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## **A CLINICAL STUDY OF SELECTED PARAMETERS OF SMOKING HABIT AMONG PATIENTS ATTENDING PULMONOLOGY OPD IN KATURI MEDICAL COLLEGE HOSPITAL, GUNTUR DURING 2012-2014**

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### **HOW TO CITE THIS ARTICLE:**

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**ABSTRACT:** 200 patients attending Katuri Medical college Pulmonology OPD with a history of Tobacco smoking coming for various symptoms for various symptoms were analysed regarding their smoking habits. Majority of them were the major bread earners of their families. Majority of them presented to the hospital in 4<sup>th</sup> to 6<sup>th</sup> decade of life. Male smokers were predominant but alternate modes of tobacco consumption and passive smoking are present in a majority of females. Majority of them are farmers, unemployed or semiskilled or unskilled with poor education and with low family incomes. A majority of them have high frequency of smoking tobacco per day Initiation of smoking occurred at less than 20 years of age.

Majority presented with less than 40 pack years of smoking history.

**KEYWORDS:** Tobacco smoking, Chutta (Cigar –Tobacco leaf), Beedi, cigarette, Non-smoking form of Tobacco.

**INTRODUCTION: MATERIALS AND METHODS:** This is a Randomized study done to know various patterns and trends of smoking and its effect on respiratory system in patients attending Pulmonology clinic at Katuri Medical College & Hospital, Guntur during the period between August 2012 and August 2014. It is located in a rural area of Guntur and the patients attending the hospital are predominantly rural (85%) and (15%) being urban.

**PARTICIPANTS:** 200 smokers attending Pulmonology clinic at KMC & H were picked randomly. These patients were to undergo a designed protocol.

### **INCLUSION CRITERIA:**

1. Smokers above 18 years of age.
2. Both current smokers and ex-smokers were included in the study.
3. Smoking and smokeless forms of tobacco was taken in to consideration.
4. Patients with respiratory symptoms were included in the study.

### **EXCLUSION CRITERIA:**

1. All the smokers less than 18 years of age.
2. Passive smokers i.e. smokers exposed to second hand smoke were not included in the study due to the fact that every individual is exposed to SHS and ETS.

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3. Patients with ongoing infectious process and very old age smokers were not allowed to undergo pulmonary function tests.

**INFORMED CONSENT:** Verbal and written informed consent was obtained from all patients before explaining them about the study.

**All the 200 patients were designated to undergo a questionnaire consisting of their;**

1. Age.
2. Occupation.
3. Income.
4. Socioeconomic status.
5. Age at initiation of smoking.
6. Number of years of smoking.
7. Frequency per day, status of inhalation.
8. Smoking index

And results were analysed.

**RESULTS:** The present study was carried out in the Department of Pulmonary Medicine, KMC&H during the period from August 2012 to August 2014.

A total of 200 Patients with current and past smoking history were asked for their pattern of tobacco use and were further evaluated. These are the results obtained after analyzing the data pooled.

Age	No. of Patients	Percent
10-20	0	0
21-30	3	1.5
31-40	27	13.5
41-50	45	22.5
51-60	72	36
61-70	35	17.5
71-80	14	7
> 80	4	2

**Table 1: AGE AT PRESENTATION**

Majority of the patients who present to the hospital are in their 4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup> decade of their life and all of them are the bread earners of their respective families. The mean age for presentation is 55 years.

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	No. of patients	Percent
F	7	3.5
M	193	96.5
<b>Total</b>	<b>200</b>	<b>100</b>

**TABLE 2: SEXDISTRIBUTION**

Majority of the smokers are males (96.5%) with only (3.5%) being females.

	No. of patients	Percent
Unemployed	23	11.5
Unskilled Labour	32	16
Semi-Skilled Labour	30	15
Skilled Labour	22	11
Farmer/ Shop Owner/ Clerk	76	38
Semi Profession	12	6
Profession	5	2.5
<b>TOTAL</b>	<b>200</b>	<b>100</b>

**Table 3: OCCUPATION**

Most of the smokers fall into the groups of farmers (38%), unemployed individuals (12%), unskilled (16%) and semiskilled labour (15%).

	No. of patients	Percent
Illiterate	99	49.5
Up to 5th class	36	18
Middle School	16	8
High School	25	12.5
Intermediate	4	2
Graduate/ Post Graduate	18	9
Professional	2	1
<b>TOTAL</b>	<b>200</b>	<b>100</b>

**Table 4: Educational Status**

Most of the individuals are illiterates (49.5%) followed by individuals with formal primary school education.

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	<b>No. of patients</b>	<b>Percent</b>
<Rs. 1589/ PM	20	10
Rs. 1590-4726/ PM	30	15
Rs. 4727-7877/ PM	69	34.5
Rs. 7878-11816/ PM	42	21
Rs. 11817-15753/ PM	29	14.5
Rs. 15754-31506/ PM	6	3
>31506/ PM	4	2
<b>Total</b>	<b>200</b>	<b>100</b>

Table 5: FAMILY INCOME IN RS/MONTH

Majority of the smokers in the study group have a family income of less than 11,816 rupees per month.

<b>START AGE</b>	<b>No. of patients</b>	<b>Percent</b>
< 10 Years	12	6
11-20 Years	129	64.5
21-30 Years	57	28.5
> 30 Years	2	1
<b>Total</b>	<b>200</b>	<b>100</b>

Table 6: AGE AT INITIATION

Most of the smokers start their smoking below 30 years and mean age at initiation is 19 years 8 months.

<b>No. of smoking years</b>	<b>No. of patients</b>	<b>Percent</b>
0-10	10	5
11-20	28	14
21-30	47	23.5
31-40	61	30.5
41-50	33	16.5
> 50	21	10.5
<b>Total</b>	<b>200</b>	<b>100</b>

Table 7: NUMBER OF SMOKING YEARS

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Frequency per day in no. of pieces smoked	No. of patients	Percent
0-5	26	13
6-10	34	17
11-15	36	18
16-20	47	23.5
21-25	24	12
> 25	33	16.5
<b>Total</b>	<b>200</b>	<b>100</b>

Table 8: FREQUENCY/DAY

Frequency per day depends upon tobacco form smoked which is high for beedi and low for chutta smokers.

PACK YEARS	No. of patients	Percent
0-10	56	28
11-20	62	31
21-30	24	12
31-40	13	6.5
41-50	9	4.5
51-60	4	2
61-70	5	2.5
71-80	5	2.5
> 80	22	11
<b>Total</b>	<b>200</b>	<b>100</b>

Table 9: PACK YEARS

Most patients have smoking indices of less than 40 pack years. However chutta smokers have high smoking indices.

## ANALYSIS OF RESULTS AND DISCUSSION

- 1. AGE AT PRESENTATION TO THE HOSPITAL:** The mean age at presentation to our clinic was 55 years. Most of the patients presented in the 6<sup>th</sup> decade with majority of patients presenting after 4<sup>th</sup> decade. The mean age at presentation in a study conducted by George d Souza et al<sup>1</sup> at a tobacco cessation clinic in Bangalore was 48 years (34-62 years). This variation may be due to more rural predominance in our study compared to urban predominance in the reference study who might present to the clinic at an early age due to their better educational and socioeconomic status.

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**2. SEX DISTRIBUTION:** The percentage of male smokers attending our clinic was 96.5% while female smokers were 3.5%. The prevalence of smoking among females is 3%<sup>2</sup>, according to the global adult tobacco survey done in 2009-10. According to the NSSO 52<sup>nd</sup> round the prevalence of smoking forms of tobacco among females were 2.6% and rest 8.1% is of smokeless form of tobacco usage<sup>3</sup>. A study done by George d Souza et al had a similar fraction of male and female smokers, males accounting for 97% while females accounting for 3%. The prevalence of tobacco use is higher than the country average in the eastern and north eastern states of India where chewing and application are the more common forms of tobacco use.

While the absolute number of female smokers is small, we observed that many of the female respiratory symptomatics are exposed to SHS because of their family members being smokers. It is not socially acceptable for a female to smoke, however non-smoking forms of tobacco are consumed by females in rural Andhra Pradesh quite regularly in the form of betel quid. In our clinical observation we have encountered female smokers who are addicted to chutta smoking. Chutta smoking is more frequent among female and rural agricultural population of north coastal Andhra Pradesh.<sup>4</sup> There is also evidence of slowly increasing cigarette smoking among educated females.<sup>4</sup>

**3. OCCUPATION:** Occupational status of the patients was classified according to modified kuppuswamy classification<sup>5</sup> where patients were classified into seven classes- unemployed, unskilled, semiskilled, skilled, farmers and shop owners, semiprofessionals and professionals. Most of the patients in our study fall into first 4 classes and farmers.

Studies done by Sorensen G et al<sup>6</sup> had shown significant relation between smoking and its increased prevalence among unemployed and unskilled labour than professionals. The results of their study indicate that the education and occupation have simultaneous and independent relationship with tobacco use. Unemployment is particularly a powerful predictor of tobacco use.<sup>6</sup> Tobacco consumption was highest (22.4%) among those who were not gainfully employed, followed by those with skilled jobs (21.6%). Tobacco use was low among those in business and professional jobs.<sup>7</sup>

**4. INCOME:** Patients attending our clinic were classified into seven classes based on their income status. Most of the patients belong to classes with monthly income of less than Rs.15753/- per month. Tobacco consumption was significantly higher in poor, less educated people

**5. EDUCATIONAL STATUS:** Majority of the patients attending our clinic were illiterates (49.5%) and individuals with formal primary school education (18%). In a study done by Sorensen and associates<sup>6</sup> tobacco use is associated with educational level of the smokers. Education is a powerful co relation of tobacco use pattern. All the forms of tobacco use followed an inverse linear pattern in terms of educational level. Odds ratio were alarmingly high among individuals with no more than primary education. Rani M<sup>8</sup> and associates stated

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that tobacco consumption was significantly higher in less educated groups. According to GATS 2009-10<sup>2</sup>, Tobacco use has been found to be inversely related to the literacy levels. Tobacco use decreases sharply with education. Prevalence of tobacco decreases from 68% among males and 33% among females with no formal education to 31% among males and 4% with secondary or more education. The prevalence of smoking in subjects classified according to their educational status was as follows: Illiterates: 60.9%, Primary: 53.9%, High school: 41%, Graduates: 21.4% Post-graduates: 25.8% in a study conducted by S.K. Chabra et al<sup>9</sup> indicating decrease in smoking status with literacy. In our study the mean age of initiation is around 19.8 years.

- 6. SOCIOECONOMIC STATUS:** According to modified Kuppaswamy classification<sup>5</sup> socioeconomic status is a sum of the above three parameters occupation, education and income. Majority of the individuals belong to smaller classes of occupation, income and are illiterates or individuals with formal primary school education they belong to low and upper middle socioeconomic classes and the influence of tobacco use is very high among the study group. The prevalence of tobacco use was higher (24.2%) among those in the low socioeconomic group than in the middle (13.3%) and high socioeconomic groups (3.2%) in a study done by Anjali B. Daniel ET al.<sup>7</sup>
- 7. AGE AT INITIATION:** 6% Start smoking less than 10 years of age, 65% begin smoking between 11-20 years and 29% start later. The national average is around 17.9 years while in Andhra Pradesh it is around 19.4 years.<sup>2</sup> In our study the mean age of initiation is around 19.8 years which is quite common to the state mean. The slight deviation may be due to small sample size. The early initiation is primarily due to peer influence, parental influence, role of cinema and media or just for experimentation. The mean age at initiation was 18.8 ( $\pm 5.5$ ), 20.8 ( $\pm 8.5$ ) and 25.8 ( $\pm 11.3$ ) years for beedi smokers, cigarette smokers and chewers, respectively in a study done by George d Souza et al<sup>1</sup> in a tobacco cessation clinic at Bengaluru.
- 8. NUMBER OF SMOKING YEARS:** This parameter is important in the calculation of pack years which depict the smoking status and there by the increasing disease burden and economic burden. In our study 19% patients smoked for less than 20 years, 24% smoked for 20-30 years, 30% smoked for 30-40 years and 27% smoked above 40 years in their entire life. On an average the number of years smoked by the study group was around 34.6 years. Mean duration of tobacco use was 23.0 ( $\pm 15.4$ ), 14.6 ( $\pm 12.2$ ) and 8.9 ( $\pm 12.4$ ) years for beedi smokers, cigarette smokers and chewers, respectively, in a study done by George d Souza<sup>1</sup> smokers attending a tobacco cessation clinic at bengaluru.
- 9. FREQUENCY/DAY:** Frequency of smoking depends upon the type of smoking form. It is high for beedis, moderate for cigarettes and low for chuttas. On an average frequency per day in our study was about 19 pieces per day. Three-fourths of the current smoking males were heavy smokers with more than 20 cigarettes per day or more than 20yr of smoking.<sup>10</sup>

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This is higher than the normal frequencies for cigarette and beedis because of mixture of all the forms without separating each entity and the second reason being the study done only among the diseased individuals without taking normal and asymptomatic individuals. The country mean for number of beedis smoked was around 11.6 and for cigarette it is 6.2. The state mean for Andhra Pradesh is 11 and 6 for beedi and cigarette respectively<sup>2</sup>. The mean number of cigarettes/beedis smoked per day was 14 ( $\pm$  11.5) in a study done by S.K. Jindal et al.<sup>11</sup> In rural areas it is around 17 and urban it is 11 per day.

**10. PACK YEARS OF SMOKING:** This is the parameter by which a clinician can assess the smoking status of an individual. Various indices were put forward for the calculation of smoking status of an individual. The universally accepted measurement of smoking status for cigarettes is given by the formula:

Number of Pack years is equal to number of cigarettes smoked  $\times$  Number of years smoked 20.

In our study the number of pack years for cigarette smoking is derived from the above formula.

20 cigarettes a day for 1 year = 1 pack year.

40 cigarettes a day for 1 year = 2 pack years.

In India the predominant form of smoking is beedi and no separate formulas are designed to calculate the pack years for beedi smoking. The net weight of tobacco per beedi averages from 150 to 240 mg which is about one-fourth that in a cigarette.<sup>12</sup> Quantization of amount of smoking must take into account for these differences. Accordingly, we have considered smoking of 4 beedis as being equivalent to 1 cigarette. Pack years of smoking were calculated from the average number of cigarettes or beedis smoked per day, one pack year being smoking of 20 cigarettes per day for one year. In case of beedi smokers, the number of pack years was further divided by 4 for reasons explained above. The same technique was employed by S. K. Chabra ET al<sup>9</sup> in a study done in New Delhi. In a study done by Raj Kumar et al they stated that beedis must be considered as an independent entities based on the products released after smoking rather than taking them according to the weight of tobacco content.

In our study we employed the above method employed by S.K. Chabra ET al<sup>9</sup> for calculation of Pack years for beedi smoking and we came forward with the formula

Number of pack years for beedi is equal to:

Number of beedis smoked  $\times$  Number of years smoked  $20 \times 4$

Finally chutta/rollups smoking is a different form of smoking in which dried raw tobacco leaves are rolled without further processing. It is a pungent form of tobacco when compared to other forms of tobacco and cannot be smoked due to its offensive nature. The fraction of chutta smokers in our study were about 14%. Pack years for chutta is calculated from Smoking pack years.com which is designed by royal college of general practioners an easy form of calculation.

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## Roll Ups/chuttas:

- 25 grams (1 ounce) = 50 cigarettes.
- 25 grams tobacco (1 oz) per week = 50 cigarettes, divided by 7 days = approx 7 cigarettes per day.
- 50 grams tobacco (2 oz) per week = 100 cigarettes, divided by 7 days = approx 14 cigarettes per day.
- 75 grams tobacco (3 oz) per week = 150 cigarettes, divided by 7 days = approx 21 cigarettes per day.

## Pipe Smoker:

- 1 pipe = 2.5 cigarettes.
- 2 pipes a day = 5 cigarettes a day.
- 4 pipes a day = 10 cigarettes a day.

## Cigars:

- 1 Café Crème = 1.5 cigarettes a day.
- 1 Hamlet (or similar) = 2.5 cigarettes a day.
- 1 Havana = 4 cigarettes a day.
- 4 Hamlet cigars a day = 10 cigarettes a day.
- Calculation of pack years can be obtained from.<sup>13,14</sup>

In our study 71% of individuals have a pack year of 30 and less but the average number of pack years was significantly high, which was around 36.4 pack years. These high values are due to high percentage of chutta smokers (14%) in the study population who were not separated from the cigarette and beedi smokers. Another method for calculation of smoking status can be given by the formula

SMOKING INDEX (SI) = FREQUENCY/DAY × Number of smoking years.

This method is not apt for chutta and other forms of smoking.

**CONCLUSION:** Basing on our study we conclude that smoking habit starts at a much earlier age. So anti-tobacco campaign must be started in villages and in the schools. Improvement in education and levels of living can cause more awareness among people.

## REFERENCES:

1. Clinico-epidemiological profile of tobacco users attending a tobacco cessation clinic in a teaching hospital in Bangalore city, George D'Souza, Dorothy P. Rekha, Priya Sreedaran, K. Srinivasan, Prem K. Monylungindia\*Vol 29\* issue 2\* Apr-Jun 2012.  
<http://webcache.googleusercontent.com/search?q=cache:CeAtiqQxs8wJ:medind.nic.in/laa/t12/i2/laat12i2p137.htm+&cd=3&hl=en&ct=clnk&gl=in>
2. Global adult tobacco survey India 2009-10, MoHFW report. Available from:  
<http://www.google.co.in/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB4QFjAA&url=http%3A%2F%2Fmohfw.nic.in%2FWriteReadData%2F1892s%2F145>

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- 5618937GATS%2520India.pdf&ei=yM5ZVODjAs7-ugT6soCAA&usg=AFQjCNEs3JFulgQD-Aj7g79RpRK-4d5cLw
3. National Sample Survey Organization (NSSO). A note on consumption of tobacco in India: NSS 50th Round, 1993.94. Sarvekshana 1998.March; New Delhi: Department of Statistics, Ministry of Planning, Government of India, 1998:76-89.
  4. Reddy SK, Gupta PC. Report on Tobacco Control in India. New Delhi: Ministry of Health and Family Welfare, Government of India; 2004.
  5. Modified kuppuswamy's socioeconomic scale: social researcher should include updated income criteria, 2012, Indian journal of community medicine, 2013 (Cited 2014 Oct5): 38-185-186; Available from <http://www.ijcm.org.in/text.asp?2013/38/3/185/116358>
  6. Sorensen G, Gupta PC, Pednekar MS. Social disparities in tobacco use in Mumbai, India: the roles of occupation, education, and gender. Am. J. Public Health [Online]. 2005 Jun [cited 2013 Dec 11];95(6):1003–8. Available from: URL: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1449300&tool=pmcentrez&rendertype=abstract77>
  7. Behavioural risk factors for Non-communicable diseases among adults in Kerala (T.N. Sugathan, C.R. Soman& K. Sankaranarayanan) centre for survey research and management services Kochi & Health action by people, Thiruvananthapuram, India. <http://webcache.googleusercontent.com/search?q=cache:vrb2Hbw9LmAJ:medind.nic.in/iby/t08/i6/ibyt08i6p555.pdf+&cd=3&hl=en&ct=clnk&gl=in&client=firefox-beta>
  8. Rani M, Bonu S, Jha P, Nguyen SN, Jamjoum L. Tobacco use in India: prevalence and predictors of smoking and chewing in a national cross sectional household survey. Tob. Control [Online]. 2003 Dec [cited 2013 Dec 16]; 12(4):e4. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1747>
  9. Patterns of smoking in Delhi and comparison of chronic respiratory morbidity among beedi and cigarette smokers. S.K. Chhabra, S. Rajpal and R. Gupta Indian J Chest Dis Allied Sci 2001; 43:19-261 <http://webcache.googleusercontent.com/search?q=cache:e9VKUYHatJ4J:medind.nic.in/iae/t01/i1/iaet01i1p19g.pdf+&cd=2&hl=en&ct=clnk&gl=in&client=firefox-beta>
  10. Gender, Women and tobacco epidemic 7 addiction to nicotine by WHO [http://webcache.googleusercontent.com/search?q=cache:GrQB46g0qaAJ:whqlibdoc.who.int/publications/2010/9789241599511\\_eng.pdf+&cd=1&hl=en&ct=clnk&gl=in&client=firefox-beta](http://webcache.googleusercontent.com/search?q=cache:GrQB46g0qaAJ:whqlibdoc.who.int/publications/2010/9789241599511_eng.pdf+&cd=1&hl=en&ct=clnk&gl=in&client=firefox-beta)
  11. Tobacco smoking in India, Prevalence, Quit rates and respiratory morbidity S.K. Jindal, A.N. Agarwal, K. Chaudhry, S.K. Chhabra, G.A. D'Souza, D. Gupta, S.K. Katiyar, R. Kumar, B. Shah, V.K. Vijayan for Asthma Epidemiology Study Group (Indian Journal chest dis. Allied Sci 2006; 48:37-42) <http://webcache.googleusercontent.com/search?q=cache:30a7I1iOzXEJ:medind.nic.in/iae/t06/i1/iaet06i1p37.pdf+&cd=2&hl=en&ct=clnk&gl=in&client=firefox-beta>
  12. Malik SK Chronic bronchitis in beedi smokers Indian J chest diseases 1974; 16:94-99 <http://smokingpackyears.com>

# ORIGINAL ARTICLE

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13. Pack\_years\_smoked calculator.pdf

[http://webcache.googleusercontent.com/search?q=cache:UHcUEYrhTacJ:www.dudleyrespiratorygroup.org/assets/downloads/Pack\\_Years\\_Smoked\\_Calculator.pdf+&cd=1&hl=en&ct=clnk&gl=in&client=firefox-beta](http://webcache.googleusercontent.com/search?q=cache:UHcUEYrhTacJ:www.dudleyrespiratorygroup.org/assets/downloads/Pack_Years_Smoked_Calculator.pdf+&cd=1&hl=en&ct=clnk&gl=in&client=firefox-beta)

14. Fagerstrom test for nicotine dependence (FTND)

[http://webcache.googleusercontent.com/search?q=cache:LHu\\_7pWDMAoJ:ndri.curtin.edu.au/btftp/documents/Fagerstrom\\_test.pdf+&cd=2&hl=en&ct=clnk&gl=in&client=firefox-beta](http://webcache.googleusercontent.com/search?q=cache:LHu_7pWDMAoJ:ndri.curtin.edu.au/btftp/documents/Fagerstrom_test.pdf+&cd=2&hl=en&ct=clnk&gl=in&client=firefox-beta)

## ABBREVIATIONS:

1. GATS: Global Adult tobacco Survey.
2. NSSO: National sample survey organization.
3. KMC & H: Katuri medical college& Hospital.
4. SHS: Second hand smoke.
5. ETS: Environmental Tobacco smoke.

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