



## Parent- Child Inheritance of Tobacco Use Habit among 17-19 years Old Adolescents Visiting a Dental College of Lucknow City: a Restrospective Study

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### Abstract

**Introduction:** Numerous cultural and societal factors, including the transmission from parents to children, have been demonstrated to have a substantial impact on how young adults first start using tobacco. **Aim:** To assess the intergenerational transfer of tobacco habit from parents to offspring aged 17-19years old adolescents of Lucknow city. **Methodology:** a hospital-based unmatched case control study was conducted. 30controls and 30cases (aged 17-19 consuming any type of tobacco) were enrolled. A pre-validated structured GYTS questionnaire and parent-bonding instrument (PBI) were used to perform in-depth interviews to determine parental tobacco exposure and parental warmth. **Results:** Risk of initiation of tobacco habit amongst the off springs of tobacco user parents had an increased risk of 6.8 times when compared to the off-springs of nonuser parents. The risk of developing a tobacco habit is 13.5 times higher in cases compared to controls among children of low caring mothers. 2.1 times higher risk was found in cases than controls while having low paternal care. **Conclusion:** The father's parenting (poor paternal warmth) is a potential risk factor, and parental tobacco usage influences the development of tobacco habits in their children.

**Keywords:** Intergenerational transfer, Tobacco habit, Adolescents, Parent bonding Instrument

### Introduction

Culture serves as a guiding framework to parents while rearing their children. The initiation of Tobacco use in young adolescents is influenced by various cultural and social factors, among these parents to child transmission is found to be significant. During adolescence the intergenerational transfer of habits is an important contributor for the initiation of tobacco use. Parenting style also has a modifying effect on the transfer of Tobacco habits between generations. The tobacco epidemic in India has reached alarming levels. Nearly 267 million adults ( $\geq 15$  years) in India (29% adults) are users of tobacco. The overall mean age of initiation of tobacco use was 17.8 years in GATS-1 (2009- 2010), according to the GATS-2 (2016-17) whereas it was 19.3 years. [1,2]

The Social Learning theory by Bandura emphasizes that people with whom one regularly associates, delimits the types of behavior that one will repeatedly observe and hence learn, which explains reasons for intergenerational transfer and influences from peers. [1,11] Parenting style has a modifying effect on the transfer of Tobacco habits between generations. The parenting style (poor paternal and maternal warmth) is a significant risk factor, and parental tobacco usage influences the development of tobacco habits in their children. Parents must be made aware of the danger that their child may start using tobacco just by imitating their own tobacco-using behavior. [1,4,6,8]

Owing to the scarcity of the literature in the given area, the study was planned with an aim to create awareness regarding the intergenerational habit transfer from parents to their children.[3,4,5] The

present case control study was designed to assess whether the parental Tobacco use behavior is a risk factor for initiation of Tobacco use (irrespective of the form it is consumed smoked/smokeless) among their children along with the effect of parenting style on the transfer of such behaviors. [6,7]

#### **Aim:**

To assess the intergenerational transfer of tobacco habit from parents to offspring aged 17-19years old adolescents of Lucknow city.

#### **Objectives:**

1. To ascertain the initiation of tobacco habit from parent to off springs aged 17-19years old adolescents of Lucknow city.
2. To assess the association between parent bonding and tobacco habit initiation among the 17-19years adolescents of Lucknow city.
3. To counsel the study groups regarding the deleterious habit of tobacco and help them in quitting.

#### **Materials And Methods:**

This present study was a hospital-based case-control study undertaken to assess the initiation of tobacco habit in 17- 19years old adolescents transmitted from tobacco user parents.

#### **Source Of Data:**

The study was done at the Outpatient department of Dept. of Oral Medicine and Radiology, SPPGIDMS, Lucknow, a dental college in Lucknow city. An informed consent was obtained from all the study participants.

Study design: Case control study

Study period: Study was conducted for a period of 3months from December 2022 to February 2023.

Pilot study: A pilot study was conducted to check the feasibility of the study.

Ethical clearance: Ethical clearance was approved by Institutional Ethical Committee of Sardar Patel Postgraduate Institute of Dental and Medical Sciences, Lucknow (EC/NEW/INST/2020/1173).

#### **Inclusion Criteria:**

1. Study Participants aged between 17-19 years.

2. Study participants raised by their parents until 16 years of age who were the continuous life residents of Lucknow city.

#### **Exclusion Criteria:**

1. Individuals who were having systemic diseases.
2. Individuals who were unwilling to participate.

#### **Case And Control Selection:**

Individuals attending the OPD of Dept of Oral Medicine and Radiology of SPPGIDMS, Lucknow were interviewed about their own as well as their parent's tobacco use status using the Global Youth Tobacco Survey 2013 questionnaire. [4,5]

These individuals were interviewed till the required sample size was achieved and were classified into 2 groups.

Group A(Cases): If they used any form of Tobacco; smoked, smokeless or both (30)

Group B(Controls): If they had never used any form of Tobacco in their lifetime (30)

Both the groups were interviewed using Parent Bonding Instrument (PBI) which is a pre-validated and structured questionnaire. Parent Bonding Instrument (PBI) scale was used to measure fundamental parental styles as perceived by the cases and controls about their parents which is categorized as; 'warmth/support/care' and 'protection/control/demandingness'. It is a 25-item questionnaire with 12 questions on care component and 13 on warmth attitudes. Each item was scored to generate a care and protection score for each of the parent.[12]

#### **Statistical Analysis**

The data was gathered and entered in MS Excel spreadsheet. Data was analyzed using SPSS version 26. Data analysis was carried out using Descriptive statistics and other relevant tests of significance. The p value was set at 0.05 to be significant, and value less than 0.01 was considered as highly significant. Confidence level was set at 95% and power of the study was fixed at 80%.

Descriptive analysis and frequency distribution was done for all the study participants based on age, gender and education qualification. Intergroup comparison of the father/ mother components and

GYTS questions was done for cases and controls using test of significance.

### Results

The figure- 1, 2, 3 describing about the distribution of the study participants based on their age, gender and education qualification. The table-1 shows that there is no significant difference in the cases and controls with respect to the demographic variables as age, gender and educational qualification, meaning that the cases and controls were comparable of the

following aspects. The risk assessment was done for father and mother components by assessing the Odds ratio for the cases and controls. The table-2 and table-4 shows a statistically significance between the risk of up taking tobacco habit in the tobacco use parents that is in the case group than the control group. The Intergroup comparison of the father/ mother components was done for cases and controls using Mann Whitney U non parametric test of significance in table 3.

Fig 1: Age wise distribution of study participants.

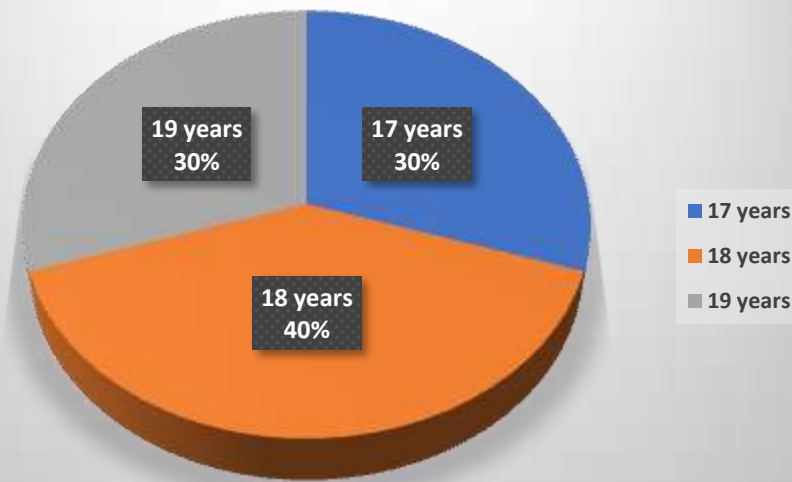
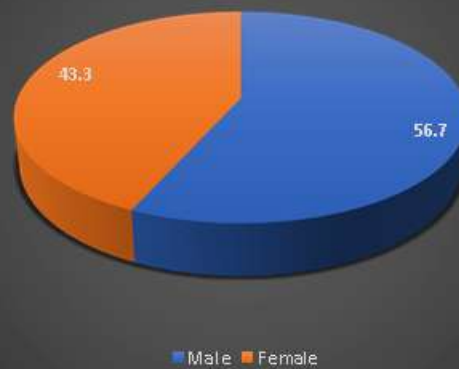
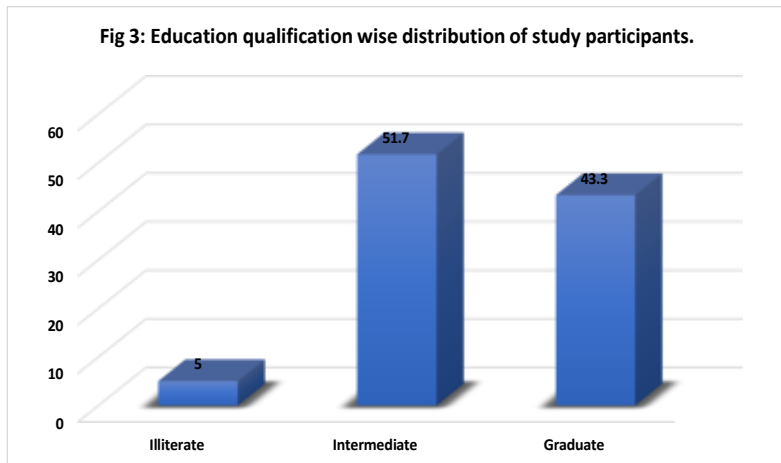


Fig 2: Gender wise distribution of study participants.





**Table 1: Intergroup comparison of the demographic details of the study participants**

| Variables               | Group   | N  | Mean   | Std. Deviation | Std. Error Mean | T Value | P value       |
|-------------------------|---------|----|--------|----------------|-----------------|---------|---------------|
| Age                     | Case    | 30 | 2.0000 | .78784         | .14384          | 0       | 1.0<br>(NS)   |
|                         | Control | 30 | 2.0000 | .78784         | .14384          |         |               |
| Gender                  | Case    | 30 | 1.4333 | .50401         | .09202          | 0       | 1.0<br>(NS)   |
|                         | Control | 30 | 1.4333 | .50401         | .09202          |         |               |
| Education qualification | Case    | 30 | 1.4000 | .62146         | .11346          | 0.219   | 0.827<br>(NS) |
|                         | Control | 30 | 1.3667 | .55605         | .10152          |         |               |

\*p<.05 is statistically significant, \*\*p<.01 is statistically highly significant, NS= not significant.

**Table 2: Distribution of exposure-parents’ tobacco use status among Group A & Group B**

| Parents Smoking | Cases     |            | Controls  |            | Total     |            | P value | Odd ratio [CI 95%]   |
|-----------------|-----------|------------|-----------|------------|-----------|------------|---------|----------------------|
|                 | Frequency | Percentage | Frequency | Percentage | Frequency | Percentage |         |                      |
| User            | 27        | 90.0       | 17        | 56.        | 44        | 100        | .004*   | 6.882 (1.707-27.752) |
| Non-User        | 3         | 10.0       | 13        | 43.3       | 26        | 100        |         |                      |
| Total           | 30        | 100        | 30        | 100        | 70        | 100        |         |                      |

\*Significant

**Table 3: Intergroup comparison of the cases and controls based on the PBI**

| Variables                   | Group   | N  | Mean  | Mean Ranks | Sum of Ranks | U value | P value    |
|-----------------------------|---------|----|-------|------------|--------------|---------|------------|
| Father care component       | Case    | 30 | .0000 | 22.50      | 675.00       | 210     | 0.000**    |
|                             | Control | 30 | .5333 | 38.50      | 1155.00      |         |            |
| Father protection component | Case    | 30 | .9000 | 29.50      | 885.00       | 420     | 0.305 (NS) |
|                             | Control | 30 | .9667 | 31.50      | 945.00       |         |            |
| Mother care component       | Case    | 30 | .1000 | 23.00      | 690.00       | 225     | 0.000**    |
|                             | Control | 30 | .6000 | 38.00      | 1140.00      |         |            |
| Mother                      | Case    | 30 | .9667 | 30.50      | 915.00       | 450     | 1 (NS)     |

|                             |                |    |       |       |        |  |
|-----------------------------|----------------|----|-------|-------|--------|--|
| <b>protection component</b> | <b>Control</b> | 30 | .9667 | 30.50 | 915.00 |  |
|-----------------------------|----------------|----|-------|-------|--------|--|

\*p<.05 is statistically significant, \*\*p<.01 is statistically highly significant, NS= not significant

The table 3 compares the cases and control based on the father and mother component of the questionnaire.

Father care component: There is a highly significant difference (p<.01) in the father care component between the cases and controls. The mean value for this question was significantly higher in the controls as compared to the cases.

Father protection component: There is a no significant difference (p>.05) in the father protection component between the cases and controls. The mean value for this question was comparable in the controls and cases.

Mother care component: There is a highly significant difference (p<.01) in the mother care component between the cases and controls. The mean value for this question was significantly higher in the controls as compared to the cases.

Mother protection component: There is a no significant difference (p>.05) in the mother protection component between the cases and controls. The mean value for this question was comparable in the controls and the cases.

**Table-4: Risk assessment of tobacco exposure in children based on PBI component**

| Variables                          |         |       | Mother care component |                | Total  | OR (95% CI)        |
|------------------------------------|---------|-------|-----------------------|----------------|--------|--------------------|
|                                    |         |       | Less than 27          | More than 27   |        |                    |
| Group                              | Case    | Count | 27                    | 3              | 30     | 13.5 (3.33-54.567) |
|                                    |         | %     | 90.0%                 | 10.0%          | 100.0% |                    |
|                                    | Control | Count | 12                    | 18             | 30     |                    |
|                                    |         | %     | 40.0%                 | 60.0%          | 100.0% |                    |
| <b>Mother protection component</b> |         |       |                       |                |        |                    |
| Group                              |         |       | Less than 13.5        | More than 13.5 | Total  | 1 (0.06 – 16.76)   |
|                                    | Case    | Count | 1                     | 29             | 30     |                    |
|                                    |         | %     | 3.3%                  | 96.7%          | 100.0% |                    |
|                                    | Control | Count | 1                     | 29             | 30     |                    |
|                                    |         | %     | 3.3%                  | 96.7%          | 100.0% |                    |
| <b>Father care component</b>       |         |       |                       |                |        |                    |
| Group                              |         |       | Less than 24          | More than 24   | Total  | 2.143 (1.462-3.14) |
|                                    | Case    | Count | 30                    | 0              | 30     |                    |

|                                    |                |              |                       |                       |              |                     |
|------------------------------------|----------------|--------------|-----------------------|-----------------------|--------------|---------------------|
|                                    |                | <b>%</b>     | 100.0%                | 0.0%                  | 100.0%       |                     |
|                                    | <b>Control</b> | <b>Count</b> | 14                    | 16                    | 30           |                     |
|                                    |                | <b>%</b>     | 46.7%                 | 53.3%                 | 100.0%       |                     |
| <b>Father protection component</b> |                |              |                       |                       |              |                     |
| <b>Group</b>                       |                |              | <b>Less than 12.5</b> | <b>More than 12.5</b> | <b>Total</b> | 3.22 (0.316-32.889) |
|                                    | <b>Case</b>    | <b>Count</b> | 3                     | 27                    | 30           |                     |
|                                    |                | <b>%</b>     | 10.0%                 | 90.0%                 | 100.0%       |                     |
|                                    | <b>Control</b> | <b>Count</b> | 1                     | 29                    | 30           |                     |
|                                    |                | <b>%</b>     | 3.3%                  | 96.7%                 | 100.0%       |                     |

The above table-4 shows the assessment of risk in the form of odds ratio, in the cases and controls.

Mother care component: The odds are 13.5 times higher in cases than in controls.

Mother protection component: The odds are the same for cases and controls.

Father care component: The odds are 2.143 times higher in cases than controls.

Father protection component: The odds are 3.22 times higher in cases than controls.

**Discussion:**

We established a significant correlation between parental tobacco usage and their children's adoption of the habit. When their parents used tobacco in the past, cases are almost six times more likely to smoke or chew than controls. According to research on this intergenerational transfer conducted in western countries (Madathil et al., 2015; Mahabee-Gittens et al., 2012; Vandewater et al., 2014; Vuolo and Staff, 2013; Leonardi-Bee Jo et al, White et al., 2000; Gilman et al., 2009; Alves et al., 2022), similar substantial relationships have been discovered.[1,6,8,13] According to the results of our study, the probability of a child adopting up their parent's smoking habits is almost three times higher than it is for a control group [OR 6.882(95%CI)]. The findings of the present study were in correspondence with the study done by Janakiram et al, 2019; by Vandewater et al., (2014), Melchoir et al., (2010), and Diwedi et al., (2016) that presented OR of 4.26

(2.39 – 7.58)] 2.91 (1.60 – 5.31), 1.96 (1.30 – 2.79) and 3.47 (2.17-5.53) respectively. [1,4]

These results support the social learning theory's tenet that kids model their behavior after what their parents do.[11] Children closely observe their parents, and the behaviors they exhibit are frequently regarded as suitable. While peer pressure, stress, boredom, and other direct stimuli may lead to the commencement of tobacco use, the trigger may be the parent's behavior that has been deeply internalized.[11] This is affirmed by the studies done by Janakiram et al, 2019; Dwivedi et al, 2016.[1,3] Also a study done by Wen c p et al, 2005 supported this theory and reaffirmed the transfer of tobacco habit of peers and parents to off springs.[10] Compared to women, men were 56.7% more likely to develop the habit. In India, smoking tobacco is a behavior that is primarily practiced by men. These results are consistent with the cultural influence on tobacco use in India, where male smoking prevalence

is higher than female smokeless tobacco use (Bhawna, 2013).[7]

A high level of paternal attention reduces the risk that the cases will develop the habit. According to this study, The odds are 2.143 times higher in cases having low paternal care component than controls. fathers' care may have a protective effect on the patients and so delay the onset of tobacco smoking. This conclusion agrees with that of prior research. [1,2] Increased parental supervision is linked to a lower risk of starting to smoke (33%) while decreasing parental supervision is linked to a higher risk of smoking in children (55%), according to a study by Gilman et al.[8] According to Madathil et al. (2015), strict mothers were linked to their children consuming less tobacco. However, in contrary the study done by Janakiram et al, 2019 they have focused that the mother's role is not that significant because, in contrast to the conventional view that the mother plays the primary role in a child's upbringing, their study's findings highlight the importance of the father in the parenting process. [1,2] In our study there was no significant association found between overprotection of mothers and tobacco use by their children. However, the over protection of fathers showed 3.22 times higher risk in their children.

### Recommendation:

With the finding of this study, it is confirmed that Adolescent population is one group that may easily succumb to the use of tobacco. So, It is necessary to educate the parents on the possibility of their child up taking the tobacco habit, just by imitating their tobacco use behavior. There is a need to implement tobacco free home campaigns at school and college level. It could be beneficial to organize school based anti-tobacco campaigns and engage parents to create awareness and help them quit the habit. As India has reached on the declining curve along the graph of tobacco epidemic, so it becomes essential for the public health professional to educate parents on reinforcing the benefits of right parenting which may defer the child from picking up the tobacco habit.

### Conclusion:

It was thus assessed, that when parents use tobacco there is a substantial likelihood that their children

would also develop tobacco use behaviors. tobacco user parents and poor parenting approach are the two most potential risk factors for initiating the tobacco habit at an early age. This begs for concentrated efforts to get parents to accept responsibility for their behavior and the health of their children.

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