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Awareness of Cancer among Adolescent Students at Selected Schools of Bharatpur Metropolitan City, Chitwan

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ABSTRACT

Background

Cancer is a major global health problem affecting the population of all age groups and it is the second leading cause of deaths globally. As one third of cancers are potentially preventable, awareness on cancer plays an effective role to avoid risk factors, detect the warning signs earlier and apply preventive measures on time. So, this study was conducted to assess awareness regarding cancer among adolescents.

Methods

A cross-sectional study design was carried among 154 adolescent students to assess awareness regarding cancer. Samples were students studying in grade 10 selected using non-probability purposive sampling technique from two government schools of Bharatpur Metropolitan. Self-administered structured questionnaire was used for data collection and analyzed by using descriptive statistics through Statistical Package for Social Science (SPSS) Version 16.

Results

Mean age of respondents was 15.33 years and more than half (53.2%) were female. Only 5.8% of respondents had history of cancer in their family. The study findings summarized the level of knowledge into three categories where, more than three-fifth (63%) had moderate level of awareness, 28.6% had low level of awareness and only8.4% had high level of awareness on cancer.

Conclusions

Though majority of the respondents had moderate level of knowledge regarding cancer but there is still awareness gap in the context of risk factors, warning signs and cancer screening. So, concerned authorities should make strategic plan on cancer awareness programme, add contents in school curriculum to increase the awareness of cancer among the adolescent students who are the key media for spreading their knowledge to public.

Keywords: awareness; adolescents; cancer.

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INTRODUCTION

Cancer is the second leading cause of death globally and there were an estimated 135234 new cases and 52186 cancer related deaths in 2022 among the adolescents aged 10-19 years of age with highest burden being in Asia. The burden of cancer incidence and mortality is rapidly growing in context of Nepal as well and is the fifth leading cause of death. [1] In 2022, there were total 6446 new cancer cases which shows the increasing burden of Cancer.[2] It is the fourth leading cause of death in adolescents Globally.[3] Limiting exposure to the modifiable risk factors may lower the risk of developing many cancers by 30 to 50%.[4] Cancer awareness is the most cost effective for the control of cancer and one third of all cancers can be prevented through various preventive measures.[5] It is the key to early diagnosis and seeking of better treatment modalities. Adolescent's awareness about cancer is important for providing the foundation for a healthy adulthood and it plays an effective role to apply preventive measures on time.[6,7] The impacts of cancer on adolescents can be profound though its lower incidence among them compared to older ages.[8] One third of cancers are potentially preventable by modifying the risk factors that arise during adolescence and lack of awareness may contribute to late - stage diagnosis hampering successful treatment outcomes.[9,10]

METHODS

A descriptive cross-sectional study was carried out to assess the level of awareness of cancer among the adolescent students. Ethical approval was obtained from B.P. Koirala Memorial Cancer Hospital (BPKMCH), Institutional Review Committee (Ref. No. 18/081/082). Administrative approval was obtained from ward number 7 of Bharatpur Metropolitan City, Chitwan. Then permission was obtained from the respective schools for conducting research among the grade 10 students of two government schools. The written informed consent was obtained from all the respondent's parents. Samples of the study were 154 students studying at grade 10 of two selected schools (Prembasti Secondary School and Rastriya Secondary School) of ward no. 7, Bharatpur Metropolitan City were selected through non-probability purposive sampling method. The desired sample size for the research study was 161 which was calculated by taking prevalence of 26.1% from the literature [8] with 5% level of significance (The Z-score value at 95% confidence interval is 1.96), with 5% margin of error. Sample size (n) = $Z^2pq/e^2 + Z^2pq/N = 146$. Now, adding +10% non-response rate i.e. 14.6. Therefore, the desired sample size = 146+14.6 = 160.6=161. Where, n = sample size, Z= 1.96 at 95% confidence level, prevalence (p) = 26.1% = 0.261, q = 1-p which is (1-0.261=0.739),margin of error = 5% = 0.05, N = Total population size= 398 (Total adolescent students of grade 10 of two government schools). But available sample size was 154. A self-administered structured questionnaire was used to collect the data consisting of three parts: Part I: Questions related to socio-demographic variables. Part II: Questions related to awareness of cancer: basic knowledge, risk factors, warning signs, preventive measures, screening and treatment of cancer. Level of awareness of cancer was measured by using 24 self-administered structured questionnaires including multiple choice questions and calculating total scores in terms of percentage. Each correct answer was scored by 1 and wrong answer was scored by 0. The Level of Awareness was measured by calculating the total scores and classifying in reference to Bloom's cut off point into three categories.[11] Where high level scores 80- 100%, Moderate level score 60-79% and Low level = (<60%). Validity of the instrument was maintained by extensive literature review, consultation with oncologist and research expert. Reliability of the instrument was maintained by pre – testing in 10% (16 participants) of the total sample in the same setting and those samples were excluded in the main study. Then all collected data were entered and analyzed by Statistical Package for Social Science (SPSS) version 20. Data was interpreted by using descriptive statistics in terms of mean, frequency and percentage and displayed in different tables.

RESULTS

Out of 154 respondents, the majority (89%) were

aged between 14 and 16 years. The mean age of the respondents was 15.33 years with a standard deviation of 0.929, ranging from a minimum of 14 to a maximum of 18 years. More than half of the respondents (53.2%) were female. In terms of ethnicity, the majority were Brahmin/Chhetri (63.6%), followed by Janajati (26.6%). In terms of maternal education, less than half of the respondents' mothers (47.4%) had attained secondary education while 19.5% had no formal education. Similarly, the majority of respondents' fathers (51.3%) had completed secondary education, and 15.6% had no formal education. The major occupation of both father and mother of respondents was agriculture. Nine respondents (5.8%) reported a history of cancer in their family. Moreover, regarding source of information, the majority (92.2%) of respondents said mass media, school (90.9%) and family/relatives (77.3 %). Out of 154 respondents, majority correctly responded on the meaning of cancer (95.5%) followed by non-communicable disease (94.8%), cancer can be cured if detected earlier (94.2%) but only 39% knew that cancer is a hereditary disease (Table1).

Table 1. Respondent's Awareness on Basic Knowledge on Cancer. (n=154)

Variables	Correct Response
	Frequency (%)
Information related to Cancer	
Cancer is a disease caused when abnormal cells grow uncontrollably and, in some cases, might spread into other parts of the body.	147(95.5)
Cancer is a hereditary disease	60(39.0)
Cancer is non-communicable disease	146(94.8)
Anyone can be affected by cancer	105(68.2)
Cancer can be cured if detected earlier	145(94.2)
Cancer is one of the major causes of death globally	129(83.8)

In relation to awareness on cancer risk factors (Table 2), more than half (51.3%) said family history of cancer followed by genetic (44.8%) and older age (18.2%) respectively. Similarly in relation to modifiable risk factors, most of them (96.1%) had knowledge on smoking followed by tobacco (89.6%), drinking alcohol (89%) and second-hand smoking (80.5%) while the least known risk factors of cancer were low level of physical activity (38.3%), overweight (33.8%), low intake of fruit and vegetables (33.8%) and mental stress (16.2%). Regarding awareness on warning signs of cancer (Table 3), majority (80.5%) of the respondents had

Table 2. Respondent's Awareness on Risk Factors of Cancer (n=154)

Variables	Frequency (%)
Non-modifiable Risk Factors *	
Genetic	69(18.2)
Older age	28(18.2)
Family history	79(80.5)
Modifiable Risk Factors*	
Smoking	148(80.5)
Second hand smoke	124(80.5)
Drinking alcohol	137(89.0)
Tobacco	138(89.6)
Sun exposure	80(51.9)
Overweight	52(33.8)
Low fruit/ vegetable intake	52(33.8)
High intake of fatty foods, red meats and processed foods	80(51.9)
Low level of physical activity	59(38.3)
Infections (Human papilloma virus, hepatitis etc.)	95(61.7)
Exposure to radiations (x-rays, gamma rays etc.)	107(69.5)
Exposure to chemicals (asbestos, arsenic, aflatoxin)	110(71.4)
Exposure to pesticides (malathion, glyphosate etc.)	81(52.6)
Mental stress	25(16.2)

**Multiple response*

Table 3. Respondent's awareness on warning signs of cancer. (n=154)

Variables*	Frequency (%)
An unexplained swelling or lump	124(80.5)
An unexplained bleeding	108(70.1)
A persistent change in bowel and bladder habit	69(44.8)
A change in appearance of a mole	92(59.7)
A sore that does not heal	106(68.8)
An unexplained weight loss	113(73.4)
Persistent difficulty swallowing	93(60.4)

**Multiple response*

knowledge on an unexplained swelling or lump followed by 73.4% unexplained weight loss, 70.1% unexplained bleeding, 68.8% sore that does not heal, 60.4% persistent difficulty swallowing and 59.7% change in appearance of a mole and 44.8% persistent change in bowel and bladder habit respectively. Concerning preventive measures of cancer, most of the respondents (97.4%) were aware on avoiding all types of tobacco consumption followed by having regular check- up (96.8%), maintaining good personal hygiene (95.5%), avoiding smoked and fatty foods (90.3%), avoiding alcohol (88.3%), eating healthy foods ((87.7%)), protecting from chemicals and fertilizers (84.4%), and doing regular exercises ((83.8%) respectively. Whereas, 68.8% knew early treatment of gastritis and the least (57.8%) known preventive measure was getting relief from tensions and stresses (Table 4). Among 154 respondents, majority (85.1%)

Table 4. Respondent's awareness on preventive measures of cancer. (n=154)

Variables*	Correct Response
	Frequency (%)
Avoiding all types of tobacco consumption	150(97.4)
Avoiding alcohol	136(88.3)
Avoiding smoked and fatty foods	139(90.3)
Eating healthy foods (high fibrous diets, fruits and green vegetables)	87.7
Having regular check ups	149(96.8)
Maintaining good personal hygiene	147(95.5)
Maintaining body weight	127(82.5)
Doing regular exercises	129(83.8)
Protection from sunlight	109(70.8)
Early treatment of gastritis	106(68.8)
Early vaccination against Human Papilloma Virus infection	109(70.8)
Getting relief from tensions and stresses	89(57.8)
Protecting from chemicals and fertilizers	130(84.4)

**Multiple response*

and (81.8%) of respondents are known about cervical and breast cancer screening program in Nepal respectively. Whereas, only 33.1% of the respondents had knowledge about meaning of screening of cancer. Regarding the screening method of breast cancer, minority (37%) reported SBE and more than half (56.5%) reported clinical breast examination. Likewise, more than three-fifth (60.4%) responded VIA and 48.7% knew PAP smear as the common screening methods of cervical cancer. Regarding treatment methods, more than three-fifth (61%) of the students reported surgery followed by chemotherapy (51.9%) and radiation therapy (44.8%) respectively (Table 5). In relation to level of awareness on cancer. Result

Table 5. Respondent's awareness on screening of cancer and treatment of cancer. (n=154)

Variables	Correct Response
	Frequency (%)
Screening of Cancer	
Screening is a test done for the detection of cancer before symptoms appear	51(33.1)
There is a cervical cancer screening program in Nepal	126(81.8)
There is a breast cancer screening program in Nepal	131(85.1)
Self -Breast Examination (SBE) is a common screening method for prevention of breast cancer	57(37.0)
Clinical Breast Examination (CBE) is a common screening method for prevention of breast cancer	87(56.5)
Mammography is a common screening method for prevention of breast cancer	72(46.8)
VIA is s common screening method for prevention of cervical cancer	93(46.8)
Pap smear is a common screening method for prevention of cervical cancer	75(48.7)
Treatment of Cancer *	
Surgery	94(61.0)
Chemotherapy	80(51.9)
Radiation therapy	69(44.8)

**Multiple response*

showed that more than three-fifth (63%) had moderate level of awareness whereas the least (8.4%) had high level of awareness (Table 6).

Table 6. Level of Awareness of Cancer (n=154)

Level of Awareness	Frequency (%)
Low <60%)	44(28.6)
Moderate (60-79%)	97(63.0)
High (80-100%)	13(8.4)

DISCUSSION

In relation to awareness on basic knowledge of cancer, majority (95.5%) of the respondents correctly answered on the meaning of cancer. Most of the respondents (94.8%) knew cancer as a non-communicable disease and 94.2% knew cancer can be cured if detected earlier. Likewise, majority (83.8%) answered correctly that cancer as one of the major causes of death globally, 68.2% said anyone can be affected by cancer and 39% knew that cancer is a hereditary disease. These findings of the study are supported by a survey conducted in United States in 2020 which showed that overall participants had a basic understanding of cancer knowledge where 82% reported that cancer is not just one disease, and the majority 89% identified that cancer cells grow without control or order. [12] Another descriptive cross-sectional study on knowledge of cancer risk factors, symptom and barriers to seeking medical help among adolescents in Oman in 2018 showed that 40.3% did not know if cancer was a prevalent condition in Oman, however majority 84.4% said cancer can be cured if detected earlier. [13] Regarding awareness on non-modifiable risk factors of cancer, more than half (51.3%) said family history followed by genetic (44.8%) and older age (18.2%) respectively. Similarly, regarding modifiable risk factors, most of them (96.1%) reported smoking followed by tobacco (89.6%), drinking alcohol (89%), second hand smoking (80.5%), chemicals (71.4%), infection (61.7%), radiations (69.5%), pesticides (52.6%), equal percentage 51.9% for sun exposure and high intake of fatty foods, red meats and processed foods, low level of physical activity (38.3%), equal percentage (33.8%) for overweight and low intake of fruit and vegetables and mental stress (16.2%) respectively. These findings of the study are closely supported by a study carried out in England [14] in 2011 which revealed that 88% adolescents agreed smoking as a cancer risk factor followed by second-hand smoke 60% and being overweight 58%, sun exposure 52%, drinking alcohol 47%, HPV infection 31%, low levels of physical activity 26%, eating red or processed meat 15%, and low fruit and vegetable consumption7%. Likewise, 41% agreed that having a close relative and 22% said that being over 70 years of age may increase the chance of developing cancer. Concerning warning signs of cancer, majority (80.5%) of the respondents had knowledge on an unexplained swelling or lump as the warning signs of cancer whereas the least 44.8% of knowledge was found on a persistent change in bowel and bladder habit. Similarly, more than half 73.4% of respondents responded an unexplained weight loss followed by 70.1%an unexplained bleeding, 68.8% on a sore that does not heal, 60.4% persistent difficulty swallowing and 59.7% a change in appearance of a mole as the warning signs of cancer respectively. These findings of the study are closely related to a study conducted in Scotland [15] which showed unexplained lump or swelling (78.9%) followed by change in bowel/bladder habits (55.2%) and change in mole appearance (45.9%). Similarly, less than half (44.9%) recognized unexplained bleeding followed by persistent unexplained pain44%, unexplained weight loss42.4%, persistent cough or hoarseness (34%), persistent difficulty in swallowing (34%) and the least recognized was a sore that does not heal (26.2%

Regarding awareness on preventive measures of cancer, majority (97.4%) reported avoiding all types of tobacco consumption followed by having regular check-ups (96.8%), maintaining good personal hygiene(95.5%) and avoiding smoked and fatty foods (90.3%), avoiding alcohol (88.3%) eating healthy foods (87.7%), protecting from chemicals and fertilizers(84.4%), doing regular exercise(83.8%) and early treatment of gastritis (68.8%)respectively, Whereas, the least (57.8%) known preventive measures of cancer was getting relief from tension and stresses. These findings of the study are closely consistent with the study conducted in Malaysia in 2011among 261 adolescent students which demonstrated that having regular check-ups 90.7%, reducing smoking and alcohol consumption 86.9%, a healthy diet 88.9%, regular exercise 83.6% and reducing stress 52.3%.[16] Majority of the respondents (85.1%) and 81.8% were aware on the availability of breast cancer screening and cervical cancer

screening program in Nepal. Whereas only 33.1% of the respondents reported correctly about meaning of screening of cancer. More than half (56.5%) were known about clinical breast examination followed by mammography (46.8%) and breast self-examination (37%). Likewise, more than three fifth (60.4%) reported VIA and 48.7% knew about PAP smear. These findings of the study are contrary to the study conducted in Oman [17] in 2018 which showed that majority (72.6%) were unknown about cervical cancer screening program in Oman and 71.7% bowel cancer screening and half (50%) breast cancer screening. In relation to awareness on treatment of cancer, 61% of the students reported surgery followed by chemotherapy 51.9% and the least radiation therapy (44.8%). This finding of the study is supported by a study conducted in Malaysia in 2011 which revealed 61.5% chemotherapy, 51.9%, surgery and 37.7%. radiotherapy.[16] In this study, 63% had moderate level of awareness, 28.6% had low level of awareness and the least (8.4%) had high level of awareness on cancer. of the study is contrary to the study conducted in Australia in 2023 in which respondents showed poor awareness of cancer risk factors and cancer warning signs.[18] Likewise, a study conducted in 2018 among 100 adults of Bardiya, Nepal revealed that more than 68% of adults had poor awareness regarding cancer which is not consistent with the current study.[19]

CONCLUSIONS

Based on the findings of this study, it can be concluded that though 63% of the adolescent students had moderate level of awareness on cancer, there is still awareness gap in terms of risk factors, meaning of screening, warning signs. Concerned authority should be focused to develop and implement necessary measures to increase the awareness of cancer among the adolescent students. Also, there is need for appropriate modifications in course curriculum that are essential to raise cancer awareness, promote healthy lifestyles of adolescence and avoid preventable cancer.

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