ORIGINAL RESEARCH

Cancer Awareness in Nursing and paramedical staff at a tertiary care center in Central India

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ABSTRACT

Background: Cancer is a prevalent disease in both developing and developed countries. Cancer awareness is important for the prevention and early diagnosis and treatment of cancer. Nursing and paramedical staff are the frontline healthcare professionals. Cancer awareness among them is important to disseminate knowledge and take the right measures for the prevention, early diagnosis, and treatment of cancer patients. **Aims:** This study aims to assess the level of cancer awareness in hospital nurses and paramedical staff about the signs and symptoms of cancer, the risk factors of cancer, and the national cancer screening programs. **Materials and Methods:** A cross-sectional survey was conducted among nurses and paramedical staff in a tertiary care hospital in central India using a pre-tested self-administered structured questionnaire. A total of 200 nurses and paramedical staff participated in the study voluntarily. Data was collected and analyzed. **Results:** Our study showed that an average of only 51.2% (n = 102.4) of the subjects were aware of the signs and symptoms of cancer, only 51.45% (n = 102.24) were aware of the risk factors of cancer, and only 59% (n = 118) were aware of the cancer screening programs. **Conclusions:** Our study showed that there is a significant lack of awareness amongst nurses and paramedical staff in India. Ithighlights the need to educate and train them in various areas of cancer so that they can provide an additional layer of intervention to improve the prevention, early identification, and prompt treatment of cancer, and to improve global cancer outcomes.

Key message: Through this study, we want to show the lack of awareness of cancer in nursing and paramedical staff, and the need to educate and train them to improve their role in all steps of cancer management.

Keywords: awareness, cancer, nursing, paramedical, risk factors, signs and symptoms.

INTRODUCTION

Cancer is a major health issue worldwide. In India, the number of new cases and deaths due to cancer were 1.3 million and 0.85 million, respectively, in 2020[1]. The prognosis of cancer is poorer in developing countries compared to developed countries due to a lack of awareness, late diagnosis and treatment, and inequitable access to healthcare services[2]. Nursing and paramedical staff are frontlinehealthcare professionals who are important source of spreading awareness of cancer and in the prevention and early identification of cancer. Through this study, we aimed to assess the awareness of cancer in nursingand paramedical staff.

MATERIALS AND METHODS

Study Design: A cross-sectional survey was conducted amongst nurses and paramedical staff at a tertiary care institute in central India, between April 2023 and May 2023.

Study Subjects: There were 200 study subjects including 128 nurses and 72 paramedical staff working at the hospital who agreed to participate in the study voluntarily. The study procedure was explained in detail. They were assured of the confidentiality of their responses.

Study Instrument: A pretested self-administered structured questionnaire was designed, and administered to the study participants. The

questionnaire included questions to assess the awareness and knowledge of cancer in the participants. The questions were framed in both English and Hindi language to make them easy to understand. The questions had three types of answers, including, "yes", "no", and "don't know". There were 15 questions in part 1 to assess for various signs and symptoms of cancer; 25 questions in part 2 to assess for various risk factors associated with cancer; and 2 questions in part 3 to assess for various screening programs in the country.

Study Method: The procedure was explained to all the participants. Informed consent was taken. The questionnaire form was distributed in the form of a survey form to all the nurses' and paramedical staff who agreed to participate in the program and it was collected from them after 15 days. The collected data were analyzed in detail.

RESULTS

A total of 200 subjects participated in the study, including 128 (64%) nurses and 72 (36%) paramedical staff. The mean age of the subjects was
31.48 years. There were more females (n
= 132, 66%) than males (n = 68, 34%). The demographic characteristics of the subjects are summarized in Table 1. The assessment of the questionnaire is described in detail below.

Awareness of signs and symptoms of cancer: The first part of the questionnaire consisted of questions about the signs and symptoms of cancer. Only the most common signs and symptoms of cancer were included. There were
11 different signs and symptoms of various types of cancer and four negative questions. The most commonly recognized signs and/or symptoms of cancer (Graph 1) were unexplained lump or swelling (n = 140, 70%), unexplained bleeding (n = 120, 60%), persistent difficulty in swallowing (n = 108, 54%), persistent change in bowel/bladder habits (n = 104, 52%),persistent unexplained pain (n = 100, 50%), and a sore that does not heal (n = 100, 50%). The least commonly recognized signs and/or symptoms of cancer were persistent cough or hoarseness of voice (n = 76, 38%), and headache, seizures, and weakness in limbs (n = 72, 36%). The most commonly recognized sign and/or symptom not associated with cancer was a lump or swelling for a long time with no change in appearance (n
= 124, 62%). Only a few subjects (n = 88, 44%) were aware that unexplained hair fall is not a sign of cancer. The details are shown in Table 2**.**

Awareness of various risk factors for cancer: The second part of the questionnaire included questions about various risk factors associated with cancer. A total of 25 risk factors were included, out of which 18 were associated with cancer, while 7 were negative questions.The most commonly recognized risk factors associated with cancer (Graph 2) were tobacco chewing (n = 164, 82%), smoking bidi or cigarette (n = 160, 80%), radiation exposure (n = 160, 80%), nuclear power (n = 144, 72%), industrial pollution (n = 136, 68%), alcohol consumption
(n = 132, 66%). The least commonly recognized risk factors were insufficient physical activity (n = 60, 30%),parasitic worms (n =60, 30%), and diets high in fat (n = 56, 28%).The most commonly recognized risk factors not associated with cancer were diets high in fruits and vegetables (n = 168, 84%), diets high in fiber (n = 136, 68%), and coffee (n = 84, 42%). The least commonly recognized risk factors not associated with cancer were deodorants and shampoos (n = 60, 30%), and mobile phones (n = 48, 24%). The details are described in Table3.

Awareness about the cancer screening programs in the country: The third part of the questionnaire included questions about the awareness of screening programs operating in the country. A total of 124 (62%) subjects were aware of the cervical cancer screening program. While 112 (56%) of the subjects were aware of the breast cancer screening program. The details are shown inTable 4.

Mean average scores: The mean average score achieved by the subjects was 7.58 (50.53%) for awareness of signs and symptoms of cancer; 12.86 (51.45%) for risk factors of cancer; 1.22 (61%) for cancer screening programs; and 21. 44 (51.04%) overall, as shown in Table 5. The mean average number of subjects who gave a correct response was 102.4 (51.2%) about signs and symptoms of cancer; 102.24 (51.12%) for awareness of risk factors of cancer; 118 (59%) for cancer screening programs; and
107.54 (53.77%) overall, as shown in Table 6. The mean average number score for various types of risk factors was highest for addictive substance abuse (n = 152, 76%), followed by exposure to various radiation and industrial pollutants (n = 138.65, 69.32%) and dietary factors (n = 110, 55%), as shown in Table 6.

Common myths on risk factors of cancer: The most commonly recognized myths about risk factors of cancer were coffee (n = 84, 42%), food additives (n = 72, 36%), and artificial sweeteners (n = 64, 32%), as shown in Table 7

Table 1: Demographic characteristics of subjects

Demographic characteristics	
Total number of subjects	200
Nursing staff	128 (64%)
Paramedical staff	72 (36%)
Age group range (years)	21-46
Number of subjects in different age groups	
21-30 years	92 (46%)
31-40 years	80 (40%)
41-50 years	28 (14%)
Mean age (years)	31.48
Number of Males	68 (34%)
Number of Females	132 (66%)

Table 2: Awareness of the signs and symptoms of cancer amongst nursing and paramedicalstaff

Associationwith cancer		Answers by participants (*n) (*n)			Assessment of answers	
		Yes	No	Don't know	Right Answer	Wrong/No Answer
1. Unexplained lump orsw	YesYes					
2. Persistent unexplained		140 (70%)	60 (30%)	0	140 (70%)	60 (30%)
3. Unexplained bleeding	Yes					
4. Unexplained hair fall	No	100 (50%)	88 (44%)	12 (6%)	100 (50%)	100 (50%)
5. Persistent cough/hoars	Yes					
ofvoice		120 (60%)	76 (38%)	4 (2%)	120 (60%)	80 (40%)
6. Presence of a mole inth		84 (42%)	88 (44%)	28 (14%)	88 (44%)	112 (56%)
body	No YesYesNo Yes	76 (38%)	108 (54%)	16 (8%)	76 (38%)	124 (62%)
7. Persistent change in						
bowel/bladder habits	YesYes	64 (32%)	120 (60%)	16 (8%)	120 (60%)	80 (40%)
8. Persistent difficulty in						
swallowing	Yes	104 (52%)	84 (42%)	12 (6%)	104 (52%)	96 (48%)
9. Cancer always causesp		108 (54%)	76 (38%)	16 (8%)	108 (54%)	92 (46%)
10. Change in the appear						
of a mole		68 (34%)	108 (54%)	24 (12%)	108 (54%)	92 (46%)
11. A sore that does noth		92 (46%)	92 (46%)	16 (8%)	92 (46%)	108 (54%)
12. Lump or swelling sinc						
long time with nochanges i		100 (50%)	88 (44%)	12 (6%)	100 (50%)	100 (50%)
appearance						
13. Unexplained weightlo		64 (32%)	124 (62%)	12 (6%)	124 (62%)	76 (38%)
14. Persistent unexplaine						
generalizedweakness		96 (48%)	88 (44%)	16 (8%)	96 (48%)	104 (52%)
15. Headache, seizures,or						
weakness in limbs		88 (44%)	96 (48%)	16 (8%)	88 (44%)	112 (56%)
		72 (36%)	104 (52%)	24 (12%)	72 (36%)	128 (64%)

*n represents the number of subjects who answered the questions in a given category,percentage is shown in the brackets

Table 3: Awareness of the risk factors of cancer amongst nursing and paramedical staff

Possible Risk Factors	Association of risk factors with cancer	Answers by participants (*n)			Assessment of answers (*n)	
		Yes	No	Don't know	Right answer	Wrong/No Answer
1. Smoking bidi/ cigarettes	Yes	160 (80%)	32 (16%)	8 (4%)	160 (80%)	40 (20%)
2. Tobacco chewing	Yes	164 (82%)	38 (18%)	0	164 (82%)	38 (18%)
3. Drinking alcohol	Yes	132 (66%)	48 (24%)	20 (10%)	132 (66%)	68 (34%)
4. Obesity	Yes	68 (34%)	92 (46%)	40 (20%)	68 (34%)	134 (54%)
5. Insufficient physical activity	Yes	60 (30%)	104 (52%)	36 (18%)	60 (30%)	140 (70%)
6. Diets high in fat	Yes	56 (28%)	96 (48%)	48 (24%)	56 (28%)	144 (72%)
7. Diets high in fruits/vegetables	No	12 (6%)	168 (84%)	20 (10%)	168 (84%)	32 (16%)
8. Diets high in red/processed meat	Yes	80 (40%)	92 (46%)	28 (14%)	80 (40%)	120 (60%)
9. Diets high in fiber	No	36 (18%)	136 (68%)	28 (14%)	136 (68%)	64 (32%)
10. Betel/areca nut	Yes	112 (56%)	52 (26%)	36 (18%)	112 (56%)	88 (44%)
11. Radiation exposure	Yes	160 (80%)	36 (18%)	4 (2%)	160 (80%)	40 (20%)
12. Excessive exposure to sunlight	Yes	120 (60%)	64 (32%)	16 (8%)	120 (60%)	80 (40%)
13. Mobile phones/cell phones use	No	128 (64%)	48 (24%)	24 (12%)	48 (24%)	152 (76%)
14. Industrial pollution	Yes	136 (68%)	40 (20%)	24 (12%)	136 (68%)	64 (32%)
15. Deodorants and shampoos shampoos	No	108 (54%)	60 (30%)	32 (16%)	60 (30%)	140 (70%)
16. Nuclear power	Yes	144 (72%)	44 (22%)	12 (6%)	144 (72%)	56 (28%)
17. Inherited predisposition/cancer genes	Yes	132 (66%)	56 (28%)	12 (6%)	132 (66%)	68 (34%)
18. Food additives	No	100 (50%)	72 (36%)	28 (14%)	72 (36%)	128 (64 %)
19. Artificial sweeteners	No	104 (52%)	64 (32%)	32 (16%)	64 (32%)	136 (68%)
20. Viruses and bacteria	Yes	96 (48%)	80 (40%)	24 (12%)	96 (48%)	104 (52%)
21. Infection with HPV	Yes	88 (44%)	72 (36%)	40 (20%)	88 (44%)	112 (56%)
22. Infection with HIV AIDS	Yes	88 (44%)	80 (40%)	32 (16%)	88 (44%)	112 (56%)
23. Old age	Yes	68 (34%)	104 (52%)	28 (14%)	68 (34%)	132 (66%)
24. Coffee	No	56 (28%)	84 (42%)	60 (30%)	84 (42%)	116 (58%)
25. Parasitic worms	Yes	60 (30%)	104 (52%)	36 (18%)	60 (30%)	140 (70%)

*n represents the number of subjects who answered the questions in a given category,percentage is shown in the brackets

Table 4: Awareness about the existence of various screening programs for cancer

Screening programs	Screening programs existing in the country	Answers by participants (*n) (*n)			Assessment of answers	
		Yes	No	Don't know	Right answer	Wrong/No Answer
1. Cervical cancer screening program	Yes	124 (62%)	48 (24%)	28 (14%)	124 (62%)	76 (38%)
2. Breast cancer screening program	Yes	112 (56%)	56 (28%)	32 (16%)	112 (56%)	88 (44%)

*n represents the number of subjects who answered the questions in the given category,percentage is shown in the brackets

Table 5: Highest, lowest and mean average scores obtained by the subjects

Parameters Assessed	Highest score	Lowest score	Mean average score
Signs and symptoms of cancer (score out of 15)	13 (86.6%)	3 (20%)	7.58 (50.53%)
Risk factors of cancer (score out of 25)	20 (80%)	3 (12%)	12.86 (51.45%)
Screening programs (score out of 2)	2 (100%)	0	1.22 (61%)
Overall score (score out of 42)	34 (80.9%)	6 (14.2%)	21.44 ((51.04%)

Table 6: Mean average number of the subjects who answered correctly in various categories

Parameters Assessed	Mean average number
Signs and symptoms of cancer	102.4 (51.2%)
Risk factors of cancer	102.24 (51.12%)
Screening programs for cancer	118 (59%)
Overall	107.54 (53.77%)
Various types of risk factors	
1. Addictive substance abuse (Smoking, tobacco chewing, alcohol use)	152 (76%)
2. Exposure to various types of radiation (Direct radiation, sun-rays, nuclear power) and **industrial pollution**	138.65 (69.32%)
3. Dietary factors (Diets high in fat; diets rich in red/processed meat; diets rich in fruits/vegetables; diets rich in fiber)	110 (55%)
4. Individual factors (Inherited predisposition/cancer genes; old age)	100 (50%)
5. Infectious agents (Viruses and bacteria; HPV; HIV AIDS; Parasitic worms)	83 (41.2%)
6. Lifestyle factors (Obesity/insufficient physical activity)	64 (32%)

Table 7: Awareness about common myths on risk factors of cancer

Common myths on risk factors of cancer	Correct Response *n)
1. Mobile phones/cell phones use	48 (24%)
2. Deodorants and shampoos	60 (30%)
3. Food additives	72 (36%)
4. Artificial sweeteners	64 (32%)
5. Coffee	84 (42%)

*n represents the number of subjects who answered the questions in a given category,percentage is shown in the brackets

LEGENDS:

GRAPHS:

Graph 1: Graph showing the percentage of subjects recognizing the ten most common signs and symptoms of cancer. The horizontal (x) axis shows the percentage of subjects in each category shown in the vertical (y) axis

Graph 2: Graph showing the percentage of subjects recognizing the ten most common risk factors of cancer. The horizontal (x) axis shows the percentage of subjects in each category shown in the vertical (y) axis

DISCUSSION

Cancer is a life-threatening disease. It is prevalent in developing as well as developed countries all over the world. The mortality due to cancer is higher in developing countries as compared to developed countries due to factors, such as lack of awareness, illiteracy, poor socio- economic status, neglect, especially in female patients, myths and superstitions, and poor access to healthcare facilities in remote locations. These factors lead to late diagnosis when the disease is at an advanced stage (stage 3 or 4), and the chances of a complete cure are small to none, leading to higher rates of mortality. In a past study, data from four major centers in India showed that the majority of individuals with cancer seek healthcare for the first time at late or advanced stages· Cancer is a preventable disease and mortality due to cancer can be

reduced by early detection and screening. Hence, there is a dire need to increase awareness of cancer in the public all over the country. Nursing and paramedical staff are frontline healthcare professionals who often come first in contact with the patients. They play a key role in protecting the health and preventing illnesses and also in bringing healthy lifestyle behavior modifications to individuals, families, and society, as they are in constant communication with patients.[4, 5] They play a pivotal role in disseminating knowledge and awareness of cancer, as well as in recognizing signs and symptoms of cancer in the patients, leading to early diagnosis and treatment. Hence, it's important that nursing and paramedical staff should have knowledge and awareness of cancer. But this is so often not the case. Many studies in the past have shown the significance of awareness of cancer amongst nursing and paramedical staff. The significance of the role of nurses in cancer detection has been reported in a past study by Frank in 1986[6]. A low level of awareness among nurses on cancer pain management was reported in a study by Shahriary et al.[7]. A study by Sankheshwari et al.[8]reported healthcare personnel as a major source of information for cervical cancer. According to some studies, nursing students had insufficient knowledge about the symptoms and prevention of breast cancer,[9] had a low level of awareness about symptoms of cervical cancer and skin cancer,[10, 11] and also had insufficient information about various cancer screening programs.[12] According to some past studies, individuals with a family history of cancer had a higher level of awareness about the warning signs of cancer.[13] Also, individuals with a family history of cancer were more aware of the risk factors of cancer.[14] Another study reported that a family history of cancer increases awareness about cancer, and awareness is important for a change in behavior.[15] Our study showed that an average of 51.2% (n = 102.4) of the nursing and paramedical staff were aware of the signs and symptoms of cancer, 51.12% (n= 102.2) were aware of the risk factors of cancer, and 59% (n = 118) were aware of cancer screening programs. A study conducted in Delhi, India by Rao et al.[16] showed that 75% of nursing staff were aware of warning symptoms of cancer and the total average score of the study subjects on cancer awareness was < 75%. Our results show a lesser awareness compared to this study. This could be due to regional differences. The most commonly recognized sign and/or symptom of cancer by the nursing and paramedical staff was an unexplained lump or swelling (70%, n = 140) and the least known sign was a headache, seizures, or weakness of limbs (36%, n = 72). According to a study by Yakar et al.,[17] the most known warning sign of cancer was also a thickening or lump in the breast or elsewhere (92.6%), which is similar to our study, whereas the least known sign was indigestion or difficulty in swallowing (47.0%). A UK study by Connor et al.[15] reported that an unexplained lump or swelling was the most commonly recognized sign by all the samples (94.7%), which is consistent with our results. The most commonly recognized risk factor of cancer in our study was tobacco chewing (82%, n = 164) and the least known risk factor was high-fat diets (28%, n = 56). The most commonly recognized group of risk factors was addictive substance abuse (76%, n = 152), including tobacco chewing, smoking, and alcohol use. A past study showed that only 23.4% were aware of human papilloma virus (HPV) infection as a risk factor.[18] While our results showed that 44%(n = 88) of subjects knew about HPV as a risk factor. The study by Rao et al.[16] showed that obesity as a risk factor for cancer was recognized by 47.1% of subjects, while in our study it was recognized by only 34% (n = 68) of subjects, which is even lower. Data shows that one- third or more cancer diagnoses can be avoided by reducing risk factors, such as tobacco use, poor diet, low levels of physical activity, alcohol consumption, workplace, and environmental carcinogens, exposure to radiation, immunizing against hepatitis B and C viruses and the HPV, and preventing infection with Helicobacter pylori and schistosomiasis.[19] The mean average overall score achieved by nursing and paramedical staff in our study was 51.04%, which is significantly low and it shows that there is an urgent need to provide proper training to the staff focusing on knowledge and awareness of various aspects of cancer. To improve the outcomes of cancer, prevention should be combined with screening and early detection measures. Early detection of cancer decreases the overall costs of cancer treatment as well.[20, 21] With additional training, nurses can be trained to perform various interventions that can help with the screening,[22,23] early detections, and even treatment of precancerous lesions.[24] Nurses must be properly educated, trained, and positioned to practice to their highest potential to improve patient outcomes at all points of care and in all locations.[25] A Cochrane review of 16 studies about tobacco cessation was done which included various high-income countries (HICs) and showed that the chances of quitting smoking are increased when nursing-specific interventions are utilized.[26] Emerging research has shown that nurses are pivotal in providing effective intervention for smoking cessation not only in HICs but in low and middle-income countries (LMICs) as well.[27] Unfortunately, there is a serious lack of healthcare professionals who provide care in all steps of cancer, from prevention and detection to treatment, end-of-life care, and survivorship, in LMICs. The current mortality statistic for patients with cancer in these countries is 72% to 75%, which is devastating.[28] The 2017 World Health Assembly resolution on cancer prevention and control proposed an integrated approach to cancer control from the perspective of a public policy. The guiding principle of these WHO efforts is that health is a basic human right, and to respect that right, a universal health coverage system is needed to provide health services that include everyone.[29] There are over 20 million nurses and

midwives worldwide, and it makes them the largest group of healthcare professionals who are well-placed to reduce the burden of cancer. Achieving the goal of universal health coverage to reduce the burden of cancer therefore urgently requires that nursing services are not only strengthened through proper education and training but that they are optimized and extended to the public everywhere.[30]

CONCLUSION

Our study has shown that there is a significant lack of awareness about cancer amongst the nurses and paramedical staff in India. There is a need to educate and train nurses and paramedical staff regarding the signs and symptoms of cancer, which can help in early identification and hence early treatment of cancer. Also, there is a need to educate them regarding the risk factors of cancer, which can help in the prevention of cancer and in reducing the overall incidence of cancer. And finally to educate them about various screening programs for cancer, which can help in the early identification of precancerous or cancerouslesions, which can lead to prevention or early treatment leading to an overall reduction in the morbidity and mortality due to cancer and the global cancer burden.

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