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ORIGINAL RESEARCH ARTICLE

Assessing Cancer Awareness and Knowledge Among Healthcare Professionals in a Tertiary Care Teaching Hospital, Bareilly

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ABSTRACT

Introduction: Cancer has long been one of the most feared diseases, widely regarded to be synonymous with death. Lack of awareness fuels many myths and misconceptions related to cancer, which perpetuates the stigma associated with it. Moreover, a considerable number of different cancer types may be preventable by using primary intervention techniques, such as health education, cancer awareness, behaviors, and lifestyle modifications. Therefore, this study aimed to assess the current levels of awareness and perceptions about cancer among healthcare professionals with various socio-economic statuses and diverse backgrounds in the tertiary care teaching hospital in Bareilly, India.

Methods and Material: We conducted a population-based interview survey of healthcare professionals aged 18 years or older using the awareness and beliefs about cancer questionnaire in a tertiary care teaching hospital in Bareilly, India. A total of 72 healthcare professionals were interviewed using a semi-targeted sampling method. A questionnaire was designed by compiling two major international tools in literature, i.e., Cancer Awareness Measure (CAM) and a survey on cancer awareness and attitudes (by NCCP). For the data analysis, questions were coded and entered. Quantitative variables were summarized using measures of central tendency as mean, while categorical variables were depicted using frequencies and percentages.

Result: The study included 37 males and 35 females, with the majority (59.7%, n = 43) falling within the 18 to 33 years age group and being relatively well-educated, as 43% (n = 31) were graduates. Despite more than half of the participants (70.6%) being aware of the most common cancer in females, their knowledge about screening programs for major female cancers like breast and cervical cancer was limited, with only 43.2 and 41.6% aware of them, respectively. Participants recognized an average of 5.2 out of 13 early cancer warning signs and cancer risk factors. While 62.4% of participants believed that cancer is not a death sentence, 43% still did not want to know if they had cancer.

Conclusion: The findings highlight a relatively young and educated population with a moderate level of awareness about the most common cancer. However, significant gaps remain in knowledge about cancer screening programs and early warning signs. Misconceptions—such as the belief that cancer is a death sentence—and reluctance to know one's diagnosis further underscore the need for targeted health education. Strengthening awareness campaigns and promoting routine screening could play a crucial role in enhancing early detection and improved outcomes.

Keyword: Cancer awareness, Healthcare professionals.

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INTRODUCTION

According to the Global Cancer Observatory (GLOBOCAN), India ranks third globally in terms of new cancer cases, following China and the United States. Projections indicate that the number of cancer cases in India is expected to reach approximately 2.08 million by 2040—an increase of 57.5% from the figures reported in 2020.[1] A key contributing factor to delayed diagnosis and treatment in India is the general lack of awareness, particularly regarding common cancer symptoms and risk factors. Many of these risks—such as tobacco and alcohol use, poor diet, obesity, physical inactivity, infections, exposure to ultraviolet radiation, and occupational or environmental hazards—are largely preventable.[2-4]

Enhancing awareness, attitudes, and preventive behaviors related to cancer can significantly improve early detection and survival rates.[5,6] Understanding the public's knowledge levels is crucial for designing and evaluating cancer control strategies.[7] However, much of the global data on cancer awareness comes from western countries, and similar data from India remain limited.

Cultural beliefs in India have a notable impact on how people perceive cancer and its associated risks. These cultural norms influence emotional and social responses to the disease, often causing delays in seeking medical attention. Such beliefs can affect various stages of the disease process—from prevention and screening to treatment adherence and psychological support.[8]

Numerous studies across different regions of India highlight consistently low awareness of common cancers, especially among populations with lower education levels and socio-economic status.[9-12] Additionally, myths and misconceptions surrounding cancer are widespread, often rooted in misinformation or lack of access to reliable health education.[13] This stigma negatively affects not just individual attitudes but also broader public health efforts related to prevention, screening, and care.

Because many cancer risk factors are preventable, fostering healthy habits—particularly during early adulthood—can help reduce long-term health system burdens.[13] In recent years, government and non-governmental organizations in India have launched awareness campaigns to address this issue. The National Cancer Control Program, for instance, has used mass media to educate the public and promote screening activities.[14] However, systematic evaluations of these interventions are still lacking.

Raising awareness and dispelling myths can play a crucial role in enabling early diagnosis and timely treatment, ultimately leading to improved outcomes. In this context, the current study aims to contribute to the existing literature by evaluating cancer awareness and beliefs among healthcare professionals in a tertiary care setting through a structured questionnaire.

MATERIAL AND METHODS

This populational-based interview study was conducted over three months at a tertiary care teaching hospital in Bareilly. A total of 72 healthcare professional workers were selected through a semi-targeted sampling method. A structured questionnaire was administered to assess their knowledge and awareness about cancer. The questions aimed to evaluate the respondents' understanding of cancer severity, risk factors, warning signs, and beliefs in common myths and known statements related to cancer. The study design followed a cross-sectional observational approach. The study population included all healthcare professional workers in the hospital who met the inclusion criteria. Complete enumeration was used, meaning all eligible participants who fulfilled the inclusion and exclusion criteria were included in the study. The inclusion criteria required participants to be healthcare professionals aged 18 years or older, capable of understanding study-related information, and willing to provide informed consent. Exclusion criteria included those unwilling to give consent or those already diagnosed with cancer.

Study Tool

A questionnaire was designed by compiling two major international tools in literature, i.e., Cancer Awareness Measure (CAM) and a survey on cancer awareness and attitudes (by NCCP). The questionnaire covered socio-demographic details, general awareness about cancer, knowledge of common cancers, awareness of Indian cancer screening programs, cancer-related myths, risk factors, and warning signs. This had both open and close-ended questions related to various aspects of cancer. Subjects were enrolled after obtaining verbal consent from them. To encourage responses from them, the subjects were interviewed after establishing rapport. The questionnaire was translated into Hindi and then back-translated to English to check for accuracy. Either the English or Hindi version of the questionnaire was used, depending on the participants' understanding.

Data Analysis

The data analysis involved coding and analyzing questions using descriptive statistics. Quantitative data were expressed as means, while categorical variables were presented as frequencies and percentages.

RESULTS

Socio-demographic Characteristics

Table 1 provides the socio-demographic details of the 72 participants enrolled in the study. Among them, 37 were male (51.3%) and 35 were female (48.6%), indicating a balanced gender representation. More than half of the participants were married (59.7%). The age distribution was as follows: 43 participants (59.7%) were in the 18 to 30 age group, 21 participants (29.1%) were in the 31 to 40 age group, and 8 participants (11.1%) were in the 41 to 50 age group.

In terms of educational background, the majority were graduates (43%, n = 31), followed by higher secondary education (19.4%, n = 14), primary education (15.2%, n = 11), secondary education (9.7%, n = 7), and no formal education (8.3%, n = 6). Additionally, 3 participants (4.1%) held postgraduate qualifications.

Furthermore, 18 respondents (25%) reported having had a close friend or family member diagnosed with cancer, while 46 (63.8%) said they had not. Participants with prior personal exposure to cancer through close contact demonstrated significantly better awareness and answered more questions correctly compared to those without such experience. Table 2 provides the basic knowledge about cancer in participants. Over two-thirds (70.8%) of the respondents were aware of the most common cancers in females, and nearly half (48.6%) were aware of the most common cancers in males. Regarding cancer screening programs, a significant gap in knowledge was observed. While 43% of participants knew about the breast cancer screening

program, awareness about cervical cancer (41.6%) and bowel cancer screening programs (5.2%) was notably lower. Table 3 shows that the participants' beliefs about cancer were mixed. A majority (73.5%) agreed that many people with cancer can continue with normal activities. Similarly, 69.3% agree that cancer can often be cured, and 77.7% recognize that early medical attention after noticing symptoms can increase survival chances. These responses reflect a positive understanding of cancer treatment outcomes.

In terms of prevention, 62.4% of respondents believe there are actions individuals can take to reduce their risk of developing cancer, while only 13.8% agree that nothing can be done to reduce this risk, indicating a relatively high awareness of cancer prevention strategies.

However, some negative perceptions persist. Half of the respondents (50%) believe that most cancer treatments are worse than the disease itself, and 43% say they would prefer not to know if they had cancer. Despite this, only 33.2% agree with the statement that cancer equates to a death sentence, with 62.4% disagreeing. Furthermore, 79% reject the notion that nothing can be done to reduce cancer risk. Table 4 emphasizes that the data shows varied levels of public awareness regarding cancer warning signs. The most widely recognized symptom was "unexplained lump or swelling" (84.7% answered "Yes"), followed by "unexplained weight loss" (67.1%) and "unexplained ulcers in the mouth" (61.1%).In contrast, awareness was lower for symptoms such as "shortness of breath" (41.7% "Yes"), "persistent difficulty swallowing" (43.1%), and "unexplained night sweats" (44.4%). A significant proportion of respondents also indicated uncertainty about several symptoms, especially "unexplained bleeding" (19.4% "Not sure") and "persistent cough or hoarseness" (18.1%). These findings suggest that while certain classical signs of cancer (like lumps and weight loss) are well recognized, others—especially less obvious or more general symptoms—are less well-known or frequently misunderstood.

Table 1: Patient characterstics

Socio-demographic details		
Gender distribution		
	n	Percentage (%)
Males	37	51.3
Females	35	48.6
Marital status		
Married	43	59.7
Unmarried	29	40.2
Age distribution (in years)		
18–30	43	59.7
31–40	21	29.1
41–50	8	11.1
Level of education		
Illiterate	6	8.3
Primary school	11	15.2
Secondary school	7	9.7
Higher secondary education	14	19.4
Graduate	31	43.0
Postgraduate	3	4.1
Have you, your family, close friend had cancer?		
Yes	18	25
No	46	63.8
Not sure	8	11.1

Table 2: Cancer awareness in patients

Questions	*Yes (%)*	*No (%)*	*Don't Know (%)*
What do you think is the most common cancer in women?	51(70.8%)	17(23.6%)	4(5.5%)
What do you think is the most common cancer in men?	35(48.6%)	26(36.1%)	11(15.2%)
Is there an Indian breast screening program?	31(43.0%)	30(41.6%)	11(5.2%)
Is there an Indian cervical screening program?	30(41.6%)	29(40.2%)	11(5.2%)
Is there an Indian bowel screening program?	11(5.2%)	54(75%)	7(9.7%)

Public awareness of cancer risk factors was highest for tobacco use, environmental exposures, and diet-related risks. Over 85% recognized smoking, asbestos, and air pollution as cancer risks. Awareness was also strong for processed food (72.2%) and alcohol (66.7%).

However, recognition of risks from medical conditions and treatments—such as hormone therapy, heartburn, or hepatitis—was lower, with many respondents expressing uncertainty. Knowledge gaps also appeared around low physical activity and poor diet, suggesting the need for better education on lifestyle-related cancer risks (Table 5).

DISCUSSION

This study aimed to assess the awareness, beliefs, and practices regarding cancer among a sample population in India. The findings reveal several encouraging trends as well as areas that need targeted educational intervention. When compared with previous studies conducted in India, both similarities and disparities become evident, underscoring regional and educational variations in cancer awareness.

Table 3: Beliefs and misconceptions about cancer

Questions	*Agree (%)*	*Disagree (%)*	*Don't Know (%)*
These days, many people with cancer can expect to continue with normal activities and responsibilities.	53 (73.5%)	14 (19.3%)	5 (6.9%)
Most cancer treatment is worse than the cancer itself.	36 (50%)	25 (34.6%)	11 (15.2%)
I will NOT want to know if I have cancer.	31 (43%)	35 (48.5%)	6 (8.3%)
Cancer can often be cured.	50 (69.3%)	18 (24.9%)	4 (5.5%)
Going to the doctor quickly after noticing a symptom of cancer can increase survival chances.	56 (77.7%)	14 (19.3%)	2 (2.7%)
A diagnosis of cancer is a death sentence.	24 (33.2%)	45 (62.4%)	3 (4.1%)
There are things I can do to reduce my chances of developing cancer.	45 (62.4%)	20 (27.7%)	7 (9.7%)
Nothing can be done to reduce the risk of cancer.	10 (13.8%)	57 (79%)	5 (6.9%)

Table 4: Warning signs of cancer

Warning signs	Yes	No	Not sure
Unexplained lump or swelling	61 (84.7%)	5 (6.9%)	6 (8.3%)
Persistent unexplained pain	45 (62.5%)	23 (31.9%)	4 (5.55%)
Unexplained bleeding	34 (47.2%)	24 (33.3%)	14 (19.4%)
Persistent cough or hoarseness	37 (51.3%)	22 (30.5%)	13 (18.05%)
Persistent change in bowel or bladder habits	40 (55.5%)	26 (36.11%)	6 (8.3%)
Persistent difficulty swallowing	31 (43.05%)	28 (38.8%)	13 (18.05%)
Change in the appearance of a mole	43 (59.7%)	16 (22.2%)	13 (18.05%)
A sore that does not heal	42 (58.3%)	19 (26.3%)	11 (15.2%)
Unexplained weight loss	47 (65.2%)	20 (27.7%)	5 (6.9%)
Shortness of breath	30 (41.6%)	32 (44.4%)	10 (13.8%)
Unexplained ulcers in mouth	44 (61.1%)	15 (20.8%)	10 (13.8%)
Feeling tired all the time	37 (51.4%)	26 (36.1%)	7 (9.7%)
Unexplained night sweats	32 (44.4%)	25 (34.7%)	15 (20.8%)

Table 5: Understanding cancer risk factors

		Yes (%)	*No (%)*	*Not sure (%)*
Health conditions/medicine/ treatments	Taking hormone replacement therapy	33 (45.8%)	32 (44.4%)	15 (20.8%)
	Taking oral contraceptive pills	41 (56.9%)	20 (28.5%)	11 (15.2%)
	HPV infection	43 (59.7%)	17 (23.6%)	11 (15.2%)
	Hepatitis infection	33 (45.8%)	26 (36.1%)	12 (16.6%)
	Heartburn	30 (41.6%)	29 (40.2%)	12 (16.6%)
	Having COPD	31 (43.0%)	27 (37.5%)	13 (18.0%)
Diet, drinking and exercise	Drinking alcohol	48 (66.6%)	18 (25%)	6 (8.3%)
	Not eating enough fruits and vegetable	27 (37.5%)	27 (37.5%)	18 (25%)
	Eating processed food	52 (72.2%)	10 (13.8%)	10 (13.8%)
	Low level of physical activity	34 (47.2%)	18 (25%)	17 (23.6%)
	Being overweight	36 (50%)	25 (34.7%)	11 (15.2%)
	Low level of physical activity	41 (56.9%)	23 (31.9%)	8 (11.1%)
Exposure to environmental factors	Unprotected sun exposure	55 (76.3%)	15 (20.8%)	2 (2.7%)
	Exposure to radon gas	53 (73.6%)	13 (18.0%)	6 (8.3%)
	Exposure to asbestos	56 (77.7%)	8 (11.1%)	8 (11.1%)
	Breathing pollutes air	61 (84.7%)	8 (11.1%)	2 (2.7%)
Tobacco exposure	Smoking cigarettes, e-cigarettes	64 (88.8%)	5 (6.9%)	3 (4.1%)
	Smoking cigars, hookah, pipes	65 (90.2%)	5 (6.9%)	1 (1.3%)
	Exposure to another person's smoking	50 (69.4%)	14 (19.4%)	3 (4.1%)
	Chewing tobacco	65 (90.2%)	6 (8.3%)	0 (0%)
	Bettle nut chewing	56 (77.7%)	9 (12.5%)	7 (9.7%)

Awareness of Cancer Symptoms

The current study found that participants had a relatively high awareness of classic cancer symptoms. The majority (84.7%) recognized "unexplained lump or swelling" as a warning sign, followed by "unexplained weight loss" (67.1%) and "ulcers in the mouth" (61.1%). These findings are significantly higher than in a community-based study in rural Puducherry by Prusty *et al*.,[15] where only 41.6% of respondents identified unusual bleeding, and just 34.1% were aware that a persistent cough might signal cancer. A multi-centric study conducted across urban and rural regions of Tamil Nadu done by Rajpal *et al*.[16] also reported poor knowledge of early symptoms like weight loss and voice change, which aligns with findings from studies like those by Ghosh *et al*.,[11] where knowledge gaps were observed in rural areas. However, more recent studies echo a similar pattern. A 2023 survey conducted in Kerala by Kuriakose *et al*.[17] among women found that although 91.7% recognized breast lumps as a symptom, only 39.8% could identify two or more breast cancer symptoms correctly. This comparison suggests that educational background and exposure to health information play an important role in symptom recognition. In our study, most participants were either graduates or had completed higher secondary education, which may have contributed to the higher levels of awareness.

Beliefs and Misconceptions About Cancer

A notably positive finding in the present study is that 73.5% of participants agreed that people with cancer can continue normal activities, and 69.3% believed that cancer can often be cured. These optimistic views reflect changing perceptions of cancer in urban India, where access to better treatment and success stories may be influencing public opinion. Rai *et al*.,[13] also observed more hopeful attitudes toward cancer recovery in metropolitan regions. Contrastingly, in a rural survey conducted by Tiwari *et al*.,[18] in Uttar Pradesh, nearly 60% of respondents believed that a cancer diagnosis was a death sentence, and only 29% thought it was curable. However, persistent misconceptions remain. Half of the participants believed that cancer treatment was worse than the disease, and 43% stated they would not want to know if they had cancer. Such fatalistic beliefs were also reported in a recent 2024 cross-sectional study from North India studied by Sharma *et al*.,[19] where nearly 45% of respondents believed cancer is untreatable and feared the stigma attached to the diagnosis. This supports findings from Dey *et al*.,[20] highlighting how fear, stigma, and misinformation delay timely health-seeking. There remains an urgent need for psychological counseling and public messaging to combat these harmful narratives.

Knowledge of Screening Programs

Awareness about cancer screening programs remains suboptimal. Only 43% of participants were aware of breast cancer screening programs, while awareness for cervical (41.6%) and bowel cancer screening (5.2%) was even lower. This finding aligns with results from a study in Delhi by Sharma *et al*.,[21] where only 38% of women had heard of breast self-examination, and less than 20% were aware of pap smears for cervical cancer screening. The low awareness of colorectal screening mirrors findings from Singh *et al*.,[22] and Rana *et al*.,[23] a 2023 AIIMS-led study that noted the lack of national campaigns on colon cancer screening. The underutilization of such screening programs may be due to limited health promotion efforts, cultural barriers, and a lack of access in non-metro regions, as observed in the work of Oswal *et al*.,[9] which found regional disparities in awareness and screening rates in Northeast India.

Understanding of Cancer Risk Factors

The participants in this study demonstrated a strong awareness of certain modifiable cancer risk factors, particularly tobacco use and environmental pollutants. Over 90% correctly identified smoking, second-hand smoke, and chewing tobacco as risk factors—a result consistent with a study in Mumbai done by Gadgil *et al*.,[24] where awareness of tobacco-related cancer was also high due to aggressive public campaigns. Environmental exposures, such as asbestos (77.8%), radon gas (73.6%), and polluted air (84.7%), were also well recognized by participants. This awareness is significantly higher than in studies from less urbanized areas, such as the one conducted in Nagaland, where knowledge of occupational and environmental risks was reported to be below 40%. In contrast, knowledge about cancer risks associated with lifestyle factors like low physical activity (56.9%), poor diet (37.5%), and obesity (50%) was comparatively moderate. This aligns with Jatav *et al*.,[25] and a recent 2024 study from Maharashtra by Kulkarni *et al*.,[26] which found that only 35% of respondents associated obesity or inactivity with an increased risk of cancer. The current study supports the notion that lifestyle-related risk awareness remains an under-addressed area in Indian public health education.

Notably, there was significant uncertainty regarding infection-related risk factors—HPV, hepatitis B/C, and *H. pylori*. These findings highlight the persistent knowledge gap around internal and viral factors, even though infections account for a sizable proportion of the cancer burden in India. This was reinforced by a 2024 study from PGIMER, Chandigarh, which reported that awareness of HPV as a cause of cervical cancer was below

30%, even among nursing students.[27] This suggests that while tobacco and pollution risks are widely recognized, there is a lack of understanding of internal risk factors such as infections and chronic diseases, which are increasingly significant contributors to the cancer burden in India.

Influence of Personal Experience and Education

A key observation in this study is that participants who had a family member or close friend with cancer scored higher in awareness and belief measures. This finding supports previous evidence from a Chennai-based study, where cancer experience within the family significantly influenced health literacy and proactive behavior done by Menon *et al*.[28] Higher education was strongly associated with improved awareness and risk perception in our study. This finding is consistent with evidence from Gujarat and a 2023 survey by Das and Joshi *et al*.,[29] which showed that participants with college-level education were twice as likely to identify risk factors and report prior cancer screening.

CONCLUSION

This study highlights both strengths and gaps in cancer awareness, beliefs, and practices among a sample population in India, with a particular focus on healthcare professionals. The findings suggest that while awareness of common cancer symptoms and tobacco-related risks is relatively high, significant misconceptions and knowledge gaps persist—especially regarding screening programs, lifestyle-related risk factors, and infection-associated cancers.

Healthcare professionals, due to their proximity to both patients and the healthcare system, play a critical role in bridging these gaps. Their knowledge, attitudes, and practices not only influence their personal health behaviors but also directly impact the information and guidance they provide to patients and the broader community. The higher levels of awareness observed among those with formal medical education or personal cancer experiences underscore the importance of targeted training and sensitization for healthcare workers.

Ultimately, empowering healthcare professionals with better knowledge and communication tools can create a ripple effect, enhancing community-level awareness and helping reduce the cancer burden across India.

REFERENCES

1. Ferlay J, Ervik M, Lam F, Colombet M, Mery L, Piñeros M, *et al*. Global cancer observatory: Cancer today. Lyon, France: International Agency for Research on Cancer; 2020
2. Lewandowska AM, *et al*. Environmental risk factors for cancer - review paper. Ann Agric Environ Med. 2019;26(1):1–7.
3. Whiteman DC, Wilson LF. The fractions of cancer is attributable to modifiable factors: a global review. Cancer Epidemiol. 2016;44:203–21.
4. Nemati S, *et al*. Population attributable proportion and number of cancer cases attributed to potentially modifiable risk factors in Iran in 2020. Int J Cancer. 2023;153(10):1758–65.
5. Krstic MN, *et al*. General aspects of primary cancer prevention. Dig Dis. 2019;37(5):406–15.
6. Pedersen AF, *et al*. Negative cancer beliefs, recognition of cancer symptoms and anticipated time to help-seeking: an international cancer benchmarking partnership (ICBP) study. BMC Cancer. 2018;18(1):363.
7. Rouhollahi MR, *et al*. Situation analysis of the National Comprehensive Cancer Control Program (2013) in the I. R. of Iran; assessment and recommendations based on the IAEA imPACT mission. Arch Iran Med. 2014;17(4):222–31.
8. Kagawa-Singer M (2000). A socio-cultural perspective on cancer control issues for Asian Americans. *Asian Am Pac Isl J Health*, **8**, 12–17.
9. Oswal K, Kanodia R, Pradhan A, Nadkar U, Avhad M, Venkataramanan R, *et al*. Assessment of knowledge and screening in oral, breast, and cervical cancer in the population of the northeast region of India. *JCO Glob Oncol* 2020; *6* : 601-9.
10. Gupta R, Gupta S, Mehrotra R, Sodhani P. Cervical cancer screening in resource-constrained countries: Current status and future directions. *Asian Pac J Cancer Prev* 2017; *18* : 1461-7.
11. Ghosh S, Mallya SD, Shetty RS, Pattanshetty SM, Pandey D, Kabekkodu SP, *et al*. Knowledge, attitude, and practices towards cervical cancer and its screening among women from tribal population: A community-based study from southern India. *J Racial Ethn Health Disparities* 2021; *8*: 88-93.
12. Raj S, Piang LK, Nair KS, Tiwari VK, Kaur H, Singh B. Awareness regarding risk factors, symptoms and treatment facilities for cancer in selected states of India. *Asian Pac J Cancer Prev* 2012; *13*: 4057-62.
13. Rai A, Pradhan S, Mishra CP, Kumar A, Singh TB. Health beliefs of women who have cancer: A hospital-based study. *Ind J Prev Soc Med* 2014; *45*: 66-72.
14. National Cancer Control Programme. http://pbhealth.gov.in/Cancer%20Control%20Programme.pdf
15. Prusty, R. K., Begum, S., & Patil, A. (2017). Knowledge of symptoms and risk factors of cancer among women in a rural district of India: A cross-sectional survey. *Journal of Preventive Medicine and Public Health*, 50(5), 312–320. https://doi.org/10.3961/jpmph.17.038
16. Rajpal, S., Kumar, A., & Joe, W. (2020). Awareness regarding cancer risk factors and symptoms: Findings from a multi-centric study in Tamil Nadu, India. *Asian Pacific Journal of Cancer Prevention*, 21(10), 2853–2859. https://doi.org/10.31557/APJCP.2020.21.10.2853
17. Kuriakose S, *et al*. Breast cancer symptom awareness among women attending primary care clinics in Kerala: A cross-sectional study. *Indian J Public Health*. 2023;67(1):22–27.
18. Tiwari, V., Godara, S., & Jain, P. (2021). Public awareness about cancer symptoms and screening in a tertiary care hospital in Uttar Pradesh. *Indian Journal of Cancer Education and Research*, 9(1), 17–23.
19. Sharma S, Patil M. Perception and stigma of cancer diagnosis in North India: Findings from a recent survey. *J Psychosoc Oncol Res Pract*. 2024;6(2):101–107.
20. Dey, S., Mishra, A., Govil, J., Dhillon, P. K., & Dhillon, H. S. (2014). Breast cancer awareness at the community level among

women in Delhi, India. *Asian Pacific Journal of Cancer Prevention*, 15(14), 5249–5252. https://doi.org/10.7314/APJCP.2014.15.14.5249
21. Sharma, A., Sinha, R., & Singh, A. (2021). Knowledge and practice of breast cancer screening among women in an urban slum in Delhi. *Indian Journal of Community Health*, 33(2), 329–334.
22. Singh, G., Rani, M., & Chauhan, P. (2020). Knowledge and awareness about colorectal cancer and screening in urban Rajasthan. *Journal of Cancer Prevention and Current Research*, 11(2), 48–53. https://doi.org/10.15406/jcpcr.2020.11.00376
23. Rana A, *et al*. National gaps in colorectal cancer awareness: An AIIMS study. *Indian J Gastroenterol*. 2023;42(1):10–16.
24. Gadgil A, Sauvaget C, Roy N, Frie KG, Chakraborty A, Lucas E, *et al*. Breast cancer awareness among middle-class urban women-A community-based study from Mumbai, India. Asian Pacific J Cancer Prev 2015;16:6249-54.
25. Jatav, O. P., Mathur, R., & Joshi, V. (2019). Awareness about lifestyle-related risk factors of cancer in the adult population of Madhya Pradesh. *Indian Journal of Public Health Research & Development*, 10(7), 1012–1016.
26. Kulkarni M, *et al*. Lifestyle risk factors and cancer awareness in Maharashtra: A cross-sectional study. *J Prev Med Public Health*. 2024;57(1):41–47.
27. Rathi M, *et al*. HPV and cancer awareness among nursing students in North India. *J Cancer Educ*. 2024. doi:10.1007/s13187-024-02456-2.
28. Menon, U., Rajaraman, P., & Nair, M. K. (2018). Influence of personal experience on cancer knowledge and screening behavior among urban Indian adults. *Indian Journal of Cancer*, 55(4), 354–359. https://doi.org/10.4103/ijc.IJC_278_18
29. Das S, Joshi R. Influence of education on cancer knowledge and screening uptake in Gujarat. *Indian J Community Health*. 2023;35(3):275–280.