

# Incidence of gall bladder cancer in rural and semi-urban population of north central India: A first insight

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## Citation

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## Abstract

There is marked increase in the incidence of gall bladder cancer (GBC) in Indian subcontinent in recent times. No hospital based data or registry is available for this important cancer from North Central province of India. The present study aims to make a first insight into the pattern of GBC in North Central region of India during the year (2007-08). A retrospective study was carried out at the Cancer Hospital and Research Institute, Gwalior, Madhya Pradesh, India, to identify the pattern of GBC in different districts of north central India. The data obtained were analyzed for statistical significance by calculating the average value of the parameters followed by sample t-test using Graph Pad Prism 5. Most of the patients were from rural background with poor economic status (55.07%) with low body mass index (BMI  $\leq 18.5$ ) and were either uneducated or educated up to primary level only. The crude incidence rate of GBC was 15.5/1, 00,000 in females and 5.9/1, 00,000 in males. The female/male ratio was 2.3 for gall bladder diseases.

## INTRODUCTION

Gall Bladder Cancer (GBC) was first described by De Stoll in 1777. GBC is a rare neoplasm with marked ethnic, gender and geographical variations worldwide. Since 1980s, the mortality rate remained as such. Bolivia and Chile have had the highest incidence rate in the world. The highest mortality rate of both women (16.6/1, 00, 000) and men (7.8/1, 00, 000) was also observed in Chile<sup>1</sup>. The comparison of different population based cancer registries indicated that GBC was one of the commonest causes of cancer related mortality in women in northern and north-eastern states of India<sup>2</sup>. The reported incidence ranged from 10/1, 00, 000 in Delhi to 2-3/1, 00, 000 in South India<sup>3</sup>. The association of GBC with gall stone increased the risk from 4 to 7 times than those without gall stone<sup>4</sup>. Mention may be made of chronic cholecystitis, Salmonella typhii infection, BMI, dietary and environmental factors as some risk factors other than gall stone<sup>1,5,6</sup>. Blood serum alkaline phosphatase (ALP), serum glutamic pyruvic transaminase (SGPT), serum glutamic oxaloacetic transaminase (SGOT) and total bilirubin (TB) were found elevated in different cancers<sup>7,8,9,10</sup>. The asymptomatic nature of the disease always remained a problem in the diagnosis and treatment. This was always being confused with other gastrointestinal problems as symptoms like abdominal pain, abdominal lump, anorexia, jaundice, nausea and vomiting are common to GI tract

problems. Thus, urgent ultra-sonography followed by cytological investigations is needed to diagnose the gall bladder disease. Unfortunately, in a study area like ours, most often patients visit hospital only when the disease is in its advance stage and thus, have a poor prognosis. There is lack of an ideal civil registration system in this part of South-East Asia to estimate the morbidity and mortality rates for a particular disease. The national level data sets<sup>11,12</sup> showing incidence of gall bladder cancer made available have clearly missed the North Central part of India (including north Madhya Pradesh, a few districts of Uttar Pradesh and Rajasthan), may be due to the remoteness, lack of availability of hospital based data and other reasons. The worst part of the malaise is the predominance of gall bladder cancer in rural population, who are either unaware of the extreme consequences or are too poor to afford the cost of diagnosis and treatment and hence, continue to suffer. The present study is first of its kind, reporting on the status of the disease in North Central Indian population especially in rural and semi-urban areas. Our observations are based on a regional cancer centre based record of two years, which admits most of the patients from the regions shown in the map (Figure 1: Geographic distribution of study area (Map not to scale)).

**Figure 1**

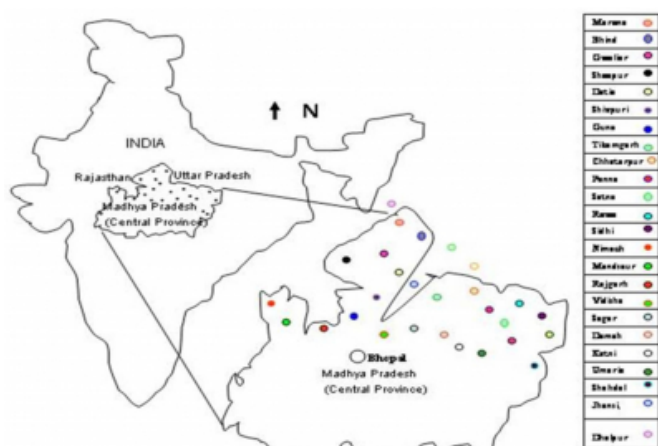


Fig 1. Geographic distribution of the study area (Map not to scale)

**METHODS**

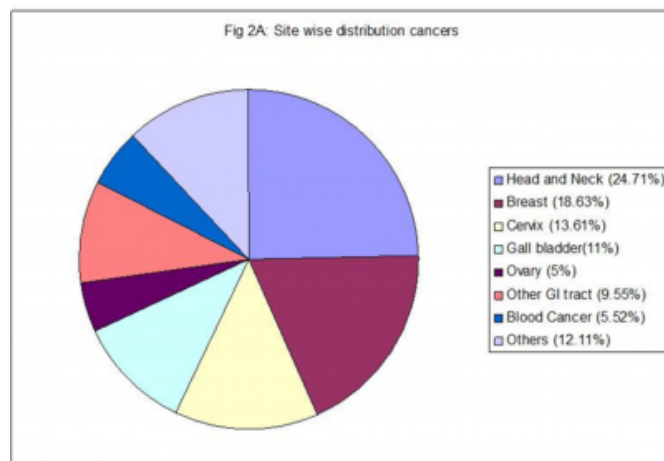
A retrospective study was carried out at the Cancer Hospital and Research Institute (CHRI), Gwalior, Regional Cancer Centre (Code-08), Ministry Of Family Health and Welfare (MOFW), Government of India from the period January 01, 2007 to December 31, 2008. The study was approved by Institutional Ethics Committee. We collected information on the medical diagnosis and demographics of all the 464 different categories of gall bladder disease patients who were admitted for treatment during the above period. Out of 464 patients, 365 had Gall Bladder Cancer with Gall stone (abbreviated as GSC onwards), 15 with Gall Stone (abbreviated as GS), 36 with Gall Bladder Cancer without stone (abbreviated as GC), 30 with Chronic Cholecystitis (abbreviated as CC) and 18 having Gall Bladder Cancer with Cholecystitis (abbreviated as GCC). We have excluded the data of patients who left the hospital after check-up at outpatient door for personal problems and studied all the comparative data available from the hospital record for those who got admitted and properly diagnosed. The cases were confirmed on the basis of clinical investigations, like X-ray, ultrasound, cytological examination (FNAC), histopathological examination and blood biochemistry reports. About 80% of the diagnosis is based on the ultrasound, chest X-ray and cytological tests (FNAC) and of remaining 20%, after post surgical histopathology. Sample t-test was carried out for the average values of the parameters in five different categories of gall bladder disease (collectively abbreviated as GBD). A total of 419 gall bladder cancer (abbreviated as GBC) with or without gall stones/ cholecystitis were included in the present study. The statistical analysis was performed using Graph Pad Prism 5

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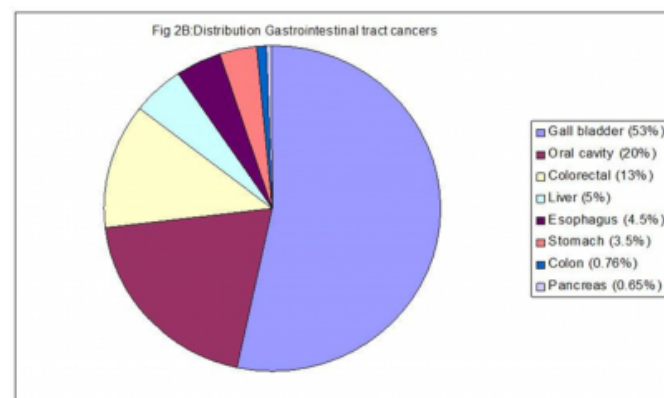
**RESULT AND DISCUSSION**

In our hospital based record, Gall Bladder Cancer is placed at the fourth position (419 out of 3820 cases of various cancers registered during 2007-2008), following cervix (third, 13.61%), breast (second, 18.64%) and head and neck (first, 24.7%) cancers (Fig 2A: Site wise distribution of cancer). About 11% of patients admitted at the hospital were with gall bladder cancers, being the most common amongst gastrointestinal tract cancers (53%) followed by oral cavity and colorectal cancers (Fig 2B: Distribution of gastrointestinal tract cancer patients). Most of the patients admitted were residents of north Madhya Pradesh, adjoining Uttar Pradesh and Rajasthan (Fig 1).

**Figure 2**



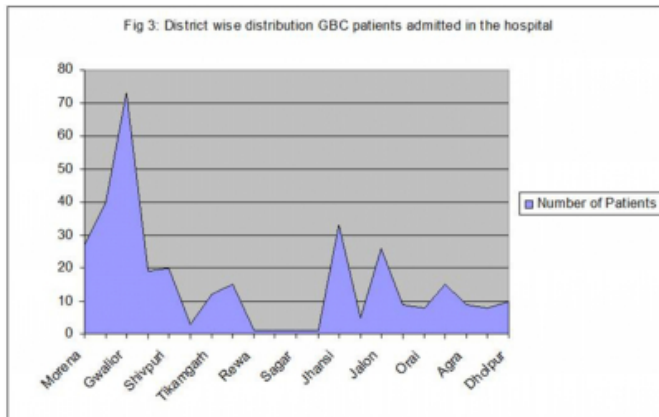
**Figure 3**



The area-wise contribution of number of cases is shown in Fig 3 (District-wise distribution of gall bladder cancer (GBC) patients admitted in the hospital). Significantly, about 70% of GBD patients were from rural areas but the gall stone (GS) or cholecystitis (CC) cases alone were largely from urban areas (Table 1: Distribution of patients in rural

and urban areas).

**Figure 4**



**Figure 5**

Table 1: Distribution of patients in rural and urban areas

Area	GSC (%)	GS (%)	GBC (%)	CC (%)	GCC (%)	Net (%)
Rural	277 (75.89)	04 (26.66)	25 (69.44)	10 (33.33)	9 (50)	325(70.04)
Urban	88 (24.11)	11 (73.34)	11 (30.56)	20 (66.64)	9 (50)	139(29.96)
Total (N)	365	15	36	30	18	464

The food habit of the GBD patients was mostly vegetarian (76%). About 64% of patients admitted were having no education or only primary level education with very low income (about 70%). The annual income in about 56% of the total cases was found extremely low (