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Research Article
Cancer

Profile of cancer patients attending a tertiary care center

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Introduction: In India, around 555,000 people died of cancer in the year 2010. Cancer is a major cause of morbidity and mortality in developing and developed countries. In many low-income and middle-income countries, including India, most of the population does not have access to a well organized and well-regulated cancer care system. **Objective:** (1) To study the socio-demographic profile of cancer patients attending tertiary care center.(2) To study the type, site and at what stage cancers are being reported to tertiary care center (3) To study the association of the cancer type with socio-demographic variables. **Material and methods:** A Hospital-based Cross-Sectional Study carried out from November 2013 to October 2014. Detailed pre-designed and pre-tested proforma is used to collect information on the socio-demographic profile. All diagnosed cancer patients admitted at SDM College of Medical Sciences and Hospital. A total of 381 were studied during the study period. **Results:** Total of the 381 cancer patients, Males were 154 (40.4%) and females were 227 (59.6%), it was found that majority of male, 78 (50.6%) study subjects were in the age group of 60-69 years, in socioeconomic status male subjects were in lower-middle and upper lower class i.e. 40 (26%) female were in upper-middle-class i.e. 70 (30.8%), according to the present study breast cancer (21.3%) was most prevalent, followed by CA liver and biliary tract (14.7%), followed by lungs (8.7%). the male was diagnosed in stage III of disease accounting 67(43.5%) female patients were diagnosed in stage II 86 (37.9). **Conclusion:** Breast cancer more common among younger age group and upper SES, Cervical cancer more common among lower SES, Lung cancer in literates'. Liver cancer more common among the older age group and lower SES. So, these groups can be targeted for health education and screening for early diagnosis and treatment.

Keywords: Cancer, Mortality, Morbidity

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Introduction

Cancer is a major cause of morbidity and mortality in developing and developed countries. In many low-income and middle-income countries, including India, most of the population does not have access to a well organized and well-regulated cancer care system [1].

There were 14.1 million new cancer cases, 8.2 million cancer deaths and 32.6 million people living with cancer (within 5 years of diagnosis) in 2012 worldwide. 57% (8 million) of new cancer cases, 65% (5.3 million) of the cancer deaths and 48% (15.6 million) of the 5-year prevalent cancer cases occurred in the fewer developed-regions [2].

The overall age-standardized cancer incidence rate is almost 25% higher in men than in women, with rates of 205 and 165 per 100,000, respectively. Male incidence rates vary almost five-fold across different regions of the world, with rates ranging from 79 per 100,000 in Western Africa to 365 per 100,000 in Australia/New Zealand (with high rates of prostate cancer representing a significant driver of the latter). There is less variation in female incidence rates (almost three-fold) with rates ranging from 103 per 100,000 in South-Central Asia to 295 per 100,000 in Northern America [2].

In terms of mortality, there is less regional variability than for incidence, the rates being 15% higher in more developed than in less developed regions in men, and 8% higher in women. In men, the rates are highest in Central and Eastern Europe (173 per 100,000) and lowest in Western Africa (69). In contrast, the highest rates in women are in Melanesia (119) and Eastern Africa (111), and the lowest in Central America (72) and South-Central (65) Asia [2].

In India 1 million of these new cases and nearly 700 000 of the deaths occurred, which is home to about 17% of the global population [3].

In 2012, almost 145000 Indian women were diagnosed with breast cancer. Nearly 400000 of those who had reportedly been diagnosed with breast cancer in the previous 5 years were still alive [4].

In India, the five most common cancers in both sexes were

- Breast (144,937; 14.3%),
- Cervix Uteri (122,844; 12.1%),
- Lip-Oral (77,003; 7.6),
- Lung (70,275; 6.9%),
- Colorectum (64,332; 6.3%),

These comprising 47.2% of the 28 cancers reported. Further, deaths due to these five cancers are 302,124.

In India, the five most common cancers in men were

- Lung (11.3%),
- Lip-Oral (11.3%),
- Stomach (9.1%),
- Colorectum (7.7%),
- Oro-pharynx (6.6%)

These resulting in 219,608 cancers; death due to these cancers were 180,670, with a five-year prevalence as 235,840.

In India, the five most common cancers in women were

- Breast (27%),
- Cervix Uteri (22.9%),
- Colorectum (5.1%),
- Ovary (5.0%),
- Lip-Oral cavity (4.3%)

A total of 345,191 cancers; death due to these were amounted to 193,664, with the five-year prevalence as 833,106(5), a diagnosis of cancer often leads to catastrophic personal health expenditures. Such expenditures can push entire families below the poverty line [3]. The rapid epidemiological transition has resulted in a shift in the focus from communicable to non-communicable diseases in terms of morbidity and mortality. The cancer profile varies in different parts of the world and an epidemiological study helps us to know the common cancers prevalent in particular segments of a population. However, there is a lack of definitive information regarding hospital-based cancer profile in northern Karnataka. So, the present study is being undertaken with the aim to find out the profile of Cancer patients at SDM College of Medical Sciences and Hospital, Dharwad which is located in Northern Karnataka.

Material and Methods

Study design: Hospital-Based, Cross-Sectional Study

Study population: All diagnosed cancer patients admitted in SDMCMSH, Dharwad for treatment

Sample size: All diagnosed cancer patients admitted in SDM College of Medical Sciences and Hospital, during the study period (November 2013 to October 2014) will be enrolled in the study. As per the retrospective data collected from the hospital records, the average number of patients admitted during the last 3 years (who satisfy the present study criteria) accounted for 320. So, the expected sample size for the present study is estimated to be around 300.

Sample population: Cancer cases admitted to the hospital for the duration of more than 24 hours and meeting study criteria. A total of 381 were studied during the study period.

Study instrument: Pretested, semi-structured questionnaire was administered by the investigator which relied on ICD-10 for classifying the type of cancer

Study duration: One year [1st November 2013-30th October 2014]

Study setting: Sri Dharmasthala Manjunatheshwara College of Medical Sciences and Hospital is a tertiary care hospital at Dharwad, Karnataka. The hospital serves as an important reference center for people in and around the district of Hubli-Dharwad.

Ethical clearance: Obtained from the Institutional Ethics Committee, SDMCMS, and H, Dharwad on 8th November 2013

Reference number: SDMIEC: 123: 2013

Results

It was observed that, regarding the gender-wise distribution of 381 study subjects. Males were 154 (40.4%) and females were 227 (59.6%). An age-wise distribution of study subjects, it was found that majority of males, 78 (50.6%) study subjects were in the age group of 60-69 years followed by 22 (14.3%) in 50-59 years, 20 (13.0%) in 70-79 years, and 17 (11%) in 40-49 years age group.

In female group majority 64 (28.2%) study subjects were in 50-59 years followed by 47 (20.7%) in 40-49 years, 40 (17.6%) in 60-69 years, and 30 (13.2%) in 30-39 years age group. In males 78 (50.6%) study subjects were in 60-69 years age group which is more when compared to other age Groups. Majority of study subjects were Hindus i.e. 336 (88.2%) followed by Muslims 34 (8.9%) Christians and other religions were 11 (2.9%)

The majority of study subjects were illiterates i.e. 123 (32.3%). 50 (32.5%) in males and 73 (32.2%) in females were illiterates. Primary school 87 (22.8%), followed by both high school and graduate 63 (16.5%).

The majority of female study subjects were housewives i.e. 115 (50.7%) followed by agriculturist 47 (20.7%) followed by laborer 27 (11.9%). In the male's majority were agriculturist 43 (27.9%) followed by those who were unemployed 29 (18.8%).

According to socioeconomic status majority of study subject males were in lower-middle and upper lower class i.e. 40 (26%) followed by upper class 81 (24.8%) followed by upper-middle-class 27 (17.5%) and in female group majority of study subjects were in upper-middle-class i.e. 70 (30.8%) followed by lower-middle-class subjects 54 (23.8%) followed by upper lower class 49 (21.6%). The present study shows that 239 (62.7%) of study subjects were belonging to the nuclear family in both groups. In male group 106 (68.8%) study subjects belonged to the joint family which was more compared to urban area 81 (24.8%) (Table 1).

Table-1: Socio-demographic profile of cancer patients.

		Male No. (%)	Female No. (%)	Total No. (%)
Age	19-29	4 (2.6)	20 (8.8)	24 (6.2)
	30-39	5 (3.2)	30 (13.2)	35 (9.18)
	40-49	17 (11.0)	47 (20.7)	64 (16.7)
	50-59	22 (14.3)	64 (28.2)	86 (22.5)
	60-69	78 (50.6)	40 (17.6)	118 (30.9)
	70-79	20 (13.0)	18 (7.9)	38 (9.9)
	>80	8 (5.2)	8 (3.5)	16 (4.1)
	Total	154 (100)	227 (100)	381 (100)
Sex		154 (100)	227 (100)	381 (100)
Education	Illiterate	50 (32.5)	73 (32.2)	123 (32.2)
	Primary School	38 (24.7)	49 (21.6)	87 (22.8)
	High School	27 (17.5)	36 (15.9)	63 (16.5)
	PUC / Secondary	17 (11.0)	14 (6.2)	31 (8.1)
	Graduate	18 (11.7)	45 (19.8)	63 (16.5)
	Postgraduate	4 (2.6)	10 (4.4)	14 (3.67)
	Total	154 (100)	227 (100)	381 (100)

Occupation	Unemployed	29 (18.8)	0	29 (7.6)
	Agriculturist	43 (27.9)	47 (20.7)	90 (23.6)
	Laborer	18 (11.7)	27 (11.9)	45 (11.8)
	Housewife/unemployed	0	115 (50.7)	115 (30.1)
	Businessman	25 (16.2)	2 (0.9)	27 (7.08)
	Student	3 (1.9)	10 (4.4)	13 (3.41)
	Employee in service	15 (9.7)	18 (7.9)	33 (8.6)
	Others	21 (13.6)	8 (3.5)	29 (7.6)
	Total	154 (100)	227 (100)	381 (100)
Socio economic classification (according to BG Prasad)	Class I	33 (21.4)	43 (18.9)	76 (20)
	Class II	27 (17.5)	70 (30.8)	97 (25.4)
	Class III	40 (26.0)	54 (23.8)	94 (24.67)
	Class IV	40 (26.0)	49 (21.6)	89 (23.3)
	Class V	14 (9.1)	11 (4.8)	25 (6.56)
	Total	154 (100)	227 (100)	381 (100)
Religion	Hindu	137 (89.0)	199 (87.7)	336 (88.1)
	Muslim	14 (9.1)	20 (8.8)	34 (8.9)
	Christian	0 (0)	2 (.9)	2 (0.5)
	others	3 (1.9)	6 (2.6)	9 (2.36)
	Total	154 (100)	227 (100)	381 (100)
Marital	Married	119 (77.3)	176 (77.5)	295 (77.4)
	Unmarried	4 (2.6)	27 (11.9)	31 (8.1)
	Divorced	4 (2.6)	6 (2.6)	10 (2.62)
	Widow/Widower	27 (17.53	18 (7.9)	45 (11.8)
	Total	154 (100)	227 (100)	381 (100)

Table-2: Type family history, comorbidity, and stages of cancer patients.

		Male No. (%)	Female No. (%)	Total No. (%)
Disease and ICD 10 CODE	Mouth (6)	2 (1.3)	0	2 (.5)
	Parotid gland (7)	0	2 (0.9)	2 (0.5)
	Salivary glands (8)	2 (1.3)	0	2 (0.5)
	Oropharynx (10)	2 (1.3)	0	2 (0.5)
	Hypo pharynx (13)	1 (0.6)	1 (0.4)	2 (0.5)
	Stomach (16)	18 (11.7)	8 (3.5)	26 (6.8)
	Small intestine (17)	3 (1.9)	0	3 (0.8)
	Colon (18)	14 (9.1)	7 (3.1)	21 (5.5)
	Recto sigmoid junction (19)	1 (0.6)	3 (1.3)	4 (1.04)
	Rectum (20)	15 (9.7)	13 (5.7)	28 (7.3)
	Anus/anal canal (21)	1 (0.6)	1 (0.4)	2 (0.5)
	Liver /bile duct (22)	42 (27.3)	14 (6.2)	56 (14.7)
	Gall bladder (23)	2 (1.3)	6 (2.5)	8 (2.09)
	Biliary tract (24)	7 (4.5)	4 (1.8)	11 (2.8)
	Bronchus/lungs (34)	15 (9.7)	18 (7.9)	33 (8.7)
	Urinary tract (64)	1 (0.6)	0	1 (0.2)
	Bladder (67)	2 (1.3)	1 (0.4)	3 (0.7)
	Thyroid (73)	1 (0.6)	18 (7.9)	19 (4.9)
	Adrenal gland (74)	1 (0.6)	1 (0.4)	2 (0.5)
	Parathyroid gland (75)	2 (1.3)	2 (1.9)	4 (1.04)
	Breast (50)	2 (1.3)	79 (34.8)	81 (21.3)
Family history	Present	25 (16.2)	29 (12.8)	54 (14.17)
	Absent	129 (83.8)	198 (87.2)	327 (85.8)
	Total	154 (100)	227 (100)	381 (100)
Comorbidity	Hypertension	31 (20.1)	28 (12.3)	59 (15.4)
	Diabetes mellitus	19 (12.3)	17 (7.5)	36 (9.44)
	Hypertension and Diabetes mellitus	25 (16.2)	17 (7.5)	42 (11.02)
	Asthma	3 (1.9)	3 (1.3)	6 (1.57)
	Hypothyroidism	1 (1.6)	2 (.8)	3 (0.78)
	Tuberculosis	6 (3.9)	3 (1.3)	9 (2.36)
	No Disease	69 (44.8)	157 (69.2)	226 (59.3)
	Total	154 (100)	227 (100)	381 (100)

Stages of cancer presentation	Stage 1	7 (4.5)	35 (15.4)	42 (11.02)
	Stage 2	58 (37.7)	86 (37.9)	144 (37.7)
	Stage 3	67 (43.5)	60 (26.4)	127 (33.3)
	Stage 4	22 (14.3)	46 (20.30	68 (17.84)
	Total	154 (100)	227 (100)	381 (100)

It was observed that breast cancer was the most common cancer followed by liver cancer and lung cancer and common cancers among the female group of population were cancer breast 79 (34.8%) followed by cancer cervix 20 (8.8%) followed by cancer ovary 19 (8.4%) and thyroid 18 (7.9%).

And the most common cancers among the male group of the population were cancer liver 42 (27.3%) followed by cancer prostate 19 (12.3%) followed by cancer stomach 18 (11.7%) and lungs 15 (9.7%).

The present study showed that around 69 (44.8%) of them were free from any comorbidity followed by 31 (20.1%) suffering from hypertension followed by 19 (12.3%) with diabetes as comorbidity and 25 (16.2%) suffered from both diabetes and hypertension.

It was observed that majority of cancer in males were diagnosed in stage III of disease accounting 67 (43.5%) followed by stage II 58 (37.7%) and in female patients majority of cancer was diagnosed in stage II 86 (37.9) followed by stage III 60 (26.4%) (Table 2).

Table-3: Association of socio-demographic factors with breast cancer.

Socio-demographic factors	Breast cancer		Odds Ratio	95% Confidence Intervals		χ2 (p-value)
	Present No.	Absent No.		Lower Limit	Upper Limit	
Age						
<50 years	43	99	0.4353	0.2644	0.7164	11.01, p=0.0009*
>50 years	38	201				
Education						
Illiterates	19	104	0.57	0.3278	1.0175	3.67, p=0.055
Literates	62	196				
SES						
Upper	70	103	12.17	6.1729	23.9983	69.80, P<0.0001*
Lower	11	197				

A significant association was found between socio-demographic factors with breast cancer. It was found that in 19-50 years age group 43 (30.2%) were diagnosed with breast cancer as compared to the older age group. This difference between age group with respect to cancer breast was found to be statistically significant (p= 0.0009), and 70 (40.4%) Of the study subjects belonging to Upper SES were diagnosed with breast cancer when compared to lower SES 11 (5.2%). This difference was found to be statistically significant (p<0.01) (Table 3).

Table-4: Association of socio-demographic factors with cervical cancer.

Socio-demographic factors	Cervical cancer		Odds Ratio	95% Confidence Intervals		χ2 (p-value)
	Present No.	Absent No.		Lower Limit	Upper Limit	
Age						
<50 years	11	99	1.33	0.530	3.353	0.38, p=0.53
>50 years	9	108				
Education						
Illiterates	4	69	0.5	0.161	1.5527	p=0.3169
Literates	16	138				
SES						
Upper	3	110	0.1556	0.0443	0.5472	P=0.0016*
Lower	17	97				

Women with lower SES had a higher risk of cancer cervix 17(14.9%) compared to higher SES 3(2.6%). This difference was found to be statistically significant (p=0.0016) (Table 4).

Table-5: Association of socio-demographic factors with lung cancer.

Socio-demographic factors	Lung cancer		Odds Ratio	95% Confidence Intervals		χ2 (p-value)
	Present No.	Absent No.		Lower Limit	Upper Limit	
Age						
<50 years	13	129	1.1035	0.5311	2.293	0.07, p=0.79
>50 years	20	219				
Sex						
Male	15	139	1.253	0.611	2.569	0.38 p=0.537
Female	18	209				
Education						
Illiterates	4	119	0.2654	0.0912	0.7728	P=0.01*
Literates	29	229				
SES						
Upper	16	157	1.145	0.5603	2.339	0.14, p=0.708
Lower	17	191				

Lung cancer was seen more in literates when compared to illiterates. In the present study, Lung cancer was seen in 29(11.2%) of literates while 4(3.3%) in illiterates.

This difference between education with respect to Lung cancer was found to be statistically significant with p-value (p=0.01) (Table 5).

Table-6: Association of socio-demographic factors with liver cancer.

Socio-demographic factors	Liver cancer		Odds Ratio	95% Confidence Intervals		χ2 (p-value)
	Present No.	Absent No.		Lower Limit	Upper Limit	
Age						
<50 years	11	131	0.362	0.1806	0.7257	8.73,
>50 years	45	194				p=0.003*
Sex						
Male	42	112	5.7054	2.988	10.892	32.6
Female	14	213				p=0.0001*
Education						
Illiterates	24	99	1.712	0.959	3.056	3.36,
Literates	32	226				p=0.066
SES						
Upper	17	156	0.472	0.256	0.868	6,
Lower	39	169				p=0.014*

When compared socio-demographic factors with cancer liver. It was found that study subjects in the age group >50 years i.e. 45 (18.8%) had more diagnosed lung cancer as compared to <50 years age group. This difference between the age group with respect to cancer liver was found to be statistically significant (p= 0.00313). Liver cancer was different in males when compared to females.

In males, 42 (27.2%) had liver cancer and 14 (6.1%) were seen in females. This difference between gender with respect to liver cancer was found to be statistically significant (p=<0.0001). Liver cancer was seen more in Lower SES i.e. 39 (18.7%) when compared to Higher SES i.e. 17(9.8%) of study subjects. This difference was found to be statistically significant (p=0.014) (Table 6).

Cancer breast (21.3%) in subjects was most prevalent, followed by the liver and biliary tract (14.7%), followed by lungs (8.7%) a study done by Puri et al, showed that Cancer lung (22.3%) in subjects was most prevalent, followed by ca breast (13.1%) [6].

A study done in Kashmir by Wani et al shows that the ten leading sites of cancer are esophagus and GE Junction, lung, stomach, colorectal, lymphomas, skin, laryngopharynx, acute leukemias, prostate and brain in males. In females, the leading sites are breast, esophagus, and GE Junction, ovary, colorectal, stomach, lung, gallbladder, lymphomas, acute leukemias and brain.

27%

Discussion

The esophagus and stomach alone constituted over of the total cancers, these findings were not similar to the present study [7]. Another study in Maharashtra by Bangal et al showed that the Cancer cervix was the commonest site (19.5%), followed by cancer breast (10.2%), cancer of the lung (9.7%) and cancer of the floor of mouth (7.3%).

In males, the commonest site for cancer was lung (9.7%), followed by the floor of mouth (7.3%), while in females; cancer cervix (19.5%) predominated, followed by cancer breast (10.2%) and cancer ovary (2.4%) [8].

Similar study in Kolar by Kalyani et al showed that Cancer of oral cavity predominated in both genders and the top ten sites most frequently involved by cancer in males were oral cavity, stomach, esophagus, bone, NHL, prostate, liver, larynx, penis, and Hodgkin's disease/bladder cancer, whereas, the sites in females were oral cavity, cervix, breast, stomach, esophagus, thyroid, ovary, bone, rectum, and melanoma skin, this result was contrasted to present study [9].

In the Global Adult Tobacco Survey 2009-10 (GATS), the majority of study subjects were homemakers and self-employed and this finding was similar to the present study [10].

Similar observations were found in a study done in Karnataka by Rajesh et al, shows that 23.3% were unemployed and unskilled 46.6% [11].

A study done by Suthahar et al, at Malaysia findings were similar to the present study, which shows that 50% were unemployed and 64.7% was pensioner [12].

A study done by Kaku et al, at south India findings were similar to the present study, 22% were illiterate and 33% were literate by occupation [13].

According to National cancer registry program under Indian council of medical research Consolidated report of Population-based cancer registries, Bangalore reports that Males: The leading sites of cancer were hypopharynx (8.4%), esophagus (7.9%), lung (7.0%), tongue (6.7%) and mouth (6.5%) followed by others, the leading cancer sites among females were cancer of the cervix, accounting for about 27.3% of cancers followed by breast (15.6%), mouth (10.3%), ovary (5.9%) and

Esophagus (5.1%) [14].

In the present study, 70(40.4%) of the study subjects belonging to Upper SES were diagnosed with breast cancer when compared to lower SES 11(5.2%). This difference was found to be statistically significant ($p<0.01$).

A study was done in Delhi by Kaur et al .showed that there was no significant difference in literacy status and Ca breast[15].

Neal and Allgar's study showed that there was a significant difference in age group and diagnosis of Ca breast [16].

Cervical cancer was seen more in lower SES i.e. 17(14.9%) when compared to higher SES 3(2.6%). This difference was found to be statistically significant ($p=0.0016$).

Thulaseedharan et al study showed that the risk significantly increased with increasing age. There was a 2.5-fold (95%CI = 1.59-3.77) increase in risk among women aged 50-59 years compared to those aged 30-39, and a significant dose-response relationship (p-value <0.001) was also observed. This was not similar to the present study[17].

Limitation

This study is a hospital-based study so it cannot generalize to the population.

- As the study was done for 1 year, so the exact pattern of cancers prevalent in the region and neighboring areas couldn't be estimated.
- Complete data from patients pertaining to follow up and the outcome couldn't be retrieved owing to the study period being Less.

Conclusion

Breast cancer more common among younger age groups and upper SES, Cervical cancer more common among lower SES, Lung cancer in literates' Liver cancer more common among older age group and lower SES. So, these groups can be targeted for the population for health education and screening for early diagnosis and treatment.

What does the study add to the existing knowledge

In the present study, it was found that the majority of patients were reporting in stage III of cancer and 14% shows positive family history.

- The majority of patients were reporting in stage III CA so health education regarding early diagnosis and treatment recommended.
- Clinicians should elicit family histories and counsel about health-related behavior's
- In the present study, a statistically significant association was found between socio-demographic factors and types of cancers, so those groups can be targeted for health education and screening for early diagnosis and treatment.
- Breast cancer more common among younger age group and upper SES
- Cervical cancer more common among lower SES
- Lung cancer in literates
- Liver cancer more common among older age group and lower SES

Author's contribution

Both the authors, **Dr. Antoney Unni Xavier** and **Dr. Amgiasvasanth A M** contributed equally in the conduct of the study, data analysis and in the preparation of the manuscript.

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