Title:

Impact of Family Functioning and Peer Pressure on Nicotine Dependence: A Cross-Sectional Study Among Medical Students in South Punjab, Pakistan

Authors' list:

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Background

The issue of nicotine dependence is escalating, especially among young adults, including medical students, which poses a significant threat to public health.[1] Despite the awareness of nicotine's adverse health effects, a significant number of medical students remain engaged in smoking and other nicotine products. [2] Family factors like parental smoking, family disputes, and supervision levels greatly influence nicotine addiction.[3] Moreover, nicotine dependence in medical students is often fueled by peer pressure, encouraging them to smoke for social acceptance [4]

A comprehensive analysis involving 107,527 student health professionals across 70 countries with response rate ranging from 40% to 100% found that nicotine intake among medical students was highest in European countries (20%) and the Americas (13%).[5] Similarly, another study identified peer pressure as the most common determinant (57.69%) for developing smoking habits among medical students.[6]

The role of family and social environment in shaping adolescent e-cigarette use is crucial, with studies demonstrating a proportionate rise in nicotine use and domestic conflicts .[7] According to study, peer pressure, hostel life, social acceptance emerged as major contributors to nicotine initiation among medical students.[8]

The motivation behind this research is the increasing prevalence of nicotine addiction among medical students, particularly due to limited research on the interplay between peer pressure and family environment. [9] Research on nicotine addiction among the general population is well documented, but there is limited attention given to the medical students. Exploring how family and peer relationships influence nicotine dependence will

provide preventive strategies, policies to counter this rising trend and consequently lead to better public health outcome

Rationale

This research is necessary to assess the impact of familial and peer related factors on nicotine addiction among medical students in South Punjab. This will help design targeted interventions and preventive strategies to mitigate the increasing trend.

Objectives

To determine the influence of the family environment and familial relationships on nicotine dependence among medical students.
To assess the impact of peer pressure on nicotine use and dependence.
To determine whether a positive or negative family and peer environment affects the likelihood of developing nicotine addiction.

Study Design

Cross-sectional study

Participants

Inclusion Criteria: Student enrolled in medical colleges in South Punjab, willing to participate.

Exclusion Criteria:

Students who didn't give consent

Those who were absent

Uncooperative students

Methods

Data Collection Procedure

Data will be collected through a **structured, self-administered questionnaire** in English. The initial section of the questionnaire will collect **basic demographic information**, including **age, gender, medical college, and year of study**.

Assessment Tools

Nicotine Dependence

To assess nicotine dependence, the **Fagerström Test for Nicotine Dependence (FTND)**—a globally validated tool—**will be used**.¹⁴ This test includes **six questions** focusing on behaviors such as the **use of cigarettes, e-cigarettes, and other tobacco-containing products immediately after waking**, **smoking in prohibited areas**, and **difficulty in giving up the first session of the day**. It also inquires about **daily frequency** and whether the participant **smokes despite illness** (Table 1).

The FTND provides a **continuous score ranging from 0 to 10**, based on six items:

- **Three yes/no items** will be scored as 0 (**No**) and 1 (**Yes**),
- **Three multiple-choice items** will be scored from 0 to 3.

The total score will be used to classify nicotine dependence as follows:

- **0–2:** Very Low
- **3–4:** Low
- **5:** Moderate
- **6–7:** High
- **8–10:** Very High

Each question will offer specific response options that aid in categorizing dependence levels. **Reliability analysis** is expected to yield a **Cronbach's alpha of approximately 0.702**, indicating acceptable internal consistency, as reported in prior studies.

Family Functioning

Participants will also be provided with the **Family Assessment Device – General Functioning subscale (FAD-GF)**, which includes **12 questions** to evaluate overall family functioning (Table 2).¹⁵ Each item will be rated on a **4-point Likert scale**, ranging from 1 (**Strongly Agree**) to 4 (**Strongly Disagree**), with **negatively worded items reverse-coded** to maintain scoring consistency. Higher scores will reflect **poorer family functioning**.

A **cutoff mean score of 2.00** will be applied:

- **Mean score ≥ 2.00** will indicate **unhealthy or dysfunctional family functioning**,
- **Mean score < 2.00** will reflect **relatively healthy family functioning**.

The FAD-GF scale is expected to demonstrate a **Cronbach's alpha of approximately 0.736**, indicating acceptable internal consistency.

Peer Pressure

Peer pressure will be assessed using items adapted from **Subramaniam et al.** This scale includes **six yes/no questions** divided into **direct** and **indirect** peer pressure:

- **Three questions** will assess **direct** peer pressure,
- **Three questions** will assess **indirect** peer pressure.

Students answering **'yes' to any question** will be considered to have **experienced peer pressure**, while those who respond **'no' to all questions** will be categorized as **not experiencing peer pressure**.

Statistical Analysis Plan

Statistical analysis will be carried out using SPSS version 26. Descriptive statistics will be used to summarize demographic data, smoking status, peer pressure, and family functioning. A two-way analysis of variance (ANOVA) will be conducted to assess the interaction effects of family functioning and peer pressure on nicotine dependence. For group comparisons, an independent t-test will be performed between students with functional and dysfunctional families experiencing peer pressure. A Chi-square test will be used to examine associations between gender, year of study, peer pressure, and smoking status. Assumptions for normality and equal variances will be verified prior to applying parametric tests, and the level of statistical significance will be set at $p < 0.05$.

Ethical Approval

Ethical approval will be obtained from the Institutional Ethical Review Board (IERB), Nishtar Medical University, Multan, Pakistan, prior to data collection. The study will ensure that subjects participate on a voluntary and anonymous basis. Prior to participation, informed consent will be obtained from each participant.

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