AWARENESS REGARDING CANCER AMONG PEOPLE RESIDING IN KAPILVASTU DISTRICT

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ABSTRACT

INTRODUCTION

Cancer is a second leading cause of death globally, accounting for an estimate 9.6 million deaths or one in six in 2018 according to WHO factsheet. This study aimed to assess the awareness regarding cancer and its associated factors among adults of Maharajgunj Municipality of Kapilvastu.

MATERIAL AND METHODS

Community based, cross-sectional study design was conducted to assess the awareness regarding cancer and its associated risk factors and warning signs from January 2023 to July 2023, on a total of 400 participants in the age range of 20-90 years. Participants were enrolled in the study using simple random sampling technique. Data were collected using semi-structured questionnaire from consented participants. Chi-square test and binary logistic regression were used for further analysis. The level of significance was set at *p*-value <0.05.

RESULTS

This study revealed that only 32.5% of participants were aware of symptoms and 32.8% of participants were aware of the risk factors associated with cancer. Significant associations were found between cancer awareness of risk factors and socio-demographic variables such as occupation (*p*=0.049), education (*p*-value=0.02), religion (*p*-value=0.033), and ethnicity (*p*-value=0.016). However, this study showed statistically significant association only between level of education and cancer awareness of symptoms.

CONCLUSION

The study findings indicate that approximately one-third of the participants had awareness regarding cancer risk factors and symptoms. These findings emphasize the urgent necessity for increased awareness of cancer among the community. Therefore, it is imperative to implement effective strategies to enhance community engagement in cancer-related health education programs.

KEYWORDS

Cancer awareness, Risk factors, Symptoms

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INTRODUCTION

Cancer stands as a prominent global mortality factor, responsible for approximately 10 million fatalities in 2020, equating to nearly one in six deaths. Among the prevalent cancer types are breast, lung, colon, rectum, and prostate cancers.[1]

In 2022, it was estimated that there were 20 million new cases of cancer and 9.7 million fatalities.[2] Key contributors to the rising cancer rates include tobacco use, alcohol consumption, and obesity, while air pollution remains a significant environmental hazard driving these trends.[2]

Annually, over 2.3 million individuals receive a cancer diagnosis in the South East Asia Region, resulting in approximately 1.4 million deaths.[3] In low- and lower-middle-income countries, infections like human papillomavirus (HPV) and hepatitis contribute to roughly 30% of cancer cases.[4] Early detection and treatment of cancer significantly lower mortality rates. Early detection comprises two vital components: timely diagnosis and screening. A crucial aspect of early diagnosis involves recognizing symptoms associated with various types of cancer and promptly seeking medical assistance upon noticing abnormal signs. Timely diagnosis of symptomatic cancers holds relevance across diverse settings and most types of cancers.[1] The global risk factors for cancer include tobacco and alcohol consumption, unhealthy dietary habits, and lack of physical activity.[5]

Studies suggested that over 30% of cancer cases could potentially be averted by modifying or abstaining from significant risk factors. These factors encompass tobacco use, obesity or excess weight, sedentary lifestyles, alcohol consumption, urban air pollution, and indoor exposure to smoke from solid fuel use in households.[6]

Rationale for study

In Nepal, the leading risk factors for cancer include tobacco smoking (30%), physical inactivity (3.3%), obesity (2.9%), and household solid fuel use (80%).[6]

A considerable portion of the rise in cancer cases can be attributed to various factors, such as inadequate awareness regarding the signs, symptoms, and risk factors associated with cancer.[5,7] Hence, the main aim of this study is to determine the awareness regarding cancer and its associated risk factors and symptoms among adults of Maharagunj Municipality of Kapilvastu.

MATERIAL AND METHODS

A cross-sectional study was conducted in Maharajgunj municipality of Kapilvastu District, situated in Province No. 5, Lumbini Pradesh of the country, to determine the awareness regarding cancer and its associated risk factors and symptoms from January 2023 to July 2023. People aged 18 years and above were study population. Sample size was calculated using Cochran's formula, assuming a prevalence of 50%, a permissible error of 5%, and a non-response rate of 10% due to the lack of relevant prevalence data in the literature specific to this study and setting. There were a total of 11 wards, with 7,977 households and a total population of 54,800 according to CBS 2011 data. Therefore, three wards were selected using a simple random sampling technique.

The study areas included ward numbers 2, 5, and 6 with populations of 3643, 2210, and 6035 respectively. The first household in each ward was chosen using a random selection method such as spinning a bottle, and subsequent households were selected until the required number was achieved. Face-to-face interviews were conducted using a semi-structured questionnaire by the researcher herself.

The collected data were entered into SPSS version 20.0 and analysis was conducted with a 95% confidence interval. Descriptive analysis was performed in terms of frequency, percentage, mean, and standard deviation. Categorical variables were presented as percentages and frequencies. The relationship between independent variables (risk factors and symptoms) and dependent variable (awareness) was examined using the chi-square test and binary logistic regression. The level of significance was set at a p-value < 0.05.

Ethical approval was obtained from the Institutional Review Committee of Universal College of Medical Sciences (Reference number UCMS/IRC/185/22). Administrative approval was obtained from the authorities of UCMS. Participants were assured that the information provided would only be used for research purposes, and confidentiality would be maintained. Participation in the research were voluntary, and participants could withdraw consent at any time. Informed verbal and written consent were obtained from each participants after clarifying the objectives of the study.

RESULTS

Table 1 illustrates that out of the 400 participants, 234 (58.5%) belonged to the 20-40 age group, while 127 (31.8%) and 39 (9.8%) belonged to the 41-60 years and >=61 years age groups, respectively. The majority of participants, comprising 312 (78%), identified as Hindu, followed by 29 (7.2%) as Muslim and 59 (14.8%) as other religions. Additionally, 88.8% were married, while the remaining 11.3% were either unmarried or widowed. Similarly, the gender distribution showed that 76.5% were male and 23.5% were female. Among the participants, 61.3% were farmers, with job/services, business, and unemployed individuals accounting for 21%, 13.5%, and 4.3%, respectively.

Regarding educational attainment, the majority of participants were illiterate (49.8%), while 24.5% had received primary education, followed by 15.5% and 10.3% with secondary and higher education, respectively. Ethnicity-wise, the study found that most participants belonged to the Madhesi ethnicity (62.7%), followed by Dalits (23%), and the least represented group were Janajati (7%). In terms of family structure, the majority belonged to extended/joint families (57.3%), followed by 42.8% in other family types.

Table 1. Socio-demographic profile of the participants

Variable	Frequency (N)	Percentage (%)
Age	234	58.5
20-40	127	31.8
41-60	39	9.8
>=61		
Religion		
Hindu	312	78
Muslim	29	7.2
Others	59	14.8
Marital status		
Married	355	88.8
Unmarried/widowed	45	11.3
Family type		
Nuclear	171	42.8
Joint/Extended	229	57.3
Sex		
Male	306	76.5
Female	94	23.5
Occupation		
Farming	245	61.3
Job/Services	83	21
Business	54	13.5
Unemployed	17	4.3
Ethnicity		
Brahmin/Chhetri	29	7.2
Madhesi	251	62.7
Janajati	28	7
Others	92	23
Education		
Illiterate	199	49.8
Primary Education	98	24.5
Secondary Education	62	15.5
Higher Education	41	10.3

Table 2 illustrates that an awareness of smoking-related cancer was highest at 98.8%. Among the participants, 98.5% were aware of tobacco-related cancer, 95.55% were aware of chemicals responsible for causing cancer. Similarly, 90% were aware of pesticides causing cancer, 58.5% knew that excessive cosmetics can cause cancer, whereas 75.8% were aware that alcohol can cause cancer, 86.5% were aware that toxic water can cause cancer, 80.5% were aware that air pollution can cause cancer, and 81.3% were aware that plastic use can cause cancer. Additionally, 50.5% were aware that cancer can be hereditary. Only 19% were aware of breast cancer.

Table 2. Awareness regarding risk factors of cancer among participants

Variable	Gender		Total
	Male	Female	
Alcohol consumption	250 (62.5%)	53 (13.3%)	303 (75.8%)
Tobacco consumption	304 (76%)	89 (22.3%)	393 (98.3)
Smoking	304 (76%)	90 (22.5%)	394 (98.5%)
Passive smoking	252 (63%)	44 (11%)	29 (74%)
Sunlight	162 (15.5%)	2 (0.5%)	64 (16%)
Air	265 (66.3%)	57 (14.2%	322 (80.5%)
Water	275 (68.8%)	71 (17.8%)	346 (86.5%)
Chemical	300 (75%)	82 (20.5%)	382 (95.5%)
Pesticide	289 (72.3%)	71 (17.8%)	360 (90%)
Non-seasonal fruits	163 (40.8%)	22 (5.5%)	185 (46.3%)
Roasted in fire	44 (11%)	3 (0.8)	47 (11.8%)
Outside food	168 (42%)	30 (7.5%)	198 (49.5%)
Excessive cosmetic	202 (50.2%)	33 (8.3%)	234 (58.5%s)
Plastic use	266 (66.5%)	59 (14.8%)	325 (81.3%)
Hereditary	169 (42.3%)	33 (8.3%)	202 (50.5%)

Table 3 showed a highly significant association between the family type of participants and their awareness of cancer risk factors (p-value=0.001). In terms of religion, 28.5% of Hindus were aware of cancer risk factors, while only 2.5% of Muslims and 1.8% of individuals belonging to other religions demonstrated similar awareness. A statistically significant association was observed between religion and awareness of cancer risk factors. Regarding gender, 29.3% of males were aware of cancer risk factors compared to only 3.5% of females. This disparity led to a significant association between gender and awareness of cancer risk factors (*p*-value=0.001). Upon reviewing the results, it was found that 20.3% of participants belonging to the Madhesi ethnicity were aware of cancer risk factors, indicating a statistically significant association (*p*-value=0.0013). Additionally, a statistically significant association was noted between cancer awareness risk factors and participant's age (*p*-value=0.001), education (*p*-value=0.001) and occupation (*p*-value=0.001).

Table 3. Association between socio-demographic factors and awareness regarding risk factor causing cancer

Variable	Cancer awareness regarding risk factor		Total	Chi-square	*p*-value
	Inadequate	Adequate			
Family type					
Nuclear	103 (25.8%)	68 (17%)	171 (42.8%)	6.676	0.01
Joint	166 (4.5%)	63 (15.8%)	229 (57.3%)		
Marital status					
Married	239 (59.8%)	116 (29%)	355 (88.7%)	0.008	0.929
Unmarried/widowed	30 (7.5%)	15 (3.8%)	45 (11.3%)		
Religion					
Hindu	198 (49.5%)	114 (28.5%)	312 (78%)	13.75	0.001
Muslim	19 (4.8%)	10 (2.5%)	29 (7.2%)		
Others	52 (13%)	7 (1.8%)	59 (14.8%)		
Sex					
Male	189 (47.3%)	117 (29.3%)	306 (76.5%)	17.78	0.001
Female	80 (20%)	14 (3.5%)	94 (23.5%)		
Ethnicity					
Brahmin/chhetri	12 (3%)	17 (4.3%)	29 (7.2%)		
Madhesi	170 (42.5%)	81 (20.3%)	251 (62.7%)	10.698	0.013
Janajati	68 (17%)	24 (6%)	92 (23%)		
Dalit	19 (4.8%)	9 (2.3%)	28 (7%)		
Age					
20-40	130 (32.5%)	104 (26%)	234 (58.5%)	36.714	0.001
42-60	103 (25.8%)	24 (6%)	127 (31.8%)		
>=61	36 (9%)	39 (0.8%)	39 (9.8%)		
Occupation					
Farming	208 (52%)	37 (9.3%)	245 (61.3%)	97.96	0.001
Job/services	29 (7.2%)	55 (13.8%)	84 (21%)		
Business	20 (5%)	34 (8.5%)	54 (13.5%)		
Unemployed	12 3%)	5 (1.3%)	17 (4.3%)		
Education					
Illiterate	151 (37.8%)	48 (12%)	198 (49.8%)	44.769	0.001
Primary	76 (19%)	22 (5.5%)	98 (24.5%)		
Secondary	27 (6.8%)	35 (8.8%)	62 (15.5%)		
Higher	15 (3.8%)	26 (6.5%)	41 (10.3%)		

Table 4. Illustrates a statistically significant association between participants' age and their awareness of cancer symptoms. (*p*-value=0.002).

Regarding gender, 27.3% of males were aware of cancer symptoms compared to only 5.3% of females. This disparity led to a significant association between gender and awareness of cancer symtoms. (*p*-value=0.001).

In terms of religion, 28% of Hindus were aware of cancer symptoms., while only 2% of Muslims and 2.5% of individuals belonging to other religions demonstrated similar awareness. A statistically significant association was observed between religion and awareness of cancer symptoms. Finally, a highly significant association was noted between participants' education levels and their awareness of cancer symptoms (*p*-value=0.001). Additionally, a highly significant association was seen between awareness of cancer symptoms and the family type of participants (*p*-value=0.014), occupation (*p*-value=0.001), ethnicity (*p*-value=0.004) respectively.

Table 4. Association between socio-demographic factors and awareness regarding symptoms causing cancer

Variable	Knowledge		Chi- square	*p*-value
	Adequate	Inadequate		
Age				
20-40	142 (35.5%)	92 (23%)	12.073	0.002
41-60	97 (24.3%)	30 (7.5%)		
>=61	31 (7.8%)	8 (2%)		
Marital status				
Married	236 (59%)	119 (29.8%)	1.5	0.221
Unmarried	34 (8.5%)	11 (2.8%)		
Family				
Nuclear	104 (26%)	67 (16.8%)	6.078	0.041
Joint	166 (41.5)	63 (15.8%)		
Religion				
Hindu	200 (50%)	112 (28%)	8.465	0.015
Muslim	21 (5.3%)	8 (2%)		
Others	49 (12.3%)	10 (2.5%)		
Education level				
Illiterate	160 (40%)	39 (9.8%)	72.185	0.001
Primary	75 (18.8%)	23 (5.8%)		
Secondary	23 (5.8%)	39 (9.8%)		
Higher	12 (3%)	19 (7.2%)		
Ehinicity				
Brahmin	12 (3%)	17 (4.3%)	13.248	0.004
Madhesi	167 (41.8%)	84 (21%)		
Janajati	20 (5%)	08 (2%)		
Dalit	71 (17.8%)	21 (5.3%)		
Sex				
Male	197 (49.3%)	109 (27.3%)	5.781	0.016
Female	73 (18.3%)	21 (5.3%)		
Occupation				
Farming	199 (49.8%)	46 (11.5%)	59.748	0.001
Job/Services	35 (8.8%)	49 (12.3%)		
Business	24 (6%)	30 (7.5%)		
Unemployed	12 (3%)	5 (1.3%)		

Table 5 illustrates that participants belonging to the Madhesi ethnicity were 1.3 times more likely to be aware of risk factors for cancer than Dalits (COR 1.350, 95% CI 0.790-2.306, p-value= 0.272), and the association was non-significant. After adjusting for risk factors, the odds ratio decreased (AOR 0.413, 95% CI 0.201-0.850, p-value = 0.016), but the association remained statistically significant. Participants belonging to the Hindu religion were 4.3 times more likely to be aware of risk factors for cancer than others, and this association was statistically significant (COR 4.277, 95% CI 1.880-9.731, *p*-value=0.001). After adjusting for risk factors, the odds ratio decreased but still remained statistically significant (AOR 2.873, 95% CI 1.089-7.579, p-value 0.033). Conversely, participants with a secondary level of education were 0.7 times less likely to be aware of risk factors for cancer than those with a higher level of education (COR 0.743, 95% CI 0.333-1.681, *p*-value = 0.482). After adjusting for risk factors, the odds ratio increased (AOR 3.229, 95% CI 1.133-9.20, *p*-value = 0.02), and the association remained statistically significant.

Participants in farming occupations were 0.4 times less likely to be aware of risk factors for cancer than the unemployed (COR 0.427, 95% CI 0.142-1.283, *p*-value = 0.129). After adjusting for risk factors, the odds ratio decreased, but the association still remained statistically significant (AOR 0.265, 95% CI 0.070-0.995, *p*-value = 0.049). Male participants were 3.5 times more likely to be aware of risk factors for cancer than females (COR 3.537, 95% CI 1.917-6.529, *p*-value=0.000), and this association was statistically significant. After adjusting for risk factors, the odds ratio decreased, but the association still persisted as statistically insignificant (AOR 1.992, 95% CI 0.909-4.363, *p*-value = 0.085).

Table 5. Crude and adjusted odd ratio of cancer awareness regarding risk factors with few of socio-demographic factors

Variable	COR	*p*-value	AOR	*p*-value
Ethnicity				
Brahmin	4.014 (1.676-9.612)	0.002	0.645 (0.218-1.91)	0.428
Madhesi	1.350 (0.790-2.306)	0.272	0.413 (0.201-0.850)	0.016
Janajati	1.342 (0.535- 3.366)	0.531	3.531 (1.083-6.502)	0.826
Dalit	Reference			
Religion				
Hindu	4.277 (1.880-9.731)	0.001	2.872 (1.089-7.579)	0.033
Muslim	3.910 (1.302-11.740)	0.15	4.21 (0.536-8.054)	0.326
Others	Reference			
Education				
Illiterate	0.183 (0.090-0.374)	0.001	0.913 (0.360-2.313)	0.874
Primary	0.167 (0.076-0.369)	0.001	0.980 (0.354-2.714)	0.968
Secondary	0.743 (0.333-1.681)	0.482	3.229 (1.133-9.2)	0.02
Higher	Reference			
Occupation				
Farming	0.427 (0.142-1.283)	0.129	0.265 (0.070-0.995)	0.049
Job/service	4.552 (1.461-14.177)	0.009	2.5 (0.602-10.386)	0.207
Business	4.080 (1.253-13.284)	0.020	3 (0.724-12.469)	0.13
Unemployed	Reference			
Sex				
Male	3.537 (1.917-6.529)	0.001	1.992 (0.909-4.363)	0.085
Female	Reference			
Marital status				
Married	0.971 (503-1.875)	0.929	1.530 (0.686-3.412)	0.298
Unmarried	Reference			
Family type				
Nuclear	1.740 (1.141-2.652)	0.010	1.278 (0.729-2.240)	0.391
Joint/Extended	Reference			
Age				
20-40	9.6 (2.875-32.055)	0.001	2.80 (0.746-10.556)	0.127
41-60	2.796 (0.794-9.846)	0.109	2.178 (0.570-8.326)	0.255
>=61	Reference			

Table 6 illustrates that participants who were male were 1.9 times more likely to be aware of symptoms related to cancer than females (COR 1.923, 95% CI 1.122-3.297, *p*-value = 0.017), and this association was found to be statistically significant. After adjusting for risk factors, the odds ratio decreased. However, the association was found to be statistically insignificant (AOR 0.802, 95 % CI 0.404-1.589, p-value = 0.526). Participants who were illiterate were 0.1 times less likely to be aware of symptoms related to cancer than those who had received a higher level of education (COR 0.222, 95% CI 0.086-0.575, p-value = 0.002). After adjusting for risk factors, the odds ratio is same (AOR 0.223, 95% CI 0.086-0.576, *p*-value = 0.002), and the association

still remained statistically significant. Likewise, participants with a primary level of education were 0.1 times less likely to be aware of symptoms related to cancer than those with a higher level of education (COR 0.127, 95% CI 0.056-0.288, *p*-value = 0.001). After adjusting for risk factors, the odds ratio increased (AOR 0.320, 95 % CI 0.116-0.885, p-value= 0.028), and the association still remained statistically significant.

Table 6. Crude and adjusted odd ratio of cancer awareness regarding symptoms with few of socio-demographic factors

Variable	COR	*p*-value	AOR	*p*-value
Sex				
Male	1.923 (1.122-3.297)	0.017	0.802 (0.404-1.589)	0.526
Female	Reference			
Occupation				
Farming	0.555 (0.186-1.652)	0.290	0.523 (0.154-1.770)	0.523
Job/services	3.360 (1.086-10.400)	0.036	2.616 (0.672-10.189)	0.166
Business	3.00 (0.928-9.697)	0.066	3.098 (0.818-11.733)	0.096
Education level				
Illiterate	0.101 (0.047-0.215)	0.000	0.222 (0.086-0.575)	0.002
Primary	0.127 (0.056-0.288)	0.000	0.320 (0.116-0.885)	0.028
Secondary	0.702 (0.301-1.637)	0.412	1.930 (0.677-5.5)	0.218
Higher	Reference			
Religion				
Hindu	2.744 (1.33-5.628)	0.006	1.253 (0.548-2.861)	0.593
Muslim	1.867 (0.646-5.393)	0.249	0.568 (1.126-5.528)	0.788
Others	Reference			
Marital status				
Married	1.559 (0.763-3.185)	0.224	2.296 (0.983-5.364)	0.055
Unmarried/widow	Reference			
Family type				
Nuclear	1.697 (1.113-2.590)	0.014	1.152 (0.669-1.982)	0.611
Joint	Reference			
Ethnicity				
Brahmin/chhetri	4.790 (1.977-11.605)	0.01	1.376 (0.488-3.879)	0.546
Madhesi	1.701 (0.978-2.956)	0.060	0.776 (0.398-1.513)	0.457
Janajati	1.352 (0.521-3.509)	0.535	3.842 (0.726-12.076)	0.783
Dalits	Reference			
Age				
20-40	1.414 (0.689-2.9)	0.345	0.843 (0.311-2.256)	0.734
41-60	0.874 (0.420-1.822)	0.720	1.010 (0.381-2.673)	0.984
>=61	Reference			

DISCUSSION

The study aimed to assess the awareness of cancer among the Nepali population, recognizing cancer as a significant public health issue both in Nepal and globally. This study revealed that only 32.5% of participants were aware of symptoms associated with cancer, a finding consistent with the research conducted in West Bengal, India where 35% of respondents demonstrated awareness of cancer symptoms.[8] Moreover, it was observed that individuals with higher educational qualifications exhibited greater awareness compared to those with lower educational levels. Similar conclusions were obtained in Delhi, India highlighting the pivotal role of education in fostering cancer awareness.[9] This trend was supported by several other studies as well.[5,6,10,11] No statistically significant associations were found between cancer awareness and socio-demographic variables such as occupation and religion. Similar results were reported in West Bengal, India.[8] Regarding age and gender, no significant associations were found with cancer awareness, consistent with the findings in study done in Nepal.[6] One of the earliest studies on overall cancer awareness was conducted in West Bengal, revealing that 98.3% of participants were familiar with cancer. Another notable study, conducted in India, found a high level of overall cancer awareness, with 87% of the population in five Indian states being aware of cancer.[8] In contrast, this study revealed that only 32.8% of participants were aware of the risk factors associated with cancer. This finding aligns with a study conducted in West Bengal, India which reported that only 44.6% of individuals were aware of major cancer risk factors.[8] Notably, there was no significant association observed between cancer awareness of risk factors and age groups, gender, or marital status, consistent with findings from another study conducted in Nepal.[6] However, significant associations were found between cancer awareness of risk factors and socio-demographic variables such as occupation, education, religion and ethnicity. Similar results were reported by study conducted in Nepal.[6] Regarding specific risk factors, this study found high awareness levels, with 98.5% of participants recognizing smoking and 98.3% acknowledging tobacco consumption as risk factors for cancer.[6] Similar findings were reported in other studies.[6,12] Further, few studies showed similar results in Chandigarh (74.7%), rural Karnataka (91.8%) and India (79.2%).[13-15] Likewise, awareness of oral cancer was considerable, with 61.5% of participants recognizing it, similar results observed by other studies.[6,15,16,17] However, awareness of breast cancer was relatively low, with only 19% of participants being aware, consistent with findings from other studies.[18] Regarding alcohol consumption, 75.8% of participants were aware of its potential to cause cancer, a result similar to that reported in Nepal.[6] This finding is consistent with studies conducted in Saudi Arabia, Malaysia, Pakistan, and India.[19-21] However, in a study conducted in Japan, only a small percentage of respondents recognized alcohol as a risk factor for cancer.[22] Additionally, this study found that 50.5% of participants were aware of the hereditary nature of cancer, a result similar to that reported in Nepal.[6]

CONCLUSION

These findings emphasize the urgent necessity for increased awareness of cancer among the community. Therefore, it is imperative to devise and implement effective strategies to enhance community engagement in cancer-related health education programs. Given its status as a significant public health concern, Nepal must prioritize efforts to raise awareness regarding the risk factors, signs, symptoms, and prevention of cancer. Moreover, they underscore the urgent demand for enhanced cancer awareness among the Nepali population.

LIMITATIONS

Due to limited resources (money and time), the study was confined to few wards only. It was conducted in small area, it cannot be generalized. Moreover, this was a descriptive, cross– sectional study; a longitudinal study design could explore further the knowledge gap in participants about cancer.

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CONFLICT OF INTEREST

None

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