

# Information Seeking Behavior about Cancer and Associated Factors among Students at DebreTabor University, Ethiopia, 2019: Cross sectional study

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## Research article

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# Abstract

**Introduction** The prevalence of cancer has been increasing and it is among the leading cause of death in in sub-Saharan Africa over the last few years which mainly influenced by life-style. Understanding the information seeking behavior of individuals, especially Students who are more likely to seek health information than other people, can be seen as an opportunity to provide resources to improve lifestyle or prevent possible health threatening behaviors among students. The main objective of this study is to determine the health information seeking about cancer among students of Debretabor University Ethiopia.

**Objective** The aim of this study was to assess cancer information seeking behavior (CISB) and its associated factors among students in Debre Tabor University.

**Methods** Institutional based cross-sectional study design was conducted from March 01-30/2019. A total of 844 students were selected using multistage stratified sampling technique. Data entry and analyses were done using Epi info version 7.2 and SPSS version 20 respectively. Descriptive statistics and multivariate logistic regression analyses were applied to determine proportion of cancer information seeking behavior and to identify factors associated.

**Result** The proportion of cancer information seeking by students in the past 12 month was 30.1%. Their first source of information was healthcare providers (48%) followed by Internet (27.6%). The majority 39.8% were looked about breast cancer. Year of study, Internet access (AOR=6.07, 95%CI= 4.05, 9.10), health literacy level (AOR=1.8, 95%CI=1.21, 2.68), self-reported health condition (AOR=1.85, 95% CI=1.25, 2.73), perceived susceptibility to cancer (AOR=2.48, 95% CI=1.47, 4.2) and perceived severity of cancer (AOR=3.33, 95% CI=1.85, 6.0) were the factors associated with cancer information seeking behavior.

**Conclusion** The proportion of cancer information seeking among university students was low. Year of study, internet access, being healthy, health literacy level, level of perception to cancer exposure and perception to severity of cancer were significantly associated with cancer information seeking behavior. Increase health literacy & awareness creation about cancer for students will help to increase cancer information seeking behavior.

## Introduction

Cancer is a disease caused by an uncontrolled division of abnormal cell in the part of body, and it is one of the most important causes of morbidity and mortality both in developed & developing world (1, 2). The upswing of non-communicable diseases (NCD) has become an important issue for health-care systems. In the past decades, national and international public health agencies across the globe have focused to control infectious and tropical diseases in developing countries.

Projection in 2016 by WHO revealed that, the cancer burden will increase to 24 million new cases and 14.6 million cancer deaths will occur worldwide in 2035. Of this around 70 percent of cancer incidence

will occur in developing countries (3). Ethiopia is among the developing countries that has high burden of cancer morbidity & mortality. Findings from 2018 showed that cancer incidence rates was 206 per 100,000 in Ethiopia (4).

Efforts have been undertaken to minimize the burden of cancer in both developed and developing countries. Several African governments have developed and implemented operational national cancer control plans (5). More than 700 cancer registries were established worldwide (6). Ethiopia also has been designed different cancer prevention strategies such as; cancer comprehensive treatment and care, health promotion and disease prevention targeting on behavioral risk factors(avoid tobacco, alcohol, unhealthy diet and physical inactivity) (7).

Effective communication on cancer-related information plays a significant role in the reduction of cancer burden since, it has substantial influence on lifestyle (8). Health Information Seeking Behavior (HISB) is the ways by which people obtain information about health, disease, health risk, and health promotion (9). Effective practice of HISB could bring health-enhancing actions and serves as an important means for understanding how an individual finds health information (10). Health information seeking practice is important in stress reduction, to increases awareness towards health risk factors and cancer disease process. Currently there are plenty of information related to cancer such as cancer prevention, cancer diagnosis, treatment and recovery (11). Health Seeking information about cancer may carry out particular importance for cancer disease reduction (8, 12). Understanding the information seeking behavior of individuals, especially Students who are more likely to seek health information than other people, can be seen as an opportunity to provide resources to improve lifestyle or prevent possible health threatening behaviors among students. Therefore, the aim of this study was to determine the health information seeking about cancer and its associated factors.

## **Methods And Materials**

### **Study design and period**

An institution-based cross-sectional study design was conducted from March 01-30/2019. The quantitative method was used to describe socio-demographic characteristics of respondents, the extent of cancer information seeking and factors associated with cancer information seeking among students.

### **Study area and setting**

Debre Tabor University is one of the newly established public higher education institutions in Ethiopia. The university has a clinic located centrally on the campus and it gives primary healthcare services. The clinic has laboratory, consultation, pharmacy, nursing services, medical records, wound dressing units and in-patient bed facilities for short term admissions. The University has a total of 9572 students.

### **Sample size determinations**

The sample size was calculated using single population proportion formula with the following assumptions: 95% confidence level (CI),  $Z (1-\alpha/2) = 1.96$ , an expected proportion of cancer information seeking behavior of 50%, and 5% margin of error. As to investigator knowledge, in the country, there were no previously conducted studies which determined the proportion of cancer information seeking behavior in higher institution. Hence, 50% was taken to estimate the required sample size. Furthermore, two sampling stage was applied to reach to the final study units in the process. Considering design effect of two and 10% non-response the final sample size was 844.

### **Sampling methods and procedure**

A stratified multi-stage sampling method was employed to select study subjects. In the first stage, departments were stratified based on health-related and not-health related. And then, proportional allocation was employed to select 13(30%) departments, 2 from health and 11 from non-health related departments by using simple random sampling, we assumed that there was a difference between departments for cancer information seeking. Next departments were stratified by their years of study; we assumed that their years of study and duration of stay in the campus would affect cancer information seeking behavior among students. The total number of students in selected departments was distributed proportionally based on the total number of students in each year of study. In the second stage, individual students from each stratum were selected by using simple random sampling technique.

### **Study variables**

**Dependent variable:** Cancer information seeking Yes/ No and was coded as 1 and 0 respectively.

### **Independent variables**

**Socio-Demographic Factors:** age, gender, year of study, field of study, club participation, religion, ethnicity, prior residence, internet access.

**Behavioral Factors:** Smoking, Alcohol drinking, Risky sexual behavior, physical activity.

**Health status:** General health status, Self-cancer disease history, family cancer disease history.

**Health literacy level:** Perceived susceptibility to cancer, Perceived severity of cancer, Perceived health self-efficacy.

### **Operational definition**

**Cancer information seeking:** "Yes" was defined as those who had looked for cancer information within the last year from any source (13).

### **Measurements:**

**Cancer information seeking:** Respondents were asked two questions about their information seeking “Have you looked for information intentionally about cancer from any source?” and “about how long ago was that?”(14).

**Smokers:** defined as a respondent who smoke currently either every day or sometimes.

**Alcohol drinking:** drinker or alcohol miss use defined as if the AUDIT-C mean score is  $\geq 4$  for male and  $\geq 3$  for females (15).

**Measurements:** The AUDIT-C (Alcohol Use Disorder Identification Test) is quantifies alcohol misuse based on three Likert scale questions is a modified, shortened version of the 10-question AUDIT instrument developed by WHO (15).

**Health self-efficacy:** Respondents were asked questions about their level of confidence ranges from completely confident (5) to not at all confident (1), overall, how confident are you about your ability to take good care of your health?

**Perceived susceptibility:** Respondents were asked questions about their perception on level of susceptibility for cancer ranging from very likely (5) to very unlikely (1). How concerned are you about getting cancer disease?

**Perceived severity:** Respondents were asked questions about their own perception on cancer severity. Decide When I think about cancer, I automatically think about death” ranging from not at all (1) to extremely (5).

**Health literacy:** European health literacy survey questionnaire was used to measure health literacy and HLS-EU-Q with 47 items. The 47 items is assessed using a 4-point scale (very easy=4, easy=3, difficult=2 and very difficult=1) and the score is divided into 4 categories: ‘inadequate’, ‘problematic’, ‘sufficient’ and ‘excellent’ health literacy. Index is computed by the formula,  $\text{Index} = \text{mean} - 1 * (50/3)$ . From the formula, if the index is In between 1 and 13.75 the health literacy is “Inadequate”, In between 13.76 and 25.5 the health literacy is “Problematic”, In between 25.6 and 37.5 the health literacy is “Sufficient” and  $>37.5$  the health literacy is “Excellent” (16).

## Data collection tools

Self-administered Amharic version questionnaire comprised of demographic, behavioral, health literacy, health status, psychological factors and looks for cancer information was used. The Health literacy questioner is adopted from European Health literacy survey (16). Cancer information seeking questioners are mainly adapted from the Health Information National Trend survey 2014 (17).

## Data collection procedures

For quantitative study, five data collectors and two supervisors were recruited. The questionnaire was first developed in English and then translated to Amharic language and again back to English for

appropriateness and easiness in approaching the study participants. The questionnaire was pre-tested for suitability prior to the actual data collection in the University of Gondar.

### **Data quality control**

Data was collected by well-trained data collectors using pretested questionnaires. Training was given for two days to supervisors and data collectors on the objective of study. Close follow up and supervision during data collection time was carried out. Data were reviewed and checked for its completeness before entered and analyses.

### **Data processing & analysis**

Data were entered into Epi- info version 7.2 and exported into SPSS version 20.0 for further statistical analysis. The data were cleaned, coded, and analysed. Descriptive analysis was done to describe socio-demographic characteristics of the study participants and the outcome variable. Binary logistic regression analysis was done to identify association between independent and cancer information seeking behavior at p-value less than 0.2. To identify factors significantly associated with the outcome variables (cancer information seeking yes/no), adjusted odds ratio (AOR) with 95% confidence interval (CI) was used. Variable having p-value less than 0.05 were considered as significant predictors. Hosmer and Lemeshow goodness of fit test was checked that was 0.17 p-values.

### **Ethical consideration**

Ethical approval was obtained from University of Gondar, Institute of public health ethical review committee. Written permission letter was secured from Debre Tabor University. From each participant written informed consent was obtained. Their name was omitted for assurance of confidentiality and privacy. Interview was performed at suitable and secure place to respondents. Finally, questionnaire was cleaned, stored and analysed at secured place.

## **Results**

A total of 844 students were participated in this study with 100% response rate. The mean age of the participants was  $23.59 \pm 3.78$  SD year which ranges from 18 to 38 years. Majority 80.5% (679/844) of the study participants had no voluntary health club participation, 53.9% (455/844) were previously resided in rural area, 67.5% (570/844) were orthodox Christian and the majority 90.3% (762/844) were from non-health department (Table 1).

Table 1: Socio-demographic characteristics of respondents at Debre Tabor University, northern Ethiopia 2019 (n=844)

Variables	Category	Frequency	Percent
Age ( in years)	≤ 23	391	46.3
	>24	453	53.7
Gender	Male	442	52.4
	Female	402	47.6
Prior residence	Urban	389	46.1
	Rural	455	53.9
Club participation	Yes	165	19.5
	No	679	80.5
Religion	Orthodox	570	67.5
	Muslim	151	17.9
	Protestant	86	10.2
	Catholic	37	4.3
Field of study	Health-related	82	9.7
	Not-Health-related	762	90.3
Year of study	1 <sup>st</sup> year	361	42.8
	2 <sup>nd</sup> year	234	27.7
	3 <sup>rd</sup> Year	194	23.0
	4 <sup>th</sup> Year	55	6.5
Marital status	Single	718	85.1
	Married	120	14.2
	*Others	6	0.7

\*Others= widowed, Divorce

## Behavioral, personal and family history to cancer

About 11.1% (94/844) of study participant's drunk alcohol and 3.4% (29/844) had history of cigarette smoking. Among the study participants eight students 0.9% (8/844) had personal history of cancer and only 0.7% (6/844) had family history of cancer (Table 2).

Table 2: Behavior, personal and family history of students to cancer in Debre Tabor University 2019

	Categories	Frequency	Percent (%)
Alcohol drinking	Yes	94	11.1
	No	750	88.9
Physical activity	Active	411	48.7
	Inactive	433	51.3
Smoking	Smoker	29	3.4
	Non-smoker	815	96.6
Risky sexual behavior	Yes	17	2
	No	827	98
General health condition	Feel healthier	429	50.8
	Less healthier	415	49.2
Self-cancer history	Yes	8	0.9
	No	836	99.1
Family cancer history	Yes	6	0.7
	No	606	71.8
	Not sure	232	27.5

## Psychological and health literacy for cancer information seeking behavior

Among the study participants only 37.2% (314/844) had adequate health literacy level. Majority 82.9% (700/844) of study participants perceived that cancer is sever disease and 21(177/844) of students perceived that they were very concerned about cancer (Table 3).

Table 3: Psychological and health literacy variable to cancer information seeking behavior among student in Debre Tabor University 2019

	Categories	Frequency	Percent (%)
Health literacy	Adequate	314	37.2
	Limited	530	62.8
Health self-efficacy	Confident	437	51.8
	Not confident	407	48.2
Perceived susceptibility to cancer	Very concerned	177	21.0
	Concerned	435	51.5
	Not concerned	232	27.5
Perceived severity of cancer	Sever	700	82.9
	Not sever	144	17.1

## Cancer health information seeking behavior

Among the study participants 30.1% (254/844) (95% CI: (26.9%-33.3%)) were searched information about cancer at least one time in the past 12 months. About 54.9 %(45/82) of study participants from health departments seek their were seek health information about cancer and only 27.4%(209/553) of study participants from non-health departments seek health information about cancer(Figure 1).

## Source of information for cancer

Out of 254 cancer information seeker, 48% (122/254) of participants' first source of information was healthcare providers followed by Internet 27.6% (70/254). Also, they sought health information about cancer from families, friends and Medias (Figure2).

## Type and frequency of cancer information

From the participants 37% (94/254) were looking information about cancer prevention strategies, 36.2% (92/254) were looking information about sign and symptoms of cancer, 19.3%(49/254) seek information about cancer treatment and 7.48% (19/254) information about cancer diagnosis. With regard to the types of cancer site-specific information about 39.8% (165/432) of participants were looking about breast cancer followed by cervical cancer 22% (93/432). Liver cancer and colon cancer were the list cancer site-specific information sought by the study participants (figure3).

More than half of the participants 53.5% (136/254) were seeking information occasionally while; nearly one-fourth of the participants 28.7% (73/254) were seeking information about cancer at least once a month(figure4)

## Factors associated with cancer information seeking

Participants' field of study, year of study, club participation, Internet access, Physical activity, health status and health literacy, perceived severity to cancer, perceived susceptibility and self-efficacy were significant in bi variable logistic regression. Among the variables which were significant in bi variable logistic regression; year of study, Internet access, Physical activity, health status, health literacy, perceived severity and perceived susceptibility were identified as factors associated with cancer information seeking behavior through multi-variable logistic regression.

The result of this study revealed that the odds of seeking information about cancer among participants whose year of study was third and fourth years were two (AOR=2.29, 95%CI=1.43, 3.69) and four times (AOR=3.92, 95%CI= 1.82, 8.45) higher as compared with first year students. The odds of seeking information about cancer among participants who were currently physically active was three times (AOR=3.05, 95%CI=2.10, 4.43) higher to seek cancer information when compared to physically inactive. The odds of seeking information about cancer among participants who had Internet access was six times (AOR=6.07, 95%CI=4.05, 9.10) higher when compared to those who had no internet access.

Information seeking about cancer by participants who had adequate health literacy level was two times (AOR=1.8, 95%CI= 1.21, 2.68) higher than those who had low health literacy level. The odds of seeking information about cancer among participants who had feel better about their health was two times (AOR=1.85, 95%CI=1.25, 2.73) higher when compared to those who had feel less healthy.

Table 6: Bi-variable and multivariable analysis of factors for cancer information seeking behavior among students in Debre Tabor University, Ethiopia 2019 (n=844)

\* indicates  $0.05 < p < 0.001$ , \*\* indicates  $p < 0.001$ , 1 = reference category

## Discussion

In low income settings, peoples are at risk of three burdens health problems such as; communicable disease, traffic accident and non-communicable disease. With all this cancer is among the public health importance and with low awareness by the community. University students are at risk for many health problems due to lack of awareness and high exposure for risk factors. Also, cancer is very devastating disease and the capacity of the country to screen, diagnose and treat cancer is very limited. In this study, students' health seeking behavior about cancer and its associated factor was assessed at Debretabor University. The overall health information seeking behaviour of students for cancer was 30.1% (95% CI=26.9, 33.3). This finding is higher than study conducted in Malaysia which showed the prevalence of health information seeking behaviour of breast cancer was 22.5% (18). This difference could be due to the former study includes only breast cancer. Also, the finding from the current is higher than a study conducted in Hadiya zone southern Ethiopia which showed the prevalence of health information seeking behaviour about cervical cancer was 14.2% (19). This difference could be due to socio-demographic difference. The former study included community child bearing women. University students had better health literacy status which in turn increases their access to information about cancer. On the other hand,

Variables	Cancer information seeking		COR (95%)	AOR (95%)
	Yes (%)	No (%)		
Club participation				
Yes	69 (8.2)	96 (11.4)	1.92 (1.35,2.73)	1.49 (0.96,2.30)
No	185 (21.9)	494 (58.5)	1	1
Field of study				
Health	45 (5.3)	37 (4.4)	3.22 (2.03,5.11)	1.42 (0.78,2.56)
Non health	209 (24.8)	553 (65.5)	1	1
Year of study				
First year	76 (9)	285 (33.8)	1	1
Second year	75 (8.9)	159 (18.8)	1.77 (1.22,2.57)	1.32 (0.84,2.05)
Third year	77 (9.1)	117 (13.9)	2.46 (1.68,3.62)	<b>2.29 (1.43,3.69)*</b>
Fourth year	26 (3.1)	29 (3.4)	3.36 (1.87,6.04)	<b>3.92 (1.82,8.45)*</b>
Internet access				
Yes	210 (24.9)	262 (31)	5.975 (4.16,8.59)	<b>6.07 (4.05,9.10)**</b>
No	44 (5.2)	328 (38.9)	1	1
Physical activity				
Active	180 (21.3)	231 (27.4)	3.78 (2.75,5.20)	<b>3.05 (2.10,4.43)**</b>
Inactive	74 (8.8)	359 (42.5)	1	1
Health literacy				
Limited	109 (12.9)	421 (49.9)	1	1
Adequate	145 (17.2)	169 (20)	3.31 (2.44,4.50)	<b>1.80 (1.21,2.68)*</b>
Health status				
Less healthier	95 (11.3)	334 (39.6)	1	1
Feel healthier	159 (18.8)	256 (30.3)	2.18 (1.66,2.95)	<b>1.85 (1.25,2.73)*</b>
Perceived susceptibility				
Not concerned	55 (6.5)	177 (21.0)	1	1
Concerned	116 (13.7)	319 (37.8)	1.17 (0.81,1.69)	1.52 (0.96,2.41)
Very concerned	83 (9.8)	94 (11.1)	2.84 (1.86,4.34)	<b>2.48 (1.47,4.20)*</b>
Perceived severity				
Not sever	20 (2.4)	124 (14.7)	1	1
Sever	234 (27.7)	466 (55.2)	3.11 (1.89,5.12)	<b>3.33 (1.85,6.00)**</b>
Health self-efficacy				
Not confident	86 (10.2)	321 (38.0)	1	1
Confident	168 (19.9)	269 (31.9)	2.33 (1.71-316)	1.39 (0.92,2.12)

health information seeking behavior of students in this study was lower as compared to different studies conducted among cancer survivor in USA(53%, 68%, 47.4%) (13, 20, 21). This might be due to high perception to the cancer severity since they are cancer survivor patients and they have high level of health literacy and awareness about cancer information source. Similarly A study conducted in Malaysia among students on health information seeking behaviour was 80% (22). This difference could be the previous study was done on general health information seeking

behavior.

Regarding the source of cancer information, about 48% of cancer information seekers prefer health care provider as the primary source followed by the Internet as secondary source of cancer information (27.6%). This study is consistent with a study conducted at different regions in Ethiopia (23). This might be health care providers are the most trusted source of health information and cancer-related information provided from health care providers is easily understandable since students encounter a problem in understanding jargon words independently.

Respondents Year of study was significantly associated with cancer information seeking behavior. Senior students were more seeker of health information about cancer than juniors. This finding is in line with a study conducted in China/Hong Kong. Participants with low educational attainment were less likely seek health information(24). The probable explanation for this could be when the student's year of study

increases their awareness towards the impact of cancer disease on human health increases and this leads to seek health information about cancer.

In this study, students' health information seeking behavior about cancer was associated with physical activities. Students who had physical activity were three times more likely search information about cancer compared to those students who were physically inactive. This study appeared to be consistent with study done in Egypt (25). The possible explanation may be: those students who are already involved in daily exercise have better understanding towards promoting their health and they are concerned about their health status which in turn leads to seeking information about cancer.

In this study, perceived susceptibility to cancer and cancer information seeking behavior was significantly associated. Participants who are Very concerned about getting cancer disease were two times more likely seek information about cancer than participants who are not concerned at all about getting cancer disease. This study is consistent with a study conducted in Belgium (26). Participants who perceive susceptible for cancer are likely to seek health information to reduce their exposure to cancer.

Similarly Perceived severity of cancer also associated with cancer information seeking behavior. Participants whose perceptions about cancer as sever sought health information about cancer were three times higher as compared with those who had no perception about severity of cancer. This study is supported by a study conducted in USA 2013 (21). Cancer severity can be described as deterministic thoughts about the external causes of the disease and the inevitability of death at diagnosis. Individual who perceives cancer as sever want to know the risk factors, prevention methods, diagnosis and treatment of cancer. In addition internet access is associated with cancer information seeking. Health information seeking behavior by participants who had Internet access was six times higher as compared with those who had no internet access. This is due to the reasons of availability and ease of accessing information, privacy and confidentiality (27).

Participants' health literacy status also significantly associated with cancer information seeking behavior. Health information seeking behavior about cancer by participants who had adequate health literacy was two times more likely sought information for cancer than who had limited health literacy. This study is consistent with other study conducted in America (21). The probable explanation for this association might be, whenever individuals health literacy increase they will be concerned about their health since cancer is the most devastating health problem. Accordingly, they will retrieve information about cancer due to the reason they fear to develop the health problem (21, 28). Club participation, field of study and health self-efficacy was not significantly associated with health information seeking behavior about cancer.

Our study gives evidence on health information seeking behavior of university students about cancer. There are some limitations that should be noted. First, the study was facility based cross sectional study which couldn't tell as the causal inference. Self-reported data collection was used and there may have been recall bias by the respondents.

## Conclusion

Generally, the proportion of information seeking behavior about cancer among university students was low. The finding also confirms health care provider had been used as a primary source of information about cancer followed by internet. Most of the participants were retrieved information mainly for the purpose keeping protected themselves and their family or friends. In this study participants were concerned to retrieve information regarding cancer was primarily about breast cancer even though there is different site-specific cancer disease. Most of participants were concerned to retrieve information with Regards about the sign symptom and prevention methods of cancer. Year of study, internet access, physical activity, health status, health literacy, perceived susceptibility, and perceived severity were factors significantly associated with information seeking behavior about cancer. Increasing health literacy status and availing internet access will increase the health information seeking behavior of students about cancer.

## Abbreviations

CISB: Cancer Information Seeking Behavior, HISB: Health Information Seeking Bhavior, NCD: Non-Communicable Diseases, WHO: World Health Organization

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## Declarations

### Ethics approval and consent to participate

The study protocol was reviewed and approved by ethical review board of University of Gondar and written consent was obtained from each study participant. Permission letter also obtained from Debretabor Hospital. Names of patients and other personal identifiers were not included in the data collection tool.

### Consent for publication

Not applicable.

### Availability of data and materials

The datasets generated and/or analysed during the current study will be available upon request from the corresponding author.

### Competing interests

The authors declare that they have no competing interests.

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## Authors' contributions

All authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; gave final approval of the version to be published; and agree to be accountable for all aspects of the work.

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## Note Regarding Tables

Tables 4 and 5 were omitted by the authors in this version of the paper.

## Figures

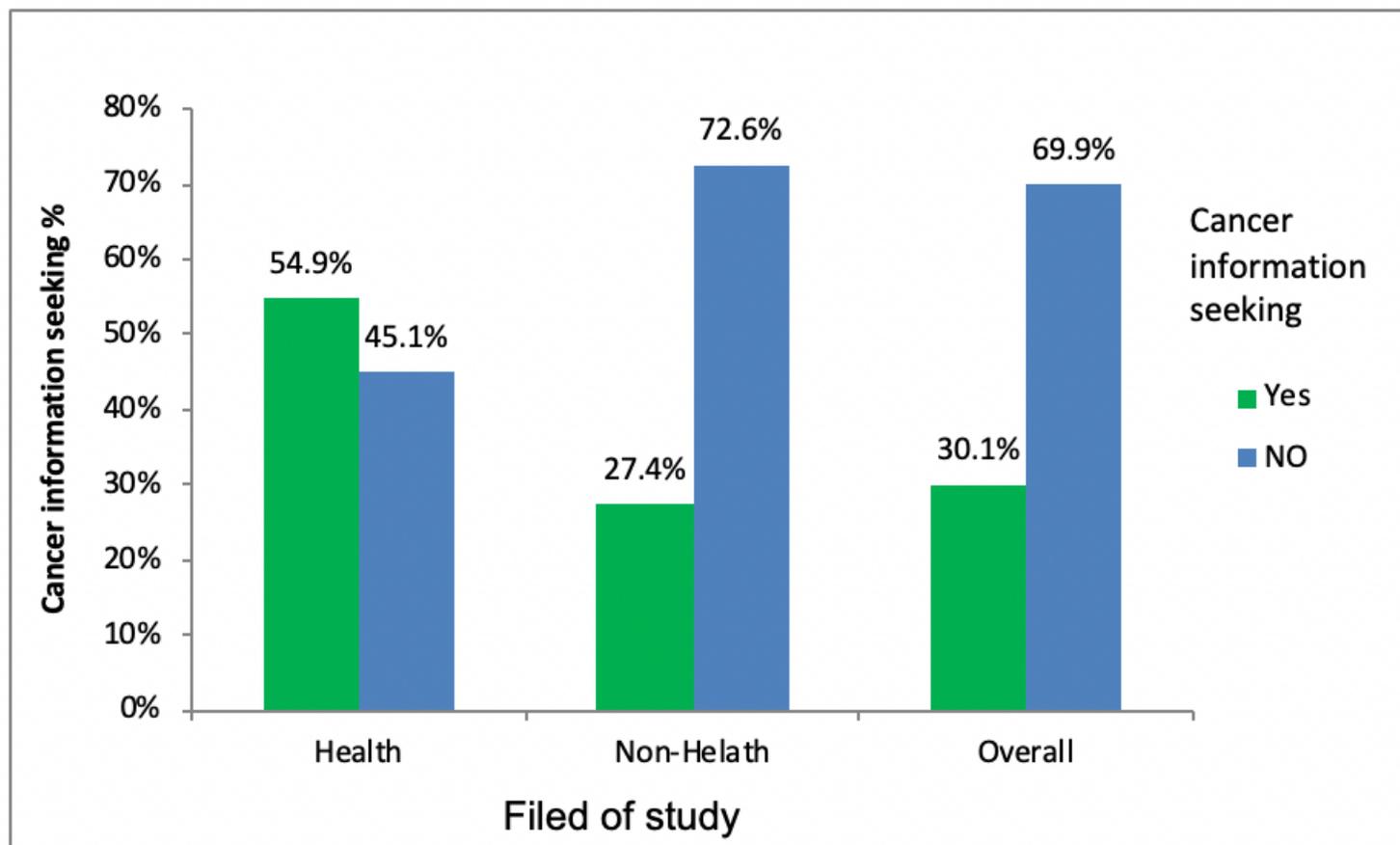


Figure 2

Cancer information seeking behavior by field of study in Debre Tabor University 2019.

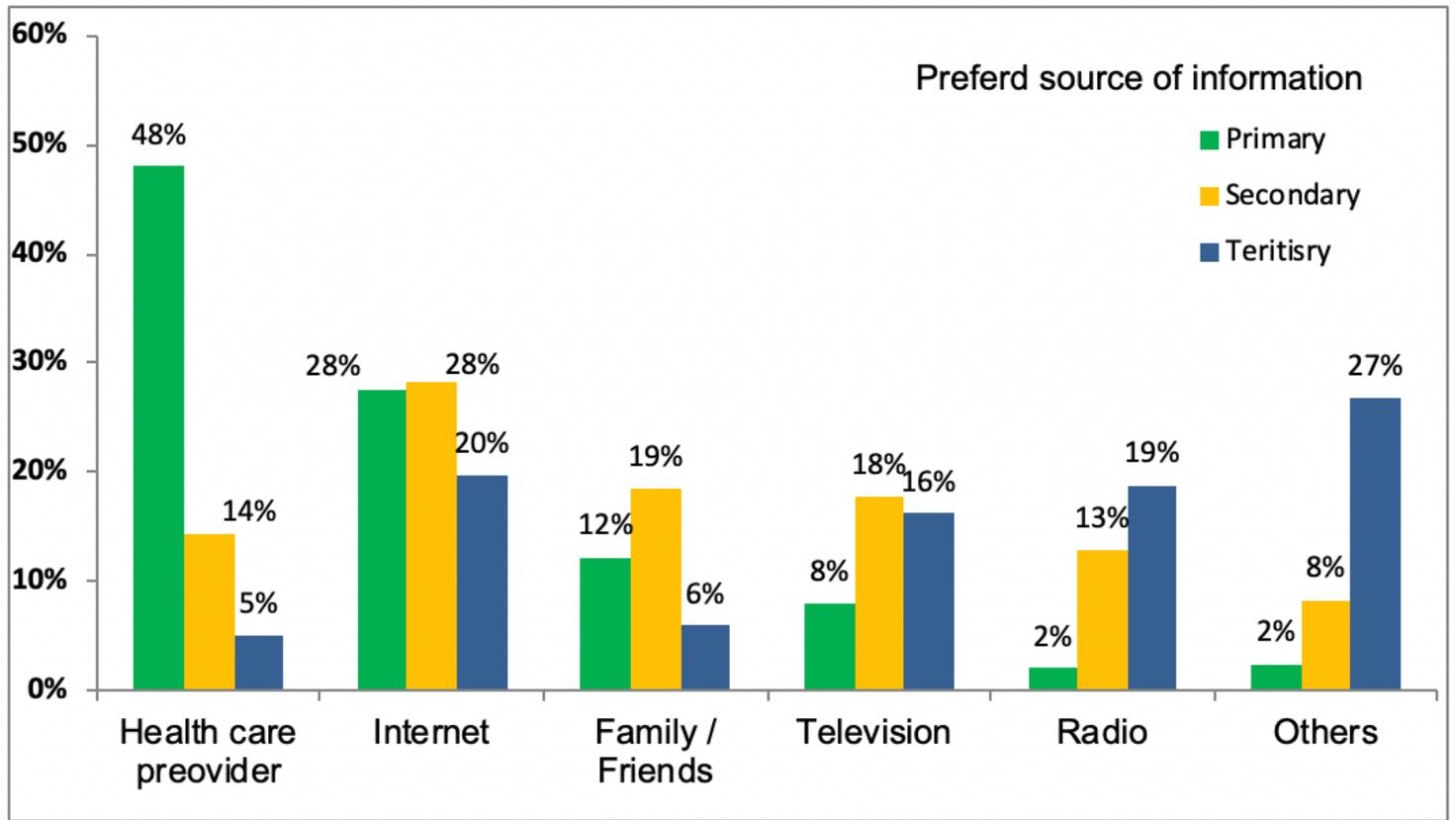


Figure 4

Preferred source of information for cancer among participants in Debre Tabor University, 2019 (n=254)

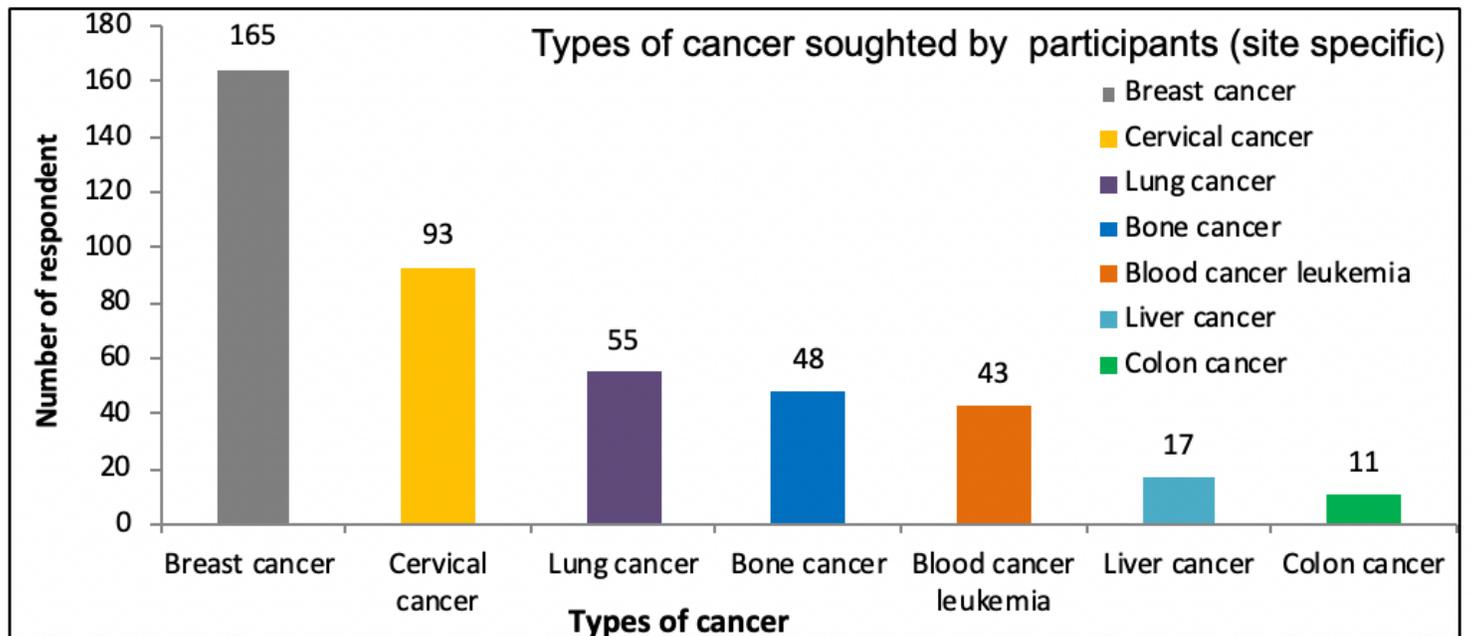
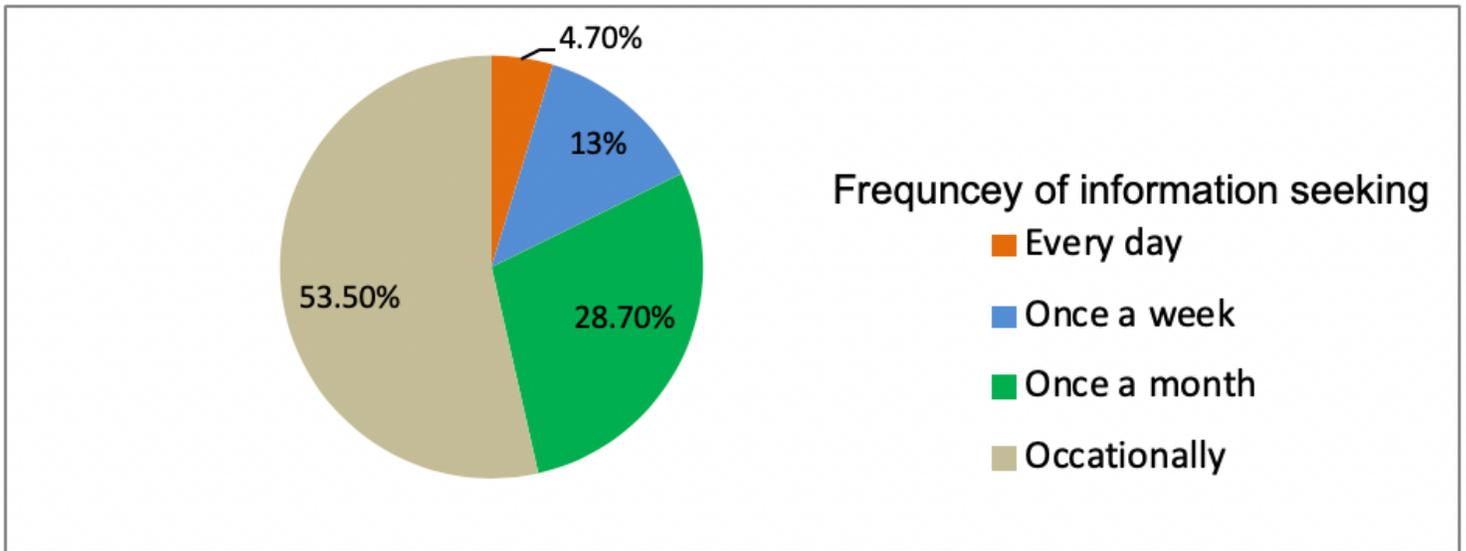


Figure 6

Types of cancer site-specific information sought by respondent in Debre Tabor University (n=254).



**Figure 8**

Frequency of information seeking behavior about cancer in Debre Tabor University 2019 n= (254)