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GENDER- AND AGE-SPECIFIC CLINICO-EPIDEMIOLOGICAL PROFILE OF LUNG CANCERS IN CENTRAL INDIA

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ABSTRACT-
Lung cancer exhibits diverse patterns of incidence, prevalence, and clinical attributes, influenced by geographical and demographic factors. This study delves into the gender- and age-specific clinico-epidemiological profile of lung cancers in Central India. Specifically, it analyzes gender-segregated incidence rates, provides insight into the age groups most affected by this malignancy, and presents age-wise distribution of lung cancer cases. By synthesizing existing research, this review facilitates a nuanced understanding of lung cancer trends in the region and offers guidance for future research and healthcare initiatives.

INTRODUCTION-

Lung cancer remains a complex health concern with distinctive variations in occurrence and characteristics across regions. In 2020, lung cancer was estimated to account for about 11.4% of all new cancer cases globally [1,2]. This made it the most common cancer globally in terms of both incidence and mortality [3]. Lung cancer is also a leading cause of cancer-related deaths [4,5]. It was responsible for approximately 18.0% of all cancer-related deaths in 2020[5,6,7]. The high mortality rate is often due to the late stage at which many cases are diagnosed.

Central India's demographic and environmental diversity necessitates a focused examination of lung cancer within this context. The burden of lung cancer is immense, both in terms of its impact on individual lives and its strain on healthcare systems. The epidemiological study of lung cancer offers insights into its unequal distribution, shedding light on geographical, cultural, and socioeconomic disparities that shape its prevalence. In this context, the role of epidemiology extends beyond a mere statistical examination of cases; it provides a lens through which the complex web of interactions between genetics, environmental exposures, lifestyle factors, and healthcare infrastructure can be deciphered.

Tobacco smoking, recognized as the leading cause of lung cancer, was one of the earliest triumphs of lung cancer epidemiology, driving public health interventions and policy changes that significantly reduced smoking rates in some regions. However, the story of lung cancer extends beyond smoking alone. Indoor and outdoor air pollutants, occupational hazards, genetic predispositions, and emerging lifestyle factors are integral components of the broader narrative that epidemiologists continue to unravel.

Studies conducted across Central India reveal gender disparities in lung cancer incidence. Historically, lung cancer has been more prevalent among males due to higher rates of tobacco consumption [8,9]. However, recent trends suggest an increasing incidence among females due to evolving smoking behaviors and exposure to indoor pollutants [10]. Comprehensive gender-specific investigations are warranted to elucidate these evolving trends and their underlying factors.

Age Groups Affected and Age-Wise Incidence Rates:

Lung cancer exhibits a broad age distribution in Central India, impacting various age groups. The incidence rates vary significantly across different age ranges. Among individuals aged 40-60, a notable rise in cases has been observed, potentially linked to cumulative tobacco exposure. The incidence increases steeply in those aged 60 and above due to age-related vulnerability to carcinogenic insults [11,12]. Among those below 40, the incidence remains lower but increasing, necessitating further investigation into early-life risk factors.

Age-wise Distribution of Lung Cancer Cases: In Central India, the distribution of lung cancer cases across age groups is as follows:

- **Age 20-39**: Low incidence, representing a small percentage of cases.
- **Age 40-59**: Moderate to high incidence, with increasing trends linked to tobacco exposure.
- **Age 60 and above** High incidence, reflecting the cumulative effect of risk factors and age-related susceptibility.

Histological subtypes of lung cancer in Central India show consistency with global trends, albeit with variations in gender-specific prevalence. Adenocarcinoma and squamous cell carcinoma are prominent subtypes, exhibiting distinct gender-related patterns [13,14]. Further research is essential to uncover the drivers behind these differences.

AIM-

By studying the age-specific incidence rates, gender disparities, and temporal trends, epidemiologists contribute to our understanding of how lung cancer manifests across different age groups, genders, and time periods. Furthermore, the field explores the histological diversity of lung cancer subtypes and their relationship to risk factors, prognosis, and treatment response. This knowledge guides the development of targeted prevention strategies, early detection methods, and personalized treatment approaches. This study aims to study the age and gender specific distribution of lung cancer to achieve the forementioned objective.

MATERIALS AND METHODS-

All the lung cancer patients attending the Respiratory Medicine OPD of Chirayu Medical College and Hospital, Bhopal, Madhya Pradesh in 2021 and 2022 were studied. Only pathologically proven cases were included. The cases were grouped into various age groups. The age groups taken for classifying these patients were <25 years, 26-50 years, 51-75 years, 76 and more.

The patients were also classified based on their gender into male and female groups. The data was analyzed and tabulated.

RESULTS-

Out of total 1114 patients registered in 2021, a total of 49(4.4%) were lung cancer patients. Out of these 49 patients, 36(73.4%) were male and 13(26.5%) were female.

Similarly, in 2022, a total of 1781 patients were registered out of which 86(4.8%) patients were lung cancer patients. Out of this 67(77.9%) were male and 19(22%) were female.

Table 1. Age wise distribution of lung cancer cases in 2021

Age group	Number of patients
<25	1
26-50	9
51-75	37
>75	2

Table 2. Age wise distribution of lung cancer cases in 2022

Age group	Number of patients
<25	3
26-50	24
51-75	55
>75	4

The data showed that the age group most affected was 51-75 years. In 2021, 75.5% of total lung cancer patients belonged to this age group and in 2022, 63.9% patients belonged to this age group.

CONCLUSION-

Addressing the gender- and age-specific clinico-epidemiological profile of lung cancers in Central India necessitates tailored interventions. Gender-sensitive awareness campaigns, targeted cessation programs, and equitable healthcare access are crucial. Future research should emphasize gender- and age-specific risk assessments, early detection strategies, and treatment protocols to improve outcomes. Understanding the evolving trends across genders and age groups is indispensable for effective prevention, diagnosis, and treatment strategies. Collaborative efforts among healthcare professionals, researchers, policymakers, and communities are vital to address the distinct challenges posed by gender- and age-related variations in lung cancer within the Central Indian context.

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