)
B. Every year	61 (28.8%)
C. Every 3 years	86 (40.6%)
D. Every 5 years	41 (19.1%)
E. Every 10 years	7 (3.3%)

Data are expressed as numbers (%).

The right knowledge about cancer screening were higher in king Abdulaziz university than university of Jeddah in what age should breast cancer screening begin with an image study in the general population (P =0.007); the screening method recommended for the detection of early breast cancer (P =0.040); how frequently the screening with an image study for breast cancer is recommended (P =0.0001); the meaning of BI-RADS (P =0.003); When is the screening for cervical cancer recommended not to continue (P =0.008); Should a Pap smear be recommended in a woman with total hysterectomy for non-malignant causes (P =0.001); what age is recommended for colon cancer screening to begin in the general population (P=0.017); what age recommended for prostate cancer screening to initiate (P =0.009); the screening method recommended for prostate cancer detection (P =0.004) and how frequently prostate cancer screening is recommended in the general population (P =0.005) (Table 3).

Table 3 Comparison of the right knowledge about cancer screening of the participants according to college

Data	King Abdulaziz university	University of JEDDAH	P value
1. Which tumour marker (s) is (are) useful for screening purposes?	16 (51.6%)	15 (48.4%)	0.857
2. Which tumour marker (s) can increase in non-malignant	27 (56.2%)	21 (43.8%)	0.386

conditions?			
3. At what age should breast cancer screening begin with an image study in the general population?	77 (62.1%)	47 (37.9%)	0.007
4. Which is the screening method recommended for the detection of early breast cancer?	100 (57.8%)	73 (42.2%)	0.040
5. How frequently is the screening with an image study for breast cancer recommended?	90 (64.7%)	49 (35.3%)	0.0001
6. What does BI-RADS mean?	77 (63.6%)	44 (36.4%)	0.003
7. In case the mammography is reported as BI-RADS 0, what is the next step to follow?	17 (42.5%)	23 (57.5%)	0.343
8. When is the screening with Pap smear for the detection of cervical cancer recommended to initiate?	86 (57.3%)	64 (42.7%)	0.072
9. When is screening for cervical cancer recommended not to continue?	66 (62.9%)	39 (37.1%)	0.008
10. Should a Pap smear be recommended in a woman with total hysterectomy for non-malignant causes?	84 (64.1%)	47 (35.9%)	0.001
11. At what age is screening for colon cancer recommended to begin in the general population?	77 (60.6%)	50 (39.4%)	0.017
12. Which is NOT a recommended screening technique for the detection of colon cancer?	30 (53.6%)	26 (46.4%)	0.593
13. At what age is screening for prostate cancer recommended to initiate?	46 (65.7%)	24 (34.3%)	0.009
14. Which is the screening method recommended for prostate cancer detection?	93 (61.6%)	58 (38.4%)	0.004
15. How frequently is the screening for prostate cancer recommended in the general population?	56 (65.1%)	30 (34.9%)	0.005

Data are expressed as numbers (%). Comparison between groups was made using Pearson Chi Square test.

Females had better knowledge regarding cancer screening in knowing which tumor marker (s) is (are) useful for screening purposes (P =0.020) and In case the mammography is reported as BI-RADS 0, what is the next step to follow (P =0.0001). Mean while, males were better than females in which items tumor marker (s) can increase in non-malignant conditions (P =0.021); what age should breast cancer screening begin with an image study in the general population (P =0.0001); the screening method recommended for the detection of early breast cancer (P =0.0001); how frequently the screening with an image study for breast cancer is recommended (P =0.0001); BI-RADS meaning (P =0.0001), When the screening with Pap smear for the detection of cervical cancer is recommended to initiate (P =0.0001), When screening for cervical cancer is recommended not to continue (P =0.0001); Should a Pap smear be recommended in a woman with total hysterectomy for non-malignant causes (P =0.0001); what age for colon cancer screening is recommended to begin in the general population (P =0.0001); Which is NOT a recommended screening technique for the detection of colon cancer (P =0.016); what screening method is recommended in prostate cancer detection (P =0.0001) and how frequently the screening for prostate cancer is recommended in the general population (P =0.0001) (Table 4).

Table 4 Comparison of the right knowledge about cancer screening of the participants according to gender.

Data	Male	Female	*P* value
1. Which tumour marker (s) is (are) useful for screening purposes?	9 (29.0%)	22 (71.0%)	0.020
2. Which tumour marker (s) can increase in non-malignant conditions?	32 (66.7%)	16 (33.3%)	0.021
3. At what age should breast cancer screening begin with an image study	86 (69.4%)	38 (30.6%)	0.0001

in the general population?			
4. Which is the screening method recommended for the detection of early breast cancer?	109 (63.0%)	64 (37.0%)	0.001
5. How frequently is the screening with an image study for breast cancer recommended?	97 (69.7%)	42 (30.2%)	0.0001
6. What does BI-RADS mean?	88 (72.7%)	33 (27.3%)	0.0001
7. In case the mammography is reported as BI-RADS 0, what is the next step to follow?	15 (37.5%)	25 (62.5%)	0.0001
8. When is the screening with Pap smear for the detection of cervical cancer recommended to initiate?	103 (68.7%)	47 (31.3%)	0.0001
9. When is screening for cervical cancer recommended not to continue?	78 (74.3%)	27 (25.7%)	0.0001
10. Should a Pap smear be recommended in a woman with total hysterectomy for non-malignant causes?	87 (66.4%)	44 (33.6%)	0.0001
11. At what age is screening for colon cancer recommended to begin in the general population?	94 (74.0%)	33 (26.0%)	0.0001
12. Which is NOT a recommended screening technique for the detection of colon cancer?	37 (66.1%)	19 (33.9%)	0.016
13. At what age is screening for prostate cancer recommended to initiate?	41 (58.6%)	29 (41.4%)	0.151
14. Which is the screening method recommended for prostate cancer detection?	105 (69.5%)	46 (30.5%)	0.0001
15. How frequently is the screening for prostate cancer recommended in the general population?	65 (75.6%)	21 (24.4%)	0.0001

Data are expressed as numbers (%). Comparison between groups was made using Pearson Chi Square test.

Table 5 shows the variation of knowledge about cancer screening in which it is better in clinical year's students than preclinical and least in interns.

Table 5 Comparison of the right knowledge about cancer screening of the participants according to different grades

Data	Preclinical	Clinical	Intern	P value
1. Which tumour marker (s) is (are) useful for screening purposes?	6 (19.4%)	21 (67.7%)	4 (12.9%)	0.0001
2. Which tumour marker (s) can increase in non-malignant conditions?	11 (22.9%)	31(64.6%)	6 (12.5%)	0.0001
3. At what age should breast cancer screening begin with an image study in the general population?	24 (19.4%)	94 (75.8%)	6 (4.8%)	0.0001

4. Which is the screening method recommended for the detection of early breast cancer?	32 (18.5%)	131 (75.7%)	10 (5.8%)	0.0001
5. How frequently is the screening with an image study for breast cancer recommended?	31 (22.3%)	98 (70.5%)	10 (7.2%)	0.0001
6. What does BI-RADS mean?	25 (20.7%)	86 (71.1%)	10 (8.3%)	0.0001
7. In case the mammography is reported as BI-RADS 0, what is the next step to follow?	10 (25.0%)	21 (52.5%)	9 (22.5%)	0.036
8. When is the screening with Pap smear for the detection of cervical cancer recommended to initiate?	28 (18.7%)	111 (74.0%)	11 (7.3%)	0.0001
9. When is screening for cervical cancer recommended not to continue?	19 (18.1%)	80 (76.2%)	6 (5.7%)	0.0001
10. Should a Pap smear be recommended in a woman with total hysterectomy for non-malignant causes?	34 (26.0%)	90 (68.7%)	7 (5.3%)	0.0001
11. At what age is screening for colon cancer recommended to begin in the general population?	24 (18.9%)	93 (73.2%)	10 (7.9%)	0.0001
12. Which is NOT a recommended screening technique for the detection of colon cancer?	12 (21.4%)	40 (71.4%)	4 (7.1%)	0.0001
13. At what age is screening for prostate cancer recommended to initiate?	14 (20.0%)	53 (75.7%)	3 (4.3%)	0.0001
14. Which is the screening method recommended for prostate cancer detection?	27 (17.9%)	114 (75.5%)	10 (6.6%)	0.0001
15. How frequently is the screening for prostate cancer recommended in the general population?	19 (22.1%)	63 (73.3%)	4 (4.7%)	0.0001

Data are expressed as numbers (%), and Comparison between groups was made using Pearson Chi Square test.

4. DISCUSSION

The research aims to evaluate the level of awareness and discloses the lack of adequate knowledge about cancer screening among medical students and interns at university of Jeddah and King Abdul-Aziz University. Which included 212 participants, 124 of them were males (85.5%), and the majority were from King Abdul-Aziz University (55.2%). The best knowledge is shown in clinical years students (4th, 5th, 6th year) compare to pre-clinical (2nd, 3rd year) and interns, they have better knowledge in all types of cancer screening methods, the initiation age of screening and frequency. This was different from another study showed no difference between the first year to sixth-year, this could be a difference of curriculum study in college (Villarreal-Garza et al., 2010). Similar result found in other studies the score improve from 4th through 6th year (Sedrak et al., 2016). The difference in knowledge between 2nd, 3rd, 4th, 5th, 6th year we believed that due to more academic exposure of clinical cases. Previous studies showed that cancer prevention is missing from the curriculum of many medical professional programs and most medical students graduate without the essential skills needed to help in awareness of the public in cancer prevention and early detection (Nekhlyudov & Braddock, 2009).

Other study found that addition ofa focused curriculum, workshops and problem based learning about cancer-preventing and screening leads to an improvement in knowledge and increased self-perceived competency in counseling and screening examinations (Lee et al., 2007). Results revealed that knowledge of majority of the participants were insufficient and didn't recognize

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the type of tumor markers useful for screening purposes (14.6%), similar to other study was found a significant difference between students and residents, most of the students idea about tumor markers only as diagnostic and follow up assessment (Villarreal-Garza et al., 2010). Regarding breast cancer this research results shows good overall knowledge about the initial age of screening , interval of screening, modality of screening and the meaning of BI-RADS system however some variations are shown in the next step of BI-RADS-0 this results are in contrast to a research done in university of Gondar, northwest Ethiopia but all more education about actions done after screening in deferent scenarios needed (Melaku Gebresillassie et al., 2018). A different study showed that health care providers had well knowledge of the screening modalities for breast cancer also Clinical experience did not seem to impact on knowledge or practice (Kumar et al., 2009).

Our participants showed a good awareness and knowledge about cervical cancer screening in that it could be the result of HPV which has a vaccine these results are inline to what is shown in a research done in Melaka, Malaysia (De et al., 2019). The score differences between genders, in some questions, might be because females are more involved in cancer detection actions, particularly because cancer prevention campaigns have focused mainly on breast and cervical cancers which involve only females (Simon et al., 2011). Regarding prostate cancer in compare to other types of cancer, the lowest knowledge found in all preclinical, clinical and intern, but for the method of screening (digital rectal examination, PSA) most of the student have good knowledge. Similar finding in another study most students agreed that the DRE and the PSA were accurate tests (Marcella et al., 2007).

Moreover, our participants shows a good all-around knowledge about when to screen for colon cancer and with somewhat variations of knowledge about the modalities used to screen colon cancer this unlike a similar study in Malaysia, 64.9% of university students had a low level of CRC knowledge, level of awareness was even worse with 94.5%, but science students and females had significantly higher level of knowledge and awareness as compared to their counterpart (Lin Loo et al., 2013). In a recent survey of the general public, Saudi Arabia, it was observed that CRC awareness is not enough; however, again, female population had better knowledge and awareness as compared to males. In addition, older people and more educated individuals were better in knowledge and awareness about CRC (Zubaidi et al., 2015).

The limitations of this study are only two medical schools were involved with a limited sample size, participation engaged only medicals student and interns, thus interfere with the results. Therefore, our recommendations for future researches are applying the study on many medical schools with different curriculums, increasing the sample size, include post-graduate residents, and to increase the number of questions that is related to cancer screening.

5. CONCLUSION

This study found that Saudi medical students have not received adequate knowledge and training in cancer screening modalities, as has been observed in some other countries before. Consequently, medical students may be unable to help increase the use of cancer prevention through screening and may not be fully aware of the important role that a physician may have in this effort. There is clearly a need to improve the curricular requirements for knowledge and practical skills regarding cancer screening in medical schools.

Author Contributions

Hisham Rizk - Roles: literature review.
Ahmed HamedAljahdali - Roles: writing discussion and writing results.
Mohammed Makhdour Alsatti - Roles: methodology and writing proposal.
Rayan Sameer Molawi - Roles: data collection and helped in publication.
Raed Ali Alharbi - Roles: writing introduction and data analysis.
Abdullah Mutlaq Alzahrani - Roles: writing conclusion and helped in abstract.

Conflict of Interest

The authors declare that there are no conflicts of interests.

Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

Ethical approval

The study was approved by the Medical Ethics Committee of king abdulaziz University hospital (ethical approval code: 740-19).

Data and materials availability

All data associated with this study are present in the paper.

Peer-review

External peer-review was done through double-blind method.

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