

Original Article **Knowledge and Perception regarding Colorectal Cancer among IIUM Kuantan Undergraduates****Norafiza Zainuddin (PhD), Nur Adibah Shamri (BSc)**Department of Biomedical Science, Kulliyah of Allied Health Sciences, International Islamic University Malaysia, 25200 Kuantan, Pahang
znorafiza@iium.edu.my***Abstract**

Colorectal cancer (CRC) is a cancer of the large intestine with high mortality and morbidity rate. According to the Malaysian National Cancer Registry Report, CRC was reported as the second most frequent cancer after breast cancer. This study was conducted to evaluate the knowledge and perception of IIUM Kuantan Campus students regarding CRC. Currently, there is no national screening program conducted by the Ministry of Health Malaysia for CRC as an early prevention in Malaysia. Despite the increase in incidence and mortality rates of CRC, emphasis on creating awareness regarding CRC among Malaysian is still lacking. Using convenience sampling method and adapted self-administered questionnaires, this cross-sectional study was conducted among the undergraduate students of International Islamic University Malaysia, Kuantan Campus. Overall, more than half of the respondents have a moderate level of knowledge and perceptions regarding CRC. Moreover, there was a significant difference between male and female respondents in terms of knowledge regarding CRC screening ($p < 0.001$). There was also a significant difference in terms of knowledge regarding CRC between different kulliyahs ($p = 0.001$). However, no correlation was found between knowledge and perception regarding CRC and screening among IIUM Kuantan students. Approximately half of IIUM Kuantan undergraduate students had moderate level of knowledge and perception regarding CRC and screening. Respondents from Kulliyah of Medicine showed higher knowledge scores compared to respondents from other kulliyahs, probably due to the educational courses they undertook during their academic years, and to the fact that they were more familiar with the healthcare systems. Female respondents showed higher knowledge score and slightly higher perception score, which could be contributed to females being more concerned in early cancer detection than males. An overall moderate score among the science- and health-based undergraduate students suggested that it is essential to empower the young adults regarding information on colorectal cancer prevention and intention to go for screening. Effective and long-lasting promotional campaigns must be conducted to improve the level of knowledge and perceptions regarding CRC and screening, particularly to benefit the young adults in the community, and this may begin with the undergraduates.

Keywords: Knowledge, Perception, Screening, Colorectal cancer, Undergraduate students.

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Introduction

Statistics done in 2012 revealed that colorectal cancer (CRC) has become the third most common cancer globally ^[1]. It is the third most frequent cancer in men with 746 000 cases, and the second most frequent cancer in women with 614 000 cases ^[1]. It was reported that developed countries such as United States, Australia, Canada and Northwestern Europe were experiencing a major health burden with the increase in incidence and mortality rate from CRC ^[2]. CRC is also predicted as one of the contributing primary cause of death in the Asian population ^[3]. This is due to the increase in CRC cases reported in Singapore, Japan and South Korea recently, compared to Malaysia and other developing countries ^[4].

Malaysia has its own statistics regarding CRC incidence and mortality rates. Unexpectedly, CRC patients in the region faced poorer survivability in comparison to the more developed regions even though the colorectal cases in Malaysia there were slightly lesser ^[1]. According to the Malaysian National Cancer Registry Report, CRC was reported as the second most frequent cancer after breast cancer in 2007 until 2011 ^[5]. During that period, CRC was the most and second most frequent cancer occurring in men and women in Malaysia, respectively ^[5]. Age is one of the associated factors which contributed to the increase in the incidence rate. It has been observed in 2007 that males contributed to a slightly higher incidence rate [age-standardized rate (asr) 13.4 per 100,000 populations] compared to females (asr 10.2 per 100,000 populations) ^[6].

It is hypothesized that globalization and improving economic status have contributed to the observation. Changes in dietary patterns and lifestyle, as well as the availability of screening programmes in Malaysia may account for the statistics ^[7]. The established risk factors for CRC can be divided into lifestyle, behavioral and genetic factors such as obesity, sedentary lifestyle, low dietary fiber intake, red meat consumption, age and family history of CRC ^[8-11]. According to Radzi et al. ^[5], gender and races were among the factors that influence the incidence of CRC, with male and Chinese race reported to be the unfavorable predictive factors ^[5]. Most of the cases detected were at a late stage with 31% at stage III and 32% at stage IV, whereas the percentage of CRC detected at early stage, which is stage I and II was low (9% and 28%, respectively) ^[6]. Nevertheless, the five-year survival rate of patients has shown to improve when the CRC patients go for screening. As a matter of fact, screening can detect this disease early and has proven to decrease the mortality and incidence rate. However, many CRC patients are asymptomatic at the early stage. Thus, it is difficult for the doctors to detect the disease earlier unless the patient has reached the late stage. According to the Ministry of Health Third Report, in 2003 until 2005, approximately 80% of CRC cases in Malaysia were generally diagnosed in patients older than 50 years old ^[12].

Currently, there is no systematic national screening program or up-to-date guidelines implemented by the Ministry of Health Malaysia for CRC as an early prevention in Malaysia ^[13]. Despite the increase in incidence and mortality rates of CRC, emphasis on creating awareness regarding CRC among Malaysian as compared to other diseases is still lacking. Moreover, low uptake and poor public awareness of CRC screening, particularly in low-income communities, and poor participation rate of primary care physicians have remained as barriers to the implementation of CRC screening in this region ^[3,14-16], whereby majority was not willing to undergo CRC screening ^[17-18]. Thus, based on these information, it is important for the Ministry of Health, Malaysia to initiate health promotion programs in an effort to improve the level of awareness of CRC particularly in the Malaysian population. The effort should begin early and should include our undergraduate university students. Hence, this study is aimed to assess the level of knowledge and perceptions of CRC screening among undergraduate students from different kulliyahs at IIUM Kuantan Campus.

Materials and Methods

Study Design

This study was conducted at the International Islamic University Malaysia, IIUM Kuantan Campus, and obtained the approval from the IIUM Research Ethics Committee (IREC 2017-003) and Kulliyah of Allied Health Sciences Postgraduate and Research Committee. Our respondents include science- and health-based undergraduate students from the six major kulliyahs in campus, namely Kulliyah of Medicine (KOM), Kulliyah of Dentistry (KOD), Kulliyah of Allied Health Sciences (KAHS), Kulliyah of Pharmacy (KOP), Kulliyah of Nursing (KON) and Kulliyah of Science (KOS). Cross-sectional study design was used to investigate whether there is any relationship between knowledge and perceptions towards CRC and its screening, and to find associated factors that could influence the level of knowledge and perceptions among IIUM Kuantan students towards CRC. 163 respondents were recruited in this study based on the inclusion and exclusion criteria. The inclusion criteria include registered undergraduate students of IIUM Kuantan Campus who were willing to provide consent, and students from all academic years aged between 20 to 25 years old. Meanwhile, those who do consent, and postgraduate students will be excluded from this study.

Questionnaire

The self-administered questionnaire used was adapted from Bowel/Colorectal Cancer Awareness Measure (Bowel/Colorectal CAM) questionnaire and National Cancer Institute (NCI) survey of CRC screening practice, with minor modifications. The content of the questionnaire was validated by an expert, and a pilot study was conducted from the same population to generate face validity. The modified questionnaire, which

consists of 54 items was composed of three sections; A, B and C.

Section A of the questionnaire focused on the sociodemographic status of the participants which comprised of gender (male and female), age, year of study (Year 1 until Year 5), and Program (courses, which include KOM, KOD, KOP, KON, KOS and KAHS). Section B focused on knowledge regarding colorectal cancer which includes questions on risk factors, signs and symptoms, risk age, and available screening options. This section consists of 24 items with Yes/No/Do not know answer options for each question. Section C focused on two parts; perceptions on CRC and its screening and perceived barriers (patient and system related barriers). The perceptions part was provided with the Likert Scale answer arranged from 'strongly disagree' to 'strongly agree' with value scores of one to five. Meanwhile, for the patient and system related barriers, the answer options were classified as 'minor barrier', 'not a barrier' and 'major barrier'.

Each correct or yes answer in the knowledge section carried 1 mark while no or do not know answer carried 0 mark. This shall give a total score range of 0 - 24 for knowledge section. In perception section, 5 items were assessed, and the items consist of three positive statements and two negative statements. For positive statement, a score value of one is given for 'strongly disagree' two for 'disagree', three for 'neither agree nor disagree', four for 'agree' and five for 'strongly agree'. The scoring system was reversed for the negative statement. This shall give a total score range 5 - 25 for perception section. The total score of knowledge were categorized as poor: 1-8, moderate: 9-16, good: 17-24 while the total score of perception were categorized as poor 5-11, moderate: 12-18 and good: 19-25.

Statistical Analysis

For analysis of data, Statistical Package for Social Sciences software (SPSS), version 12.0 was used. Initially, all information gathered via questionnaire was coded into variables. Normality of data was tested using Kolmogorov-Smirnov test. Both descriptive and inferential statistics involving independent-t test, Mann-Whitney U test, Kruskal Wallis H test were used to present results. For each test, a p-value of less than 0.05 was considered statistically significant.

Results

Socio-demographic characteristics of respondents

The socio-demographic profiles of study respondents including frequencies for age, gender, year of study and Kulliyah were shown in Table I. The age of the participants ranged from 20 years to 25 years, with a mean age (SD) of 22.96 (1.167) years.

Knowledge regarding CRC

It was reported that 126 (77.3%) respondents have heard about CRC. Majority of the respondents (69.3%) obtained information regarding CRC from the internet. 95.1% of the respondents required more information regarding CRC and screening. Approximately half (52.8%) of the respondents had a moderate knowledge regarding CRC and screening. Descriptive statistics for each item in the questionnaire are shown in Table IIa-c.

A majority (89%) of the respondents correctly identified CRC as a type of cancer of the large intestine. Alcohol consumption (66.35%), low intake of whole-grain fibre, fruits and vegetables (63.8%), and personal or familial history of CRC (63.8%) were identified by majority of the respondents as risk factors for CRC, whereas lack of physical activity (37.4%) and low intake of calcium (17.2%) were the least identified risk factors. Majority of the respondents answered correctly for the signs and symptoms of CRC which comprised of abdominal pain (77.9%), change in bowel habits (77.9%), blood in stool (75.5%), weakness or malaise (62.6%) and unexplained weight loss (68.7%). Most respondents (49.1%) were able to recognize the age at risk of developing CRC, which is 60 years old. Next, majority (53.4%) of the respondents recognized colonoscopy as one of the screening options for CRC. However, many respondents did not know about other options, including flexible sigmoidoscope (68.7%), fecal occult blood test (56.4%) and double contrast barium enema (74.8%). Majority of the respondents also did not correctly state the recommended age for screening and the frequency of the screening test.

Perceptions regarding CRC

In this study, it was revealed that 59.5% of the respondents had a moderate perception regarding CRC and screening, while 39.3% of the respondents had a good perception. Majority (70.6%) of the respondents positively answered strongly agree on the statement 'I would rather have the doctor notifies me immediately if my screening results show something wrong', whereas 37.4% positively answered strongly agree on the statement 'having CRC screening would give me peace of mind about my health'. However, approximately 45% neither agree nor disagree with the statements on 'I would pay for CRC screening myself if insurance did not cover the cost' (Table II).

Perceived barriers towards CRC

Majority (69.9%) of the respondents stated that 'patient fears of finding cancer' was the major barrier in patient related barriers (Table II). In addition, majority (65.0%) of the respondents stated that 'screening costs too much or insurance does not cover' as the major barrier in system related barriers.

Table I. Socio-demographic profile of respondents (n=163).

Variable	N (%)
Age (mean \pm SD)	22.96 (1.17)* +1.167
Gender	
Male	74(45.4%)
Female	89(54.6%)
Year of study	
1	11(6.7%)
2	39(23.9%)
3	47(28.8%)
4	59(36.2%)
5	7(4.3%)
Kulliyah	
KOM	18(11.0%)
KOD	27(16.6%)
KON	28(17.2%)
KOS	30(18.4%)
KAHS	30(18.4%)
KOP	30(18.4%)

*Mean (SD)

Factors associated with knowledge and perceptions regarding CRC

Female respondents showed statistically higher knowledge score (13.64 versus 9.86, $p < 0.001$) and slightly higher perception score than males (18.25 versus 17.23, $p = 0.018$; Table III). There was a significant difference in terms of knowledge regarding CRC between different kulliyah ($p = 0.001$; Table IV) whereby respondents from the Kulliyah of Medicine had higher knowledge score compared to other kulliyahs. However, there was no significant difference observed in terms of perceptions between different kulliyahs (Table IV). On the other hand, there was no correlation between age and year of study with knowledge regarding CRC, or with the perceptions towards CRC (Table V).

Discussion

Knowledge regarding CRC

In this study, we attempted to evaluate knowledge of CRC, including risk factors, signs and symptoms, risk age, and available screening options, and perceptions on CRC and its screening and perceived barriers among IIUM Kuantan undergraduate students, as well as to correlate these findings with age and year of study. Generally, half of IIUM Kuantan undergraduate students had a moderate level of knowledge and perception regarding CRC and screening, but there existed knowledge gaps when it came to CRC screening options, the recommended age for screening and the frequency of the screening test. However, this knowledge was not being made available to many young generations in Malaysia. Nevertheless, the level of knowledge and perception showed by our students were still acceptable compared to others as reported in previous studies. For instance, majority of the students from five different faculties in the Management Science University Malaysia had no knowledge regarding specific screening for CRC [3]. A study performed among the undergraduate students

in Jeddah, Saudi Arabia revealed that the level of knowledge and awareness of their students were not very satisfying [19]. Moreover, population-based studies conducted among West Malaysians also revealed that there was a low level of knowledge regarding CRC and screening [20].

Majority of the students were able to identify CRC as a type of cancer of the large intestine. Abdominal pain and change in bowel movement were the two most frequent answers for warning signs identified by the respondents based on the results. Previous study also revealed that abdominal pain is the most recalled warning sign for CRC [21,22]. Approximately half of the respondents were able to identify age as the risk factor for CRC, which is 60 years old and above. Our finding is in line with a study conducted in three government universities in Jordan [22].

Colonoscopy is the most mentioned screening modalities answered by the respondents and this finding is consistent with a population-based study in Hong Kong [23]. However, majority of the respondents did not know about flexible sigmoidoscopy, FOBT and double contrast barium enema as recommended screening modalities, which was similar to a study done by Boehler et al. [24]. This is probably due to the lack in structured national colorectal cancer screening program in Malaysia. At present, surgical resection provides the best hope of cure for colorectal cancer patients [25]. In addition, majority of the respondents did not correctly state the recommended age for screening and the frequency of the screening test. In the draft of Clinical Practice Guidelines of the management of CRC (available at <http://www.moh.gov.my>), screening of colorectal carcinoma should begin at the age of 50 years and continues until age 75 years for average risk population, and the immunochemical faecal occult blood test (iFOBT) is the preferred method to screen for CRC in the general population. However, this information is not being made available to public yet. CRC screening recommendations may also vary according to organizations, which may further contribute to confusion to consumers. Due to the complexity of CRC screening guidelines, it is unclear whether these guidelines are fully understood by those in the recommended age range for screening.

Perceptions regarding CRC

A success of a screening program is determined by the attitude and willingness to participate. According to the statistics, 97% of the Malaysian population showed a poor attitude towards CRC screening [20]. Our finding is in accordance to a study in the United Kingdom, whereby about 14% of the participants in their primary care population showed negative attitude towards screening [26]. The information that majority of the respondents received during their academic study period might have a positive influence on the attitude or perceptions of respondents towards colorectal screening. In contrast, most of the respondents neither agree nor disagree with

these three statements which are 'I would pay for CRC screening myself if insurance did not cover the cost', 'I would be too embarrassed to have a colonoscopy' and 'I think there is lack of evidence regarding the benefits of CRC screening'. A possible explanation would be due to disparities in the background of the respondents, such as those without health insurance, those with family of high socioeconomic status, and those who were less likely to have direct experience of this disease among their family and friends, all of which contributed to the uncertainty in responding to the three statements.

Perceived barriers towards CRC

Based on our results, it is revealed that 'patient fears of finding cancer' and 'screening cost too much or insurance does not cover' were the two major barriers identified from majority of the respondents, which were in accordance to a study done at Southern Illinois University School of Medicine (SIU) and the University of Wisconsin at Madison (UW) [24,27].

Factors associated with knowledge and perceptions regarding CRC

Our finding revealed that female respondents showed higher knowledge scores compared to male respondents, which is similar to a previous study [28]. Apart from that, our result showed that there was a significant difference in the knowledge scores, whereby respondents from KOM had higher knowledge scores compared to respondents from other kulliyahs, which is consistent with previous studies [19,22,29]. In addition, we found no correlation between knowledge regarding CRC and screening between age and year of study, which is contradictory to previous finding [3].

We have also analysed the factors associated to perceptions on CRC and its screening among IIUM undergraduates. Unfortunately, previous studies conducted to investigate the factors associated with attitude or perceptions on CRC were mainly based on the data registries of patients who have participated in CRC screening. Based on our results, there was a significant difference between male and female respondents in terms of perception scores, in which females had slightly higher perceptions score compared to males, and this is in line with a previous study [28]. The perception score differences between male and female respondents might be due to the facts that females are more concerned in knowledge regarding early cancer detection [30]. Apart from this, it was found that there was no significant difference between kulliyahs in terms of perception score regarding CRC and screening, which means that the perceptions among the respondents between each kulliyahs were almost similar. Perhaps a possible explanation is that each of the respondents from these kulliyahs does not have any experience regarding screening for CRC. Moreover, our findings revealed that there was no correlation in terms of perceptions regarding CRC and screening between age and year of study. Our findings were not in line with the results obtained by

previous study whereby they found that older individuals have negative perceptions towards CRC screening compared to younger individuals [26].

Relationship between knowledge and perception regarding CRC

Our results revealed that there was no correlation between knowledge and perceptions regarding CRC and screening among IIUM Kuantan students. This however is not similar to the finding obtained from a study conducted in United Kingdom, in which they revealed that poorer knowledge can be associated with negative attitude towards the disease [28]. The study also revealed that knowledge was an independent significant predictor of attitude towards cancer. Besides that, our result was not in line with a study conducted among multi-ethnic rural population in Malaysia, in which they found a significant positive correlation between the respondents' knowledge score of warning signs and the attitude in identifying a warning sign [31].

Limitation

This study was conducted among the undergraduate students of IIUM Kuantan Campus. Thus, it does not necessarily reflect the whole population in IIUM and might not being representative of other universities in Malaysia.

Conclusion

In conclusion, it was revealed that the majority of IIUM Kuantan Campus students have a moderate knowledge and perception regarding CRC, with respondents from the Kulliyah of Medicine showing higher knowledge score compared to other kulliyahs. Female respondents showed higher knowledge score and slightly higher perception score than males. An overall moderate score of these science- and health-based undergraduate students suggested that it is essential to empower the young adults on information regarding cancer prevention and the intention to go for screening. Effective and long-lasting promotional campaigns must be conducted to improve the level of knowledge and perceptions regarding CRC and screening, particularly to benefit the young adults in the community, and this may begin with the university undergraduates.

Conflicts of interest

The authors have no conflicts of interest that are directly relevant to the content of this manuscript.

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Table IIa. Frequency of various responses to questions on knowledge of CRC.

Domain	Statement	Yes	No	Do not know
General knowledge	Colorectal cancer is:			
	A type of cancer of the large intestine.	145(89.0%)	2(1.2%)	16(9.8%)
	A preventable disease.	79(48.5%)	18(11.0%)	66(40.5%)
	One of the leading causes of death in Malaysia.	66(40.5%)	27(16.6%)	70(42.9%)
Risk factors	The risk factors for CRC are:			
	Obesity	80(49.1%)	13(8.0%)	70(42.9%)
	Lack of physical activity	61(37.4%)	27(16.6%)	75(46.0%)
	Alcohol consumption	108(66.3%)	11(6.7%)	44(27.0%)
	Cigarette smoking	95(58.3%)	19(11.7%)	49(30.1%)
	Low intake of whole-grain fibre, fruits and vegetables	104(63.8%)	7(4.3%)	52(31.9%)
	Low intake of calcium	28(17.2%)	25(15.3%)	110(67.5%)
	High consumption of processed meat	86(52.8%)	11(6.7%)	66(40.5%)
	Personal or familial history of CRC	104(63.8%)	7(4.3%)	52(31.9%)
Signs and symptoms	The signs and symptoms for CRC are:			
	Abdominal pain	127(77.9%)	1(0.6%)	35(21.5%)
	Change in bowel habits (diarrhea, constipation or both)	127(77.9%)	0(0.0%)	36(22.1%)
	Blood in stool	123(75.5%)	0(0.0%)	40(24.5%)
	Weakness or malaise	102(62.6%)	5(3.1%)	56(34.4%)
	Unexplained weight loss	112(68.7%)	3(1.8%)	48(29.4%)
Age	Those who are likely to develop bowel cancer include:			
	A 20 year old	19(11.7%)	42(25.8%)	102(62.6%)
	A 40 year old	70(42.9%)	13(8.0%)	80(49.1%)
	A 60 year old	80(49.1%)	5(3.1%)	78(47.9%)
	Colorectal cancer is unrelated to age	45(27.6%)	31(19.0%)	87(53.4%)
Screening tests	The screening test(s) for CRC include:			
	Colonoscopy	87(53.4%)	5(3.1%)	71(43.6%)
	Flexible Sigmoidoscopy	45(27.6%)	6(3.7%)	112(68.7%)
	Fecal Occult Blood Test (FOBT)	67(41.1%)	4(2.5%)	92(56.4%)
	Double Contrast Barium Enema	32(19.6%)	9(5.5%)	122(74.8%)

Table IIb. Frequency of various responses to questions on perceptions to CRC screening.

Perceptions	Statement	Strongly Agree	Agree	Neither Agree nor Disagree
	I would rather have the doctor notifies me immediately if my screening results show something wrong.	115(70.6%)	30(18.4%)	8(4.9%)
	Having colorectal cancer screening would give me peace of mind about my health.	61(37.4%)	54(33.1%)	27(16.6%)
	I would pay for colorectal cancer screening myself if insurance did not cover the cost.	23(14.1%)	46(28.2%)	73(44.8%)
	I would be too embarrassed to have a colonoscopy.	17(10.4%)	30(18.4%)	51(31.3%)
	I think there is lack of evidence regarding the benefits of colorectal cancer screening.	26(16.0%)	33(20.2%)	63(38.7%)

Table IIc. Frequency of various responses to questions on perceived barriers towards CRC screening.

Perceived barriers	Patient- and system-related barriers:	Major Barrier	Minor Barrier	Not a Barrier
	Patient fears of finding cancer.	114(69.9%)	39(23.9%)	10(6.1%)
	Patient believes screening is not effective.	29(17.8%)	84(51.5%)	50(30.7%)
	Patient embarrassment about screening tests.	77(47.2%)	67(41.1%)	19(11.7%)
	Patient anxiety about screening tests.	85(52.1%)	65(39.9%)	13(8.0%)
	Patient does not perceive colorectal cancer as a serious health threat.	84(51.3%)	49(30.1%)	30(18.4%)
	Screening costs too much or insurance does not cover.	106(65.0%)	42(25.8%)	15(9.2%)
	Primary care physicians do not actively recommend screening to their patients.	53(32.5%)	79(48.5%)	31(19.0%)
	There is shortage of trained providers to conduct screening other than fecal occult blood testing.	57(35.0%)	77(47.2%)	29(17.8%)
	There is shortage of trained providers to conduct follow-up with invasive endoscopic procedures.	60(36.8%)	76(46.6%)	27(16.6%)

Table III. Knowledge and perception score with respect to gender (n=163).

Variable	K.score Mean (SD)	P-value	P.score Mean (SD)	P-value
Gender				
Male	9.86 (6.019)	<0.001*	17.23 (2.874)	0.018*
Female	13.64 (5.044)		18.25 (2.537)	

*P-value <0.05 is statistically significant; Independent t-test

Note: K. score = knowledge score; P. score = perceptions score; SD = Standard Deviation

Table IV. Knowledge and perception score with respect to Kulliyahs (n=163).

Variable	K.score Median (IQR)	P-value	P.score Median (IQR)	P-value
Kulliyah				
KOM	18.00 (3.00)	<0.001*	18.00 (3.00)	0.747
KOD	13.00 (6.00)		19.00 (4.00)	
KON	15.00 (7.00)		17.00 (3.00)	
KOP	12.00 (4.00)		17.50 (4.00)	
KOS	3.00 (9.00)		17.50 (3.00)	
KAHS	13.50 (6.00)		17.00 (3.00)	

*P-value <0.05 is statistically significant; Kruskal Wallis test; Post Hoc test; Mann Whitney U test

Note: K.score = knowledge score; P.score = perceptions score; IQR = Interquartile range

Table V. Correlation of knowledge and perception with respect to age and year of study (n=163).

Variables	r-value	P-value
Knowledge, Age	0.031	0.691
Knowledge, Year of Study	0.070	0.377
Perceptions, Age	0.117	0.137
Perceptions, Year of Study	0.116	0.140
Knowledge, Perceptions	0.127	0.105

P-value <0.05 is statistically significant; Correlation (Pearson) test

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