



**BURDEN OF VARIOUS CANCERS WITH RESPECT TO BIO-SOCIAL FEATURES OF  
PATIENT ATTAINING IN A TERTIARY LEVEL HEALTH CARE FACILITY OF  
JIANGSU PROVINCE OF CHINA**

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**ABSTRACT**

**Introduction:** Cancer is currently the most sought after issue for its fatality worldwide. Millions of people die of cancer every year and is a major public health problem globally as well as in China. Cancer incidence varies around the globe, especially between less-developed and developed regions. Globally, Cancer has been seriously affecting the national economy, social development, and national public health system. A recent report of national cancer center estimates that there were 4.3 million new cancer cases and 2.8 million cancer deaths in China in 2015, with lung cancer the most common cancer and the leading cause of cancer death. **Methodology:** A hospital based cross-sectional study was conducted among 430 participants in inpatient department of Onchology Xuzhou Medical University Hospital, Jiangsu province of china from July 2015 to January 2016 applying interview and record based method. Burden of cancer was found on the basis of demographic and behavioural pattern. Descriptive statistics was used to analyze the data in SPSS 16.0 and presented in tabular as well as in graphical form. **Result:** Altogether 430 cancer patients were included as the study participants in this study. Out of them 257 (59.8%) were females and 173 (40.2%) were males. The age of the respondents ranged from 19 year to 88 year (Mean  $\pm$  SD: 56.3 $\pm$ 14.08 years). Maximum number (31.5%) of participants followed Christian religion and majority of the participants (80.7%) of respondent had the history of smoking. The maximum burden of cancer in female was found as breast cancer (22.6%) followed by cervical cancer (11.2%) in male was lung Cancer (11.2%) followed by stomach cancer (10.7%). **Conclusion:** Breast, lung, cervical, stomach and colorectal cancers are more commonly seen in Jiangsu province of China. Breast cancer is most common in females whereas lung cancer is most common in males. Cancer burden seems to be higher among the smokers and alcoholics. The burden of cancer is inversely proportional to education. Hence, awareness on cancer burden and behavioral change program needs to be conducted for uneducated people; housewives and labourers that would support cancer reduction. Similarly, new plan focusing the preventive measures and screening strategies is also essential for the increment the purposed program in the Jiansu Province of china.

**KEYWORDS:** Cancer, Risk Factor, incidence, cancer mortality.

**I. INTRODUCTION**

Cancer is currently becoming a major public health issue worldwide and China as well. Millions of people are suffering from this devastating problem every year.<sup>[1]</sup> Cancer incidence varies around the world. The heterogeneity of cancer incidence is due to various factors like demographic, ecological, environmental, cultural, and genetic manifestation. But, diminutive information is available about cancer in the majority of developing countries including China.<sup>[2]</sup> Globally,

Cancer has been seriously affecting the national economy, social development, and national public health system.

In Asia, about 3.5 million people died of cancer in 2002 and the death toll projected to 8.1 million by 2020.<sup>[3]</sup> Since 1970, cancer incidence has significantly increased, and cancer mortality has become the second leading cause of death in the rural area and the leading cause of death in urban areas of China.<sup>[7] [8]</sup> A study reported that

the incidence of lung cancer was increased by 1.63% yearly from 1988 to 2005 in China. In 2005, the mortality rate of lung cancer was 30.84 per 100,000 which rised by 465% over the past 30 years.<sup>[6]</sup> According to the report of GLOBOCAN, it was estimated that about 12.7 million new cancer cases and 7.6 million death due to cancer was explored in 2008 that increased to 14.1 million new cases and 8.2 million deaths in 2012.<sup>[4]</sup> A recent report of national cancer center estimated that there were 4.3 million new cancer cases and 2.8 million deaths occurred in China in 2015, out of which lung cancer was the most common and the leading cause of the death.<sup>[4]</sup> Hence, the present study was conducted to explore the burden of various types of cancer among the patients attending tertiary level health facility.

## II. METHODOLOGY

The present study was of a cross-sectional descriptive type based on primary and secondary data of cancer patients which was conducted in Xuzhou Medical University Hospital (XMUH), offering tertiary care in Xuzhou City, Jiangsu Province of China. Altogether 430 cancer patients admitted to Onchology Department of XMUH during the study period from July 2015 to Jan. 2016 were included in this study. The primary data was collected using the pretested semi-structured questionnaire through face to face interview. For the more medical and bio-social history, the patient card and the hospital records were also used for collecting the required information. To maintain the validity and reliability, questionnaire was translated in local language and enumerators were well trained before data collection.

Periodic monitoring and 10% of cross matching of the data was conducted by the principal investigator during the study period.

Ethical Consent was taken from ethical review board of Xuzhou Medical University before starting the study. Both written and verbal consent were taken from the study participants. Privacy and confidentiality were fully maintained considering the emotional aspect of the patients during the study period. The data was re-checked to ensure whether or not there is any item missing on the same day. The so collected data was analyzed and interpreted using SPSS version 16 and chi-square test was used for the test of statistical significance.

## III. RESULTS

Altogether 430 participants were included as the study participant in this study. Out of them 257 (59.8%) were females and 173 (40.2%) were males. The study found that male cancer patients had statistically significant higher risk of cancer ( $1.5255 \pm 0.500$ ) as compared to female ( $1.94 \pm 0.22$ ) ( $P < 0.001$ ). The age of the respondent ranged from 19 year to 88 year (Mean  $\pm$  SD:  $56.3 \pm 14.08$  years). Maximum number (31.5%) of participants were from Christian religion. The median age of marriage of the participants was 24 ranging from 16 to 31 years. Likewise, average family income of the respondents was found to be RMB 9,707.5 per month. Majority (25.8%) of the respondents had primary level education followed by secondary level (24.8%), uneducated (23 % and university level educated (9.1 %) (Table 1).

**Table 1: Socio-demographic characteristics of participants (N=430)**

Characteristics	Frequency (N)	Percentage (%)	P – value
Sex wise distribution	Male	173	40.2
	Female	257	59.8
Age Group	10-20	6	1.4
	20-30	13	3.0
	30-40	27	6.3
	40-50	92	21.4
	50-60	119	27.7
	60-70	88	20.5
	70-80	69	16.0
	80-90	16	3.7
Religion wise cancer incidence	Christian	108	25.1
	Buddhist	15	3.5
	Hindu	23	5.3
	Muslim	12	2.8
	Not respond	272	63.2
Level of education	Uneducated	91	23
	Primary level	102	25.8
	Secondary level	98	24.8
	Higher secondary	68	17.2
	University level	36	9.1
Occupation and cancer	Government	21	5.3
	Business	24	6.1

	Labor	145	36.7	
	Unemployed	39	9.9	
	Housewife	101	25.6	
	Farming	65	16.5	

Regarding the occupation of the participants, the study showed that majority (36.7%) were labor where as housewife (25.6%) and agriculture (16.5%). Few of them

were found to be engaged in business (6.1%) and some were in government service (5.3%). (Table 1).

**Table 2: Burden of Cancer according to socio-behavior pattern**

<b>Kinds of tobacco/alcohol product used by family members</b>			
<b>Type/ Frequency/ Duration</b>	<b>Frequency</b>	<b>Percentage (%)</b>	<b>P – value</b>
Smoking	347	80.7	0.000
No Smoking	10	2.4	
Don't want to disclose	73	17	
<b>Duration of smoking</b>			
1-10 years of smoking	57	13.3	
10-20 years of smoking	88	20.5	
20-40 years of smoking	127	29.5	
More than 40 years of smoking	87	20.4	
Don't want to disclose	71	16.6	
<b>History of Alcohol Use</b>			
Yes	336	78.1	0.000
No	46	10.7	
Don't want to disclose	48	11.2	
<b>Duration of alcohol use</b>			
1-10 years	41	9.5	
10-20 years	93	21.6	
20-40 years	125	29.1	
More than 40 years	62	14.4	
Don't want to disclose	109	25.3	
<b>Frequency of alcohol use</b>			
Once a day	37	8.6	
Twice a day	86	20	
Once a week	14	3.3	
Occasional	35	8.1	
Don't want to disclose	258	60	
<b>Total</b>	<b>430</b>	<b>100</b>	

Present study showed that 80.7% of respondents had the history of smoking cigarette and 29.5% had smoked cigarette for 20 to 40 years. Similarly 78.1% of respondents had history of alcoholism, among them maximum respondents (29.1%) had history of alcohol for 20 to 40 years. Our study showed that history of smoking and alcohol consumption more than 10 to 20 years had higher risk of cancer. History of smoking and alcoholism had significant relationship with cancer. ( $p < 0.000$ ) (Table 2)

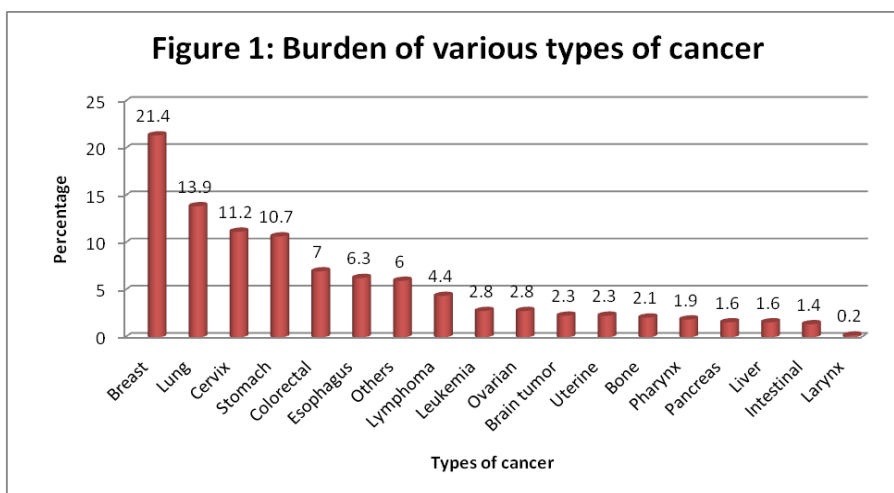
#### **Burden of cancer according to their types**

The burden of different types of cancer was observed among the 430 respondents, the maximum burden was found as breast cancer (21.4%), cervical cancer (11.2%). Uterine cancer (2.3%) and ovarian cancer (2.8%) were

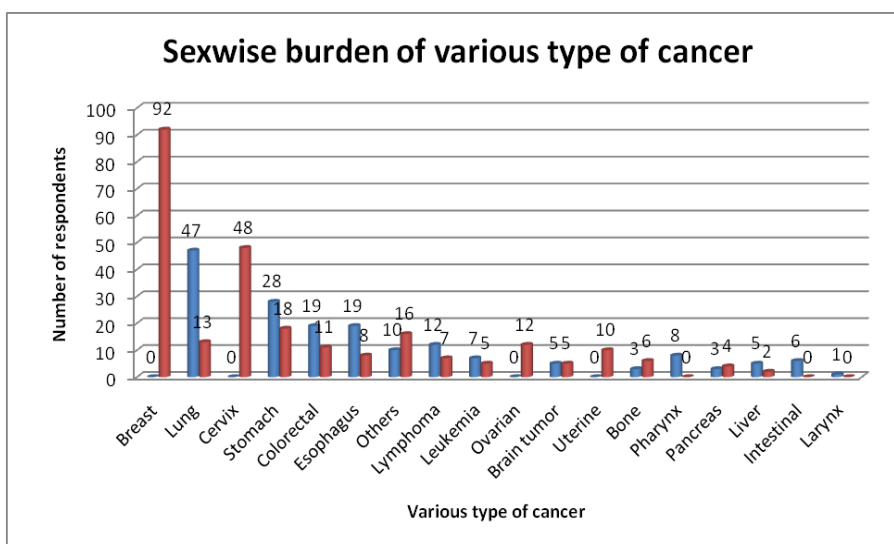
less in comparison to other breast and cervical cancer. Bone cancer and blood cancer was found to be equal (2.8%). Lymphomas, brain tumor and lung cancer were found to be ranged from 8.6% to 6.3%. Other cancer like stomach, pancreas, colorectal, liver etc were found to be fewer in number ranging from 4.4% to 1.2%. (Fig. 1 and Table 3.).

**Table 3: Burden of various type of cancer according to sex**

Type of Cancer in participant	Sex of respondent		Total No. of respondent	
	Male (N)	Female (N)	Total Number (N)	Percentage (%)
Breast	0	92	92	21.4
Lung	47	13	60	13.9
Cervix	0	48	48	11.2
Stomach	28	18	46	10.7
Colorectal	19	11	30	7.0
Esophagus	19	8	27	6.3
Lymphoma	12	7	19	4.4
Leukemia	7	5	12	2.8
Ovarian	0	12	12	2.8
Brain tumor	5	5	10	2.3
Uterine	0	10	10	2.3
Bone	3	6	9	2.1
Pharynx	8	0	8	1.9
Pancreas	3	4	7	1.6
Liver	5	2	7	1.6
Intestinal	6	0	6	1.4
Larynx	1	0	1	0.2
Others	10	16	26	6.0
Total	173	257	430	100



**Fig. 1: Burden of various type of cancer in participant.**



**Fig. 2: Sexwise burden of various types of cancer**

#### IV. DISCUSSION

China is one of the densely populated countries in the world. The burden of cancer is increasing day by day following the development of the country. Most of the people are living with their sedentary life. As a result the incidence has increasing trend. Many studies conducted within China and outside of the china show variation of cancer burden according to their socio-demographic and behavioral pattern. Present study showed that the burden was found to be more in old age with compared to adult and young age. About one quarter of the burden was found in the age group of 50-60 years. This figure is in line with other similar study conducted in china and abroad. A study conducted in Nepal by Chataut R et al. showed that the burden was maximum in the age group 45 to 54 years.<sup>[3]</sup> According to a report of Globocan In economically developed countries, 78 percentage of all newly diagnosed cancer cases occur at age 55 years and older, compared to 58 percentage in developing countries. The difference is largely due to variations in age structure of the populations.

Present study showed that the most of the cancer burden was found to be more in females as compared to males which is statistically significant ( $p < .005$ ). The result is in consistent to many studies conducted inside China and outside china as well.<sup>[3][10]</sup> Religion wise cancer burden in this study was found to be more in Christian religion. About one third of the participants were belonged to Christianity. The study reveals that cancer burden was less in people with higher education. About one third of burden was in found in higher education level people whereas about two third of the burden was found in people with lower education including uneducated people. The result is somehow similar to another study conducted by ping et al.<sup>[8]</sup> Burden on the basis of working status of participant the most (more than one third) was found among the labour followed by housewife whereas the least (less than 6%) was found among service holder and businessman. This might be due to the fact that the businessman and service holder may expose various type of awareness related activities and conscious to their health with compare to labour and housewife. This study is similar to the study done by You et al.<sup>[19]</sup>

Participant of our study used to cigarette smoking. Smoking behavior is also the major contributing factor of cancer. This study showed that almost all of the participant had the history of smoking and alcohol use which is similar in findings of the study done by Zhang Y. et al.<sup>[16]</sup> Furthermore the study showed that cancer burden was directly proportional to duration of smoking and alcohol use. More the duration of smoking and alcohol consumption, higher the burden. Participant who had the history of smoking and alcohol consumption about four decades had more chances of cancer occurrence. Similar type of study found the consistent result.<sup>[3][20]</sup>

Our study showed that breast cancer was the most frequently occurring cancer followed by cervical cancer. The most common types of cancer in males were those of the lung (21.7%) of all cancers, after that stomach (19.5%), and liver (18.1%) comparison of Cancer Incidence between China and the USA.<sup>[10]</sup> Similar study conducted by Ping et al. in china showed that lung cancer is the most common cancer, followed by stomach cancer, liver cancer, esophageal cancer and colorectal cancer.<sup>[8][9]</sup> But in our study we found breast cancer is the most common (87, 20.2%) among the participants who visited our hospital. Similarly lung and cervical cancer is the second most common cancer (47, 10.9%). Lung cancer is the first leading cancer in USA too.<sup>[9]</sup> It now represents one of the leading cause mortality as well as morbidity among all cancers in women.<sup>[11]</sup> Many data shows that lung cancer is an ongoing health issue and is the most commonly diagnosed cancers worldwide were lung cancer in China as well as around the globe.<sup>[2][11][14][17]</sup> Similar study found the incidence of gastrointestinal cancers, including carcinomas of the stomach, liver, and esophagus was higher in China than in the USA.<sup>[12][13]</sup> Burden of Liver and pancreatic cancer had equal incidence (1.6%). Similar study conducted in other countries has consistent finding our result.<sup>[12]</sup> Similar study conducted in India showed that the consequences of different types of liver disorders including liver cancer results in high foetal as well as maternal morbidity and mortality.<sup>[21]</sup>

#### V. CONCLUSION

Different types of Cancer such as breast, lung, cervical, stomach, colorectal, bone together with the different types of lymphomas, and cancer of abdominal region, including those of the liver, pancreas, and small intestine are the major burden of cancer in Jiangsu province of China. Breast cancer is most common followed by cervical cancer among females whereas lung cancer is the most common cancer in males. Cancer burden seems to be higher among the Smokers and alcoholics. The burden of cancer is inversely proportional to level of education of the people. Hence, awareness on cancer burden and behavioral change program need to be conducted focusing to uneducated people, housewives and labors to reduce the burden of cancer. Similarly new plan focusing the preventive measures and screening strategies is also essential to increase the purposed program in the Jiansu Province of china.

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