



## Peak Expiratory Flow Rate In Bidi Smokers Of Rural Area Near Metro City: Observational Study

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### ABSTRACT

Smoking is a devastating habit than also millions of people continuing which we can consider global problem. Every country taking effort to make their population free from smoking by social media governmental and NON- Governmental agencies proving education related to ill effect of smoking than also people are counting there with habits'. India is the world second largest tobacco consuming country, despite of carrying out mass massive course of action for public health complemented with laws to restrict tobacco consumption. According to Global adult tobacco survey (GATS) in 2010, in this study we have taken PEFR as a outcome measure where Out of 4000 males 3782 were observed from which 200 smoker gave consent for evaluation. Smoker who gave consent were examined and assessment was done. The mean age of population was 48.63 years, on an average 21 biddies per day from 25-30 years duration of bidi smoking was noticed. Peak expiratory flow rate relatively decrease by 50 lit/min averagely. This study would be helpful to formulate anti tobacco strategies among aware population for dedication to make tobacco free India 2025.

**Keywords:** bidi, smokers, chest expansion, PEFT, rural.

India is the world second largest tobacco consuming country India is the world second largest tobacco consuming country, despite of carrying out mass massive course of action for public health complemented with laws to restrict tobacco consumption. According to Global adult tobacco survey (GATS) in 2010, the prevalence of tobacco use among males in India is 48% compared with 20 % among females. WHO estimate that 19% cigarette and 53% bidi smoker are presently exist in India.<sup>1</sup> Bidis are slim, hand rolled and consist of about 0.2 gm of sun dried and processed tobacco flakes, rolled in a tendu leaf held together by cotton thread. Bidis are consumed 7 – 8 times more than cigarette. Bidi smoking produces same or more amount of nicotine,

tar and toxic chemicals.<sup>2</sup> 54% mainly consumed bidi In India, 27% tobacco chewing followed by (9%) cigarettes smoking.<sup>3</sup> When persons smokes different substance enter into person's body in which one is Tar whose levels are high while bidi smoking that is 45 – 50 mg/ companies like “Darshan herbal bidi” “natural herbal bidis” which can lead to minimal health risk associated with bidi smoking.<sup>2</sup>

Tobacco smoking in India increasing alarmingly. Bidi smoking wide spread all over India, especially common in rural areas. Smoking Bidi is a known risk factor for chronic obstructive pulmonary disease, cardio vascular diseases and certain cancer

especially, the lung cancer. Each bidi is loaded with cancer causing chromosomes damaging genetic equations.

The most life frightening oral lesion is related with bidi smoking. Major source of revenue generation For Indian government is bidi industry .<sup>2</sup> which last year totaled as 709.50 corers I .e. (165 million)in excise. COPD is a common, preventable disorder characterized by progressive, Poorly reversible air flow limitation often with systematic manifestation, in response to tobacco smoke. Reduction in expiratory air flow can be measured by peak flow meter, to see the amount of air expired, can be measured in lit/minute.

Chest expansion reduction in smoker can be measured by measuring tape at three different levels to see the different lobes expansion.<sup>4</sup> WHO predicts bidi will ruin the life of 1.5 million people in upcoming time in india.<sup>2</sup> presently maximum population know ,what smoking do to their health. As we all know what smoking is doing to our health, Each individual faces this problem by reducing the capacities and volume of the lungs.<sup>4</sup>

The government of India had enacted” the cigarette and other tobacco product by prohibiting smoking in public place, in spite of government awareness programmes the oral cancer and chronic obstructive pulmonary disease are on rise in india.<sup>2</sup>Study was focused to know the effect of bidi smoking on chest expansion peak expiratory flow rate. The study was aimed at to study the

effect of bidi smoking on chest expansion and peak expiratory flow. Hence in this study the effect of bidi smoking on two respiratory parameters i.e. chest expansion and PEFR were observed independently.

### **Material and Methodology:**

In the present study, a cross sectional survey was carried out in rural set up included villages around Nagpur city. Sample was collected by convenience sampling technique in the duration of March 2012 – Sep 2013. Approximately eleven thousand people were staying in 2500 houses, out of that 5000 population were smoker in which 1000 were females aged between 30 – 45 years, 50 years and above were tobacco chewers. Out of 4000 males 3782 were observed from which 200 smoker gave consent for evaluation. Smoker who gave consent were examined and assessment was done.

### **Procedure**

Prerequisite permission from the head of institution & institutional ethical committee was obtained. Then the survey was explained to the Grampanchyat Samitti members and permission was obtained from them to carry out the survey. Oral consent was obtained from 200 male smokers after that they were interviewed and chest expansion and PEFR was measured.

### **Materials:**

- 1) Peak expiratory flow meter
- 2) Inch tape
- 3) Documentation sheet , pen



Participant performing PEFR

**Chest Expansion measurement at 3 different levels:**



AT AXILLARY LEVEL

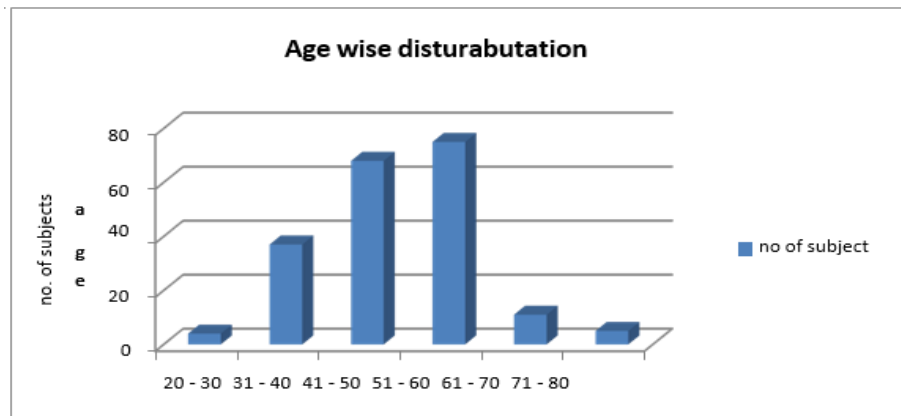


AT NIPPL LEVEL

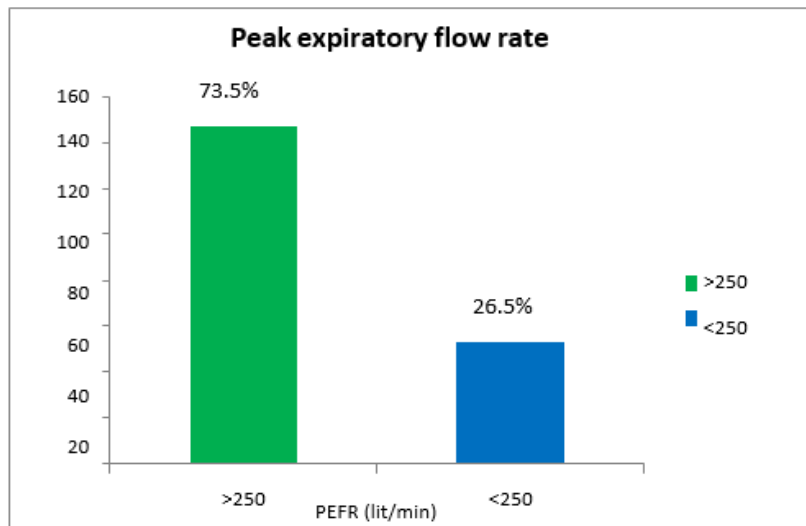


AT 10<sup>TH</sup> RIB LEVEL

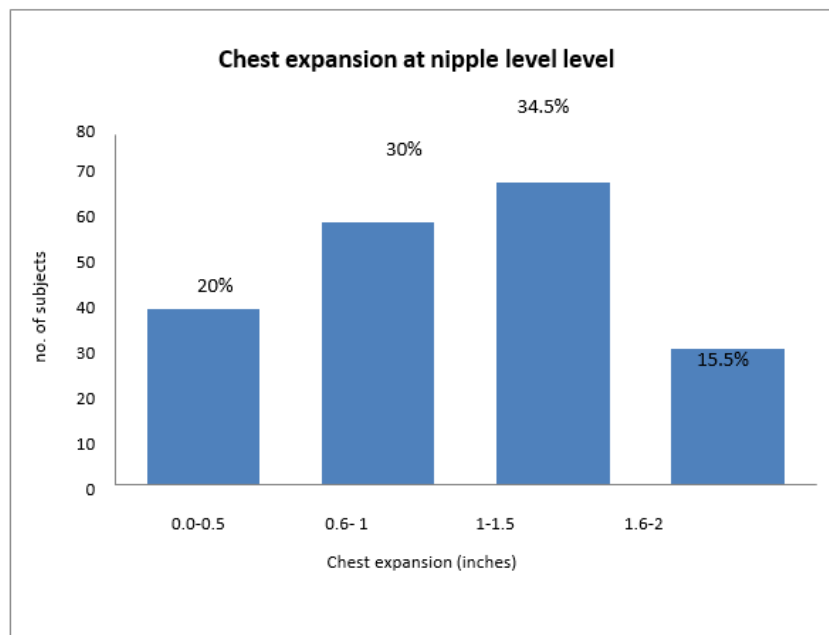
**Graph 1:**



**Graph 2:**



**Graph 3:**



Graph 4:



### Result

No women given the information about the smoking so an analysis was restricted to male. The mean age of population was 48.63 years, on an average 21 biddies per day from 25-30 years duration of bidi smoking was noticed. There was no change in the chest expansion measurements at axillary level. Chest expansion was reduced by 1 inch averagely at nipple/ xiphoid and 10<sup>th</sup> rib level. Peak expiratory flow rate relatively decrease by 50 lit/min averagely.

### Discussion

In this present cross sectional survey we found that maximum number of subjects was falling in age group of 51 – 60 years. As we

can see large number of population fall in this range because of their regular use of bidi smoking habits and amount of nicotine enough to make them dependent. (graph no 1)

Peak expiratory flow rate which is an indicator of obstructive airway flow was less than 250 lit/min in 53 subjects which shows association between smoking and lung function. There are many previous studies who found stronger association between smoking and chronic obstructive lung diseases.

Peak expiratory flow rate limitation occurs due to bronchial constriction caused by mediators of inflammation.

Distinction character we can see in airway

lumen, airway wall, smooth muscle, muscle glands, there is significant structural changes in smoker i.e. smooth muscle hypertrophy inflammation and edema airway narrowing mucus plugging mucus gland hypertrophy. Other changes which we can see like air flow obstruction which occurs from the decreased in diameter of airways caused by various reasons such as distension, increased in mucus secretion and hypertrophy of smooth muscle graph no 2.<sup>2</sup>

(graph no: 3, 4) shows the decreased in chest expansion at xiphoid and 10<sup>th</sup> rib. The respiratory, bronchial tree and blood circulation tree are surrounded in elastic tissue. When the lungs get with full of air they become inflated, due to this component it get stretched like elastic structure. The results on the chest expansion do explain that the chest expansion mainly reduces at mid and low lung volume level. Thus tobacco inhalation mostly affects the mid and lower airways than the broader airways.

Those lungs which are without difficulty get inflated has a resilient recoiling. Over work hampered the property of structure, the way Overstretching causes the lungs to lose elastic recoil. Lung distensibility and flexible recoiling property arise from the elastin and collagen fibers entangled around the alveolar walls, neighboring bronchioles, and tiny vascular system. Elastin fibers are exceedingly stretchable and can be stretched to almost double their hidden length.

Collagen fibers, however, resist stretch and limit lung expansion at high lung volumes. As the lungs expand during inflation, the fiber network around alveoli, small blood vessels, and small airways unfolds and rearranges—similar to stretching a nylon stocking. Lungs that lose their elastic recoil also become “baggy.” In other words, “baggy lungs” are easy to inflate (stretched) but are difficult to deflate because of their inability to recoil inwardly and force air out of the lungs. This shows the deleterious effect of smoking on lung expansion. Smoking also results in steady decreased in lung function

Limitation of the study standardized

questionnaire of tobacco control survey was not used because understanding of English language was poor.(3-5)

### Conclusion

The survey was restricted to bidi smoking. Control group was not available in survey society. The lower age limit 20 years and the upper limit was 79 years. Respiratory assessment is statically significant in the form of chest expansion and peak expiratory flow rate which is reduced drastically.<sup>(6-10)</sup> Pulmonary tuberculosis and lung cancer is strongly associated with high mortality rate in India. Present study was focusing about bidi smoking effect on respiratory components. Physiotherapy services will improve the bronchial hygiene. This study would be helpful to formulate anti tobacco strategies among aware population for de-addiction to make tobacco free India 2025.<sup>(11-15)</sup>

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