

Awareness Regarding Cancer Danger Signs and Risk Factors among Ethnic Minor Populations in Bangladesh

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Abstract

Background: Individuals from ethnic minority communities are exposed to divergent carcinogenic risks, where heightened awareness can foster prevention and early detection of cancer. This study intended to assess the awareness status regarding cancer danger signs, risk factors and related healthcare-seeking behaviors among this population.

Methods: This descriptive cross-sectional study was conducted among 65 adults from the Chakma ethnic community residing in the Rangamati Hill District. The data collection instrument was developed based on the questionnaire employed in the Cancer Awareness Measure (CAM) survey and information was collected through face-to-face interviews after obtaining informed written consent.

Results: The mean age of participants was 37.25 ± 10.56 years, with a predominant male representation of 60%. About 24.6%, 16.9%, 15.4% and 13.8% of the participants were unable to recognize an unexplained lump or swelling, persistent unexplained pain, a persistent difficulty swallowing and unexplained weight loss as cancer danger signs. Upon identifying any warning sign, 93.8% stated they would seek medical care within a month and the majority (84.1%) reported that they would obtain this care from a nearby health facility. 30.8% regarding less fruit and vegetable intake, 28% about family history, 27.7% about processed/red meat consumption, 21.5 % participants were unsure regarding obesity.

Conclusion: Results from this study revealed a low level of awareness regarding food habit and life-style related key cancer risk factors underscore the necessity of health education among ethnic minorities. Developing cancer-specific awareness programs and targeted risk-factor education to meet the needs of these populations could help reduce cancer incidence, promote earlier detection, and thereby contribute to reducing cancer-related mortality.

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Introduction

Cancer has emerged as a major public health issue in Bangladesh, with incidence rates gradually rising and the disease burden increasing.¹ In 2022, an estimated 156,775 new cases and 116,598 fatalities were reported in Bangladesh.² Significant disparities in healthcare access exacerbate the crisis, making socially excluded people especially at risk. In low- and middle-income countries (LMICs), such as Bangladesh, disadvantaged communities commonly experience poor outcomes, including frequent late-stage diagnoses, limited access to effective treatment options, and significantly lower survival rates.^{1,3} A significant number of people from the ethnic community experience systemic prejudice, poverty, and restricted access to healthcare.⁴ The disproportionate cancer burdens faced by indigenous peoples are widely recognized as a consequence of the lasting impacts of colonialism, which altered traditional health and wellbeing systems. Ethnic minor population generally do not pursue survivorship assistance, and their values, practices, and unique requirements are often absent in conventional healthcare.^{5, 6} Even though a significant number of these interconnected and multifaceted factors are pertinent to ethnic populations worldwide, the relative significance of specific factors is likely to differ according to the area.⁷ Higher incidence and mortality rates, delayed diagnosis, less timely access to treatment, and variations in care quality are all examples of how these inequities affect cancer care and further worsen medical marginalization among ethnic minority populations.⁸

The increasing population and scarcity of proper knowledge may lead to an increased number of patients with cancer, which is inevitable.⁹ It was found that the burden of cancer is disproportionately higher for ethnic minorities living in rural areas.¹⁰ Despite

continued efforts by government and non-governmental organizations, the country continues to encounter substantial obstacles in adopting effective screening, awareness, and prevention initiatives. Awareness and attitudes concerning cancer have significant consequences on preventive health behaviors, including risk avoidance and early recognition through screening.^{2,11} Additionally, there is a persistent prevalence of misconceptions; many individuals continue to associate cancer exclusively with smoking or genetic predisposition, while underestimating the contributions of obesity, diet, reproductive factors, aging, and infectious agents to carcinogenesis.¹² Multifactorial causations make ethnic minorities more vulnerable to the development of cancer-related mortality. For instance, a study showed that a significant number of tribal men and women chew tobacco in Madhya Pradesh. The most popular smokeless tobacco products are supari, gutka, and naswar. The majority of India's ethnic population smokes tobacco, with most people starting to smoke at the age of ten.¹³ Awareness and attitudes toward cancer significantly shape preventive health behaviors; therefore, it is essential to address the knowledge gaps, as increasing participation in screening programs and making healthier lifestyle choices have been associated with enhanced cancer awareness.¹⁴ Moreover, the importance of cultural influences on recognition of symptoms and help-seeking behaviours was highlighted in a review of ethnic and cultural differences in models of and attitudes towards cancer across ethnic groups.¹⁵ However, in the ethnic community of Bangladesh, the status of cancer awareness is currently underaddressed. This study aims to assess the awareness level regarding cancer warning signs, risk factors and health care seeking behaviors among the ethnic minority in the Rangamati Hill district of Bangladesh.

Methods

This descriptive cross-sectional study was conducted among 65 adult individuals from ethnic communities, of both sexes, residing in the Rangamati Sadar from July to December 2025. Participants from the Chakma ethnic community were chosen by systematic random sampling from the available household list. From each household, one participant was selected randomly by lottery. Individuals aged less than 18 years, having cancer-diagnosed patients within their families, working in any sort of healthcare facility, were excluded from the study. Information regarding cancer warning signs, risk factors and health care seeking behaviors was collected through face-to-face interviews using a pre-tested semi-structured

questionnaire based on the questionnaire employed in the Cancer Awareness Measure (CAM) survey. The CAM is a validated survey designed to measure awareness of signs, symptoms, and risk factors for cancer and potential barriers to seeing a doctor.¹⁶ Informed written consent from participants was obtained before data collection. The questionnaire was further translated into Bangla before data collection. Responses for cancer warning sign-related awareness were categorized as yes, no, don't know, while options were coded as strongly agree, agree, not sure, disagree and strongly disagree for cancer-related risk factors. Data analysis was performed using IBM SPSS (Statistical Package for Social Science) software, version 26.

Results

Socio-demographic attributes of the respondents

The mean age $\pm$ SD of the participants was 37.25 ± 10.56 years. The largest proportion (40%) of participants were young adults aged 20–30, followed by 24.6% in the 40–50 age group .

Table I: Distribution of the respondents according to their socio-demographic attributes (n= 65)

Attributes	Categories	Frequency (%)
Age group	20-30	26 (40)
	30-40	15 (23.1)
	40-50	16 (24.6)
	50-60	8 (12.3)
Statistics: Mean age $\pm$ SD= 37.25 ± 10.56 years		
Sex	Male	39 (60.0)
	Female	26 (40.0)
Marital status	Unmarried	17 (26.2)
	Married	48 (73.8)
Educational status	Primary	9 (13.8)
	SSC or equivalent	13 (20.0)
	HSC or equivalent	22 (33.8)
	Honours	18 (27.7)
	Masters	2 (3.1)
	Diploma	1 (1.5)
Living area	Urban	59 (90.8)
	Rural	6 (9.2)
Smartphone with internet connection	No	8 (12.3)
	Yes	57 (87.7)
Having cancer affected the patient nearby	None	35 (52.2)
	Family member	3 (4.5)
	Relatives	2 (3.0)
	Neighbor	24 (35.8)
	Friends/their parents	3 (4.5)

In Table I, Smaller proportions were in the 30–40 (23.1%) and 50–60 (12.3%) age ranges. In terms of marital status, the majority of participants were married (73.8%), while 26.2% of them were unmarried. Educational attainment varied among respondents, with the largest share among those who had completed education up to Higher Secondary Certificate (HSC) or equivalent (33.8%), followed by honors graduates (27.7%), Secondary School Certificate (SSC) holders (20%), and secondary education only (13.8%). Table 1 also shows that most participants resided in urban areas (90.8%), with 9.2% residing in rural areas. Access to digital technology was widespread: 87.7% reported owning a smartphone with internet connectivity, whereas 12.3% did not. Regarding personal or social exposure to cancer, more than half (52.2%) reported having no cancer patients within their family or in their surroundings. However, 35.8% had neighbors diagnosed with cancer, while smaller proportions reported family members (4.5%), friends or their parents (4.5%), and relatives (3.0%) as being affected.

Table II: Distribution of the respondents according to their awareness regarding danger signs of cancer (n= 65)

Attributes	Categories	Frequency (%)
An unexplained lump or swelling	Yes	49 (75.4)
	No	16 (24.6)
Persistent unexplained pain	Yes	54 (83.1)
	No	11 (16.9)
Unexplained bleeding	Yes	62 (95.4)
	No	3 (4.6)
Persistent cough or hoarseness of voice	Yes	60 (92.3)
	No	5 (7.7)
Persistent change in bowel or bladder habits	Yes	58 (89.2)
	No	7 (10.8)
Persistent difficulty swallowing	Yes	55 (84.6)
	No	10 (15.4)
Change in the appearance of a mole	Yes	56 (86.2)
	No	9 (13.8)
Sore that does not heal	Yes	59 (90.8)
	No	6 (9.2)
Unexplained weight loss	Yes	56 (86.2)
	No	9 (13.8)

According to Table II, awareness of cancer warning signs among respondents was generally high across most indicators. The majority recognized unexplained lumps or swellings (75.4%) and persistent unexplained pain (83.1%) as potential warning signs. Knowledge was strongest regarding unexplained bleeding (92.3%), persistent changes in bowel or bladder habits (89.2%),

and sores that do not heal (90.8%). Similarly, a high proportion of the respondents identified persistent difficulty swallowing (84.6%), changes in the appearance of a mole (86.2%), and unexplained weight loss (86.2%) as warning signs. Awareness was lowest for persistent cough or hoarseness of voice, with only 7.7% recognizing it as a warning sign.

Table III: Distribution of the respondents according to their awareness of cancer risk factors (n= 65)

Attributes	Categories	Frequency (%)
Direct tobacco smoking	Not sure	1 (1.5)
	Agree	1 (1.5)

	Strongly agree	63 (96.9)
Passive smoking	Agree	1 (1.5)
	Strongly agree	64 (98.5)
Drinking alcohol regularly	Agree	1 (1.5)
	Strongly agree	64 (98.5)
Less fruits and vegetable intake	Strongly disagree	2 (3.1)
	Disagree	2 (3.1)
	Not sure	20 (30.8)
	Agree	8 (12.3)
	Strongly agree	33 (50.8)
Eating processed and red meat regularly	Strongly disagree	3 (4.6)
	Disagree	1 (1.5)
	Not sure	18 (27.7)
	Agree	12 (18.5)
	Strongly agree	31 (47.7)
Obesity	Strongly disagree	2 (3.1)
	Not sure	14 (21.5)
	Agree	12 (18.5)
	Strongly agree	37 (56.9)
Family history of cancer	Not sure	18 (28.1)
	Agree	12 (18.8)
	Strongly agree	34 (53.1)
Being elderly	Strongly disagree	7 (10.8)
	Disagree	4 (6.2)
	Not sure	48 (73.8)
	Strongly agree	6 (9.2)
Human Papilloma Virus	Not sure	6 (9.2)
	Agree	5 (7.7)
	Strongly agree	54 (83.1)
Less physical activity	Not sure	17 (26.2)
	Agree	14 (21.5)
	Strongly agree	34 (52.3)

Table III shows Awareness of established cancer risk factors varied extensively among respondents. Results reveal that nearly all respondents strongly agreed that direct tobacco smoking (96.9%), passive smoking (98.5%), and alcohol consumption (98.5%) are major risk factors for cancer. Similarly, a high proportion recognized Human Papilloma Virus (HPV) infection (83.1%) as a risk factor of cancer. According to the findings, half of the respondents (50.8%) strongly agreed that low fruit and vegetable intake increases cancer risk, while 30.8% were unsure.

However, 47.7% strongly agreed that regular consumption of processed and red meat is a risk factor, though 27.7% were not sure. Awareness was weaker (73.8%) regarding older age as a risk factor. Recognition of family history of cancer had a higher frequency, with 53.1% strongly agreeing, though 28.1% remained unsure. Physical inactivity was acknowledged by over half (52.3%) of the respondents as a risk factor, while 26.2% were not sure, according to Table III.

Table IV: Distribution of the respondents according to the health-care seeking preferences and accessibility to the treatment facilities (n= 65)

Attributes	Categories	Frequency (%)
Symptoms for which you will seek medical help (n= 365)	Lump or swelling	59 (16.2)
	Persistent unexplained pain	52 (14.2)
	Unexplained bleeding	53 (14.5)
	Persistent cough or hoarseness of voice	62 (17.0)
	Persistent change in bowel and bladder habits	63 (17.3)
	Dysphagia	52 (14.2)
	Change in mole or non-healing ulcer	14 (3.8)
	Unexplained weight loss	10 (2.7)
Gap between seeking medical help and the appearance of symptoms (n= 65)	Within 1 week	1 (1.5)
	Within 2 weeks	3 (4.6)
	Within 1 month	61 (93.8)
Preferred source of seeking medical help (n= 290)	Traditional healer	4 (5.3)
	Nearby drug seller	4 (5.3)
	Ayurveda physician	1 (1.3)
	Private chamber of an MBBS doctor	3 (4.0)
	Nearby hospital	63 (84.1)
Having a health facility nearby (n=300)	Yes	63 (96.9)
	No	2 (3.1)
Duration to reach the nearby facility (n=65)	5-15 minutes	5 (7.7)
	15-25 minutes	30 (46.2)
	25-35 minutes	18 (27.7)
	35-45 minutes	12 (18.5)

In Table IV, Respondents most frequently reported that they would seek prompt medical care for persistent changes in bowel or bladder habits (17.3%), persistent cough or hoarseness of voice (17.0%), and lump or swelling (16.2%) as shown in Table IV. Other commonly reported signs included unexplained bleeding (14.5%), persistent unexplained pain (14.2%), and dysphagia (14.2%). In contrast, fewer participants indicated they would seek medical help for changes in a mole or non-healing ulcer (3.8%) or unexplained weight loss (2.7%). Regarding the time gap between symptom onset and seeking medical help, nearly all respondents (93.8%) reported they would seek care within one month. Preferences for sources of medical help revealed a strong reliance on nearby health facilities. The majority (84.1%) of the respondents preferred to visit a nearby health facility, while small proportions reported

consulting a traditional healer (5.3%), a drug seller (5.3%), an Ayurveda physician (1.3%), or a private MBBS doctor's chamber (4.0%). Table IV also demonstrates that access to health facilities was generally favorable, with 96.9% reporting the presence of a nearby facility. The travel time to these facilities varied: over half (46.2%) may take between 15 and 25 minutes, 27.7% reported 25 to 35 minutes, and 18.5% reported roughly 35 to 45 minutes.

Discussion

This cross-sectional study aimed to assess the level of awareness regarding cancer warning signs, risk factors and healthcare-seeking preferences among the Chakma ethnic community residing in Rangamati District. Results revealed that more than 80% of participants correctly identified unexplained pain, bleeding, changes in bowel or bladder

habits, difficulty swallowing, mole changes, non-healing wounds, and unexplained weight loss as cancer warning signs. However, only 7.7% of people reported having a persistent cough or hoarseness of voice, which suggests a serious lack of knowledge about cancer symptoms connected to the respiratory system. This finding is pertinent to a study where 86.3%, 69.8% participant students correctly identified risk factors and early warning signs of breast cancer.¹⁷ A relevant study found that female respondents showed weaker knowledge and perceptions about cancer prevention compared to males. Awareness was somewhat better for tobacco use and harmful chemicals, but recognition of lifestyle-related risks such as physical inactivity, was very limited.¹⁸ A study in five hard-to-reach districts found that nearly 50% of participating women in hard-to-reach areas of Bangladesh and their family decision-makers had low levels of knowledge of the risk factors and symptoms of cervical cancer.¹⁹ Almost all respondents agreed that tobacco use (both direct and passive), alcohol intake, and HPV infection are significant cancer risk factors. Dietary risk factors such as limited fruit and vegetable intake and regular consumption of processed/red meat were moderately recognized, but a significant proportion remained unsure. Awareness was weakest regarding obesity and older age, with nearly three-quarters of respondents unsure of their role in cancer risk. Uncertainty remained among a significant minority, but family history and physical inactivity were more commonly acknowledged. Compared to smoking or alcohol consumption, other biological and food habit-related risk factors are less discussed in cancer-related health education measures, which may lead to a lower level of awareness.

A very few studies in our country have attempted to explore the overall cancer awareness status among ethnic minorities. A

study among female students conducted in Sylhet city regarding cancer awareness indicated that university students exhibit low awareness levels concerning four aspects: risk factors, early warning signs, screening methods, and treatment options for breast cancer.¹⁷ It is important to note, however, that this group did not represent ethnic minority communities, and the findings were restricted to breast cancer awareness rather than broader cancer-related knowledge. In the current study, respondents also showed a clear tendency to seek medical help for more noticeable or disruptive symptoms such as bowel or bladder changes, cough or hoarseness, and lumps or swellings, while far fewer recognized mole changes or unexplained weight loss as reasons for healthcare seeking. Encouragingly, most participants in this study indicated that they would seek help within a month of symptom onset, with hospitals as the preferred treatment setting for most. However, these findings didn't align with a study of six districts across nine tribal ethnic communities, which reported significant reliance on traditional medicine and healers. They found that tribal affiliation affected health care-seeking behaviours.²⁰ Another recent study found a higher level of awareness among females, Hindu religion, married individuals and urban residents regarding cervical carcinoma.²¹ This study revealed relatively high awareness of cancer danger signs and most risk factors among respondents. However, the limited sample size and narrow geographic coverage restrict the broader applicability of these findings, underscoring the need for larger and more diverse studies to ensure generalizability.

Conclusion

Results from this study revealed a low awareness of key cancer risk factors such as limited fruit and vegetable consumption, and regular daily red meat intake, physical

inactivity and increasing age. Preventing cancer through risk factor mitigation is an evidence-based approach to reduce cancer-related mortality and health care expenditure. Therefore, findings from this study underscore the necessity of health education regarding cancer risk factors, yet this remains largely unexplored in remote areas of Rangamati district and among ethnic minority groups beyond the Chakma community.

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