## Original Article

# Smoking among future doctors in a "No-Smoking" University Campus in Karachi, Pakistan: Issues of tobacco control

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## Abstract

**Objective:** To determine the level of tobacco-related attitudes and practices among medical students who study in a designated 'No-Smoking University' in Pakistan's largest city, Karachi. It further highlighted some challenges for tobacco control at the university.

**Methods:** The study design adopted mixed methods. It commenced with an initial qualitative phase using in-depth interviews with medical students and university staff to refine and expand areas of enquiry for the development of a structured cross-sectional survey among second and fifth (final) year students. Thematic analysis was used to analyse qualitative data, while descriptive statistics and various statistical tests were applied to investigate differences along a number of parameters in the survey data.

**Results:** Overall smoking prevalence across both years was 14.5%; however, there was a sharp disparity along sex lines, with 32% of males and just 1% of females self-identifying as current or occasional smokers. Importantly, the majority of smokers initiated smoking after starting their medical education. Despite students' expressed expectations that they can and should be future non-smoking role models and advocates, their actual knowledge and practices - for males at least - were disappointing. Significantly fewer second year than final year students knew that Hamdard had been designated a 'No-Smoking University', and about half of the participants believed the university had 'effectively' controlled tobacco use on campus. A large majority supported stronger tobacco control measures at the university and in the wider society.

**Conclusion:** This study highlights weaknesses in the measures taken for tobacco control on the university campus through the picture it provides of the presence of tobacco use, the on-campus initiation of smoking and the increase in smoking rates among final year students by comparison to those in the initial years of medical studies (JPMA 58:248;2008).

## Introduction

Tobacco is the world's single most avoidable cause of death and illness.[1] By the end of the twentieth century, cigarettes killed approximately five million people annually worldwide[2], and tobacco is expected to take the lives of nearly one-half of the world's 1.1 billion current users.[3] The annual death toll is projected to increase several fold in low income countries by the year 2020[4], and Pakistan is no exception. Although the Government of Pakistan in 1997 identified smoking as one of the leading causes of morbidity and mortality[5], it remains one of the most serious public health challenges.[6]

Medical professionals can play an important role in reducing the consumption of tobacco and in motivating and initiating quit attempts among smokers.[7] In a new code of conduct on tobacco control, the World Health Organization asks all health professionals to act as role models for their patients.[8] It is therefore vital that medical students (the doctors of the future) have adequate knowledge about tobacco-related diseases and skills in smoking cessation.[9] Furthermore, it is equally important that they act as non-smoking role models for their patients.[10]

Some countries have experienced steep declines in smoking prevalence among physicians. For example in 1999, just 3% of doctors were smokers in Australia.[11] However, there is evidence that a substantial proportion of doctors continue to smoke in Pakistan. In a 2003 study carried out in Karachi, 32% of doctors at a teaching hospital were smokers.[12] One of the challenges for tobacco control in Pakistan is the substantial prevalence of smoking among future doctors. The most recent surveys have found a smoking prevalence of 19% to 26% among male and 1% to 5% among female medical students in Pakistan.[13,14] As medical students represent the group most likely to become important role models for the community, their practices in relation to this life-threatening behaviour are of interest. In order to develop effective interventions it is important to identify the context and timing of smoking initiation, as well as attitudes. This study aimed to document opportunities and obstacles for stronger policies by determining smoking prevalence and pathways into initiation among medical students over the course of their study, and investigating their attitudes towards tobacco

control in an officially declared 'No-Smoking' university campus.

## Subjects and Methods

The study was carried out from May to September 2005 among medical students at Hamdard University, one of Karachi's largest private universities. Unlike virtually all tobacco-related studies in Pakistan, which utilised quantitative data collection methods, a combined approach using both qualitative and quantitative methods was used in the present study in order to gain the advantages of both. The study commenced with 8 semi structured, in-depth interviews with medical students of both sexes, smokers and non-smokers, from different year levels, who volunteered after a flyer was posted seeking participants. Volunteers were selected on a first-come-first-served basis. Five semi-structured interviews were held with university authorities. This qualitative approach helped to establish the broader context, and to refine and expand areas of investigation, particularly in relation to potential influences on initiation of smoking. Findings from this phase were used to inform the study's main component, a cross-sectional structured, self-reported knowledge, attitudes and practices (KAP) survey.

The KAP survey incorporated standard questions used internationally for assessing smoking status, as well as results from the initial qualitative phase. Among other domains, smoking prevalence among the study population was established by the survey. The target group for the survey was two batches of medical students - second year and fifth (final) year - in the MBBS degree programme. These two groups were chosen to represent those who were relatively new (but acculturated) to the university environment and course, and those who had undergone substantially more years of medical studies. For the quantitative survey, the questionnaire was administered to the whole class of both second and fifth (final) years, which each had a minimum one-hundred enrolled students.

Smokers and non-smokers in the study were classified as follows:

* A daily smoker: smokes any tobacco product at least once a day.
* An occasional smoker: includes former daily smokers and others who now smoke only occasionally.
* An ex-smoker: formerly a daily or occasional smoker but currently does not smoke at all.
* A non-smoker: has just had a puff, or not more than one cigarette, or has never smoked.

All participants in the study were given a brief verbal explanation followed by a written 'plain language statement' explaining the purpose and relevant details of the research activity. Written informed consent was obtained to audiotape interviews. To safeguard confidentiality, the transcripts prepared from interviews were stored in a password-protected computer; hard copies were locked away in a cupboard and audio tapes were wiped. No students' names were recorded or used for the survey component. Those being asked to complete the survey were assured of confidentiality. Completion of the survey was taken as evidence of consent. Surveys and data files were kept stored and locked to ensure anonymity of all participants.

Standard methods of thematic analysis were used to code, organise and interpret transcripts prepared from interviews. SPSS statistical software Version 14 for Windows was used for tabulation and analysis of quantitative data. Pearson Chi square was used to determine the level of statistical significance between the differences in percentages across groups with a p value of $< 0.05$ regarded as statistically significant.

## Results

Out of the total 196 students enrolled in both years, 80 and 85 questionnaires were returned by the second and the fifth (final) year students, respectively. Females were a slight majority (56.36%) in both year levels, though differences were not statistically significant ($p = 0.5$). The mean age of respondents was 20.16 years (19.96, 20.36 CI) for second year and 22.89 years (22.68, 23.10 CI) for final year students. (Table 1)

Just over half of the total enrolled students (58.1%) attending the medical college were not living with their immediate families. Of the forty-six second year students originating from places other than Karachi, slightly more than half lived in hostels, whereas the single largest group among the final year students from outside Karachi shared lodgings with friends. Statistically significant differences were found according to residential status between two year levels ($p < 0.001$). (Table 1)

The overall smoking prevalence among the combined year levels was found to be 14.5% with rates dramatically higher among males (32%) than females (1%). For all practical purposes, smoking is an almost totally sex-linked behaviour. The breakdown of students by smoking status in Table 1 shows that among males and in both years, there are more occasional than daily smokers. Fifteen percent of all non-smoking respondents in both years reported having experimented with smoking (one cigarette or less) at some point in their lifetime.

The average age of smoking initiation among both current and former smokers in the combined sample was 18.8 years (18.18, 19.61 CI) (Table 2). Final year students started

**Table 1. Demographic characteristics and prevalence of smoking among the respondents by year of study and sex**

| | Second year N = 80 | | Final year N = 85 | | Total |
|---|---|---|---|---|---|
| | Male = 33 (%) | Female = 47 (%) | Male = 39 (%) | Female = 46 (%) | N = 165 (%) |
| **Sex** | 33 (41.3) | 47 (58.5) | 39 (45.9) | 46 (54.1) | |
| | $\chi^2 = 0.36$; p = 0.5 | | | | |
| **Mean Age (C I)** | 20.16 years (19.96, 20.36) | | 22.89 years (22.68, 23.10) | | |
| **Current accommodation*** | | | | | |
| At home with family in Karachi | 8(24.2) | 26 (55.3) | 11 (28.2) | 24 (52.1) | 69 (41.8) |
| In University hostels | 10 (30.3) | 16 (34.0) | 0 (0) | 5 (10.8) | 31 (32.2) |
| Accommodation shared with friends | 11 (33.3) | 1 (2.1) | 21 (53.8) | 1 (2.1) | 34 (35.4) |
| Living with relatives | 3 (9.0) | 4 (8.5) | 2 (5.1) | 10 (21.7) | 19 (19.7) |
| Living alone / independently | 1 (3.0) | 0 (0) | 5 (12.8) | 6 (13.0) | 12 (12.5) |
| | $\chi^2 = 34.4$; p < 0.001 | | | | |
| **Smoking status**** | | | | | |
| Daily smokers | 4 (12.1) | 0 (0) | 5 (12.8) | 0 (0) | 9 (5.4) |
| Occasional smokers | 7 (21.2) | 0 (0) | 7 (17.9) | 1 (2.2) | 15 (9.0) |
| Ex-smokers | 1 (3) | 2 (4.3) | 2 (5.1) | 0 (0) | 5 (3.0) |
| Non-smokers | | | | | |
| Have just had a puff or not more than one cigarette in lifetime | 8 (24.2) | 0 (0) | 7 (17.9) | 9 (19.5) | 24 (14.5) |
| Have never smoked in lifetime | 13 (39.3) | 45 (95.7) | 18 (46.1) | 36 (78.2) | 112 (67.8) |
| | 2 = 0.08; p = 0.8 | | | | |

* For the purposes of statistical testing, 'accommodation shared with friends', 'living with relatives', and 'living alone / independently' have been combined
** For the purposes of statistical testing, 'daily smokers' and 'occasional smokers', have been combined while 'ex-smokers' have been combined with 'Non smokers'

smoking on average nearly one year later than second year students, but the difference was not significant. Strikingly, at least half of the total number of smokers started smoking after beginning their studies at the medical college. It is notable that the hostel was the most frequently identified place of initiation by the second year students. During interviews some students also mentioned observing this phenomenon:

*Yes, I have seen students who have started [cigarette] smoking [in] the hostel. Before that they [didn't] use cigarettes ... And when [students] they are smoking they are [not at all] bothered how much the other person is distrubed...*

**(A male student, non-smoker)**

*In my hostel... [among] those who are new only 5% smoke. But when they reach 2nd or 3rd year, about 80% among them become smokers*

**(A male student, smoker)**

One hostel student who started to smoke elsewhere claimed his consumption was influenced by living among so many smokers. He explained:

*... when I came to the hostel I used to take very few... [used to] buy a small packet and [it lasted] even for a month... But now ... [I can finish] one packet in just one night ... the hostel environment encouraged me to take more.*

**(A male student, smoker)**

During interviews the university authorities expressed satisfaction with the effectiveness of tobacco control on campus and with the role of the "No-Smoking

**Table 2. Age and location of smoking initiation for current and ex-smokers.**

| | Year of study | | Total |
|---|---|---|---|
| | Second year n = 14 (%) | Final year n = 15 (%) | N = 29 (%) |
| **Mean age of smoking initiation in years (CI** | 18.43 (17.48, 19.38) | 19.33 (18.21, 20.45) | 18.88 |
| | t = 1.314; p = 0.20 | | |
| **Places/locations of smoking initiation** | | | |
| At school | 1 (7.1) | 2 (13.3) | 3 (10.3) |
| At college | 2 (14.3) | 4 (26.7) | 6 (20.6) |
| At University | 3 (21.4) | 4 (26.7) | 7 (24.1) |
| On a trip/tour | 1 (7.1) | 1 (6.7) | 2 (6.8) |
| In hostel | 5 (35.7) | 1 (6.7) | 6 (20.6) |
| At a friend's house | 2 (14.3) | 2 (13.3) | 4 (13.7) |
| Cannot remember | 0 (0) | 1 (6.7) | 1 (3.4) |
| **First started smoking after enrolling at the University** | | | |
| Yes | 7 (50.0) | 8 (53.3) | 15 (51.7) |
| No | 7 (50.0) | 7 (46.7) | 14 (48.2) |
| | $\chi^2$ =0.04; p = 0.85 | | |

**Table 3. Views, awareness and opinions on control of tobacco by the university and the role of doctors in tobacco control by year of study.**

| | Year of study | | Sex | | Total |
|---|---|---|---|---|---|
| | Second year = 80 (%) | Final year = 85 (%) | Male = 72 (%) | Female = 93 (%) | N = 165 (%) |
| **The university has controlled the use of tobacco around campus** | | | | | |
| Noticeably | 7 (8.8) | 13 (15.3) | 14 (19.4) | 6 (6.5) | 20 (12.1) |
| Slightly | 31 (38.8) | 30 (35.3) | 35 (48.6) | 26 (28.5) | 61 (37) |
| Not at all | 26 (32.5) | 30 (35.3) | 19 (26.4) | 37 (39.8) | 56 (33.9) |
| Do not know | 16 (20.0) | 12 (14.0) | 4 (5.6) | 24 (25.8) | 28 (17.0) |
| | $\chi^2 = 2.5$; p = 0.4 | | $\chi^2 = 22.2$; p < 0.001 | | |
| **Heavy fines should be imposed for on-campus smoking** | | | | | |
| Agree | 68 (85.0) | 77 (90.6) | 59 (81.9) | 86 (92.5) | 145 (87.9) |
| Disagree | 6 (7.5) | 6 (7.1) | 10 (13.9) | 2 (2.2) | 12 (7.3) |
| No comment | 6 (7.5) | 2 (2.4) | 3 (4.2) | 5 (5.4) | 8 (4.8) |
| | p = 0.3 | | p = 0.05* | | |
| **Is the university officially declared a "No Smoking University"?** | | | | | |
| Yes | 18 (22.5) | 50 (58.8) | 43 (59.7) | 25 (26.9) | 68 (41.2) |
| No | 29 (36.3) | 23 (27.1) | 16 (22.2) | 36 (38.7) | 52 (31.5) |
| Do not know | 33 (41.3) | 12 (14.1) | 13 (18.1) | 32 (34.4) | 45 (27.3) |
| | $\chi^2 = 25.4$; p < 0.001 | | $\chi^2 = 18.1$; p < 0.001 | | |
| **Doctors can be role models for patients by not using tobacco** | | | | | |
| Agree | 74 (92.5) | 80 (94.1) | 67 (93.1) | 87 (93.5) | 154 (93.3) |
| Disagree | 3 (3.8) | 1 (1.2) | 3 (4.2) | 1 (1.1) | 4 (2.4) |
| No comment | 3 (3.8) | 4 (4.7) | 2 (2.8) | 5 (5.4) | 7 (4.2) |
| | p = 0.7* | | p = 1.0* | | |
| **Every patient should be asked about tobacco use by doctors** | | | | | |
| Agree | 58 (72.5) | 79 (92.9) | 60 (83.3) | 77 (82.8) | 137 (83.0) |
| Disagree | 14 (17.5) | 4 (4.7) | 9 (12.5) | 9 (9.7) | 18 (10.9) |
| No comment | 8 (10.0) | 2 (2.4) | 3 (4.2) | 7 (7.5) | 10 (6.1) |
| | p < 0.001* | | p = 1.0* | | |

* Fisher exact test

University" designation. However, as can be seen in Table 3, over half of students overall denied the existence or were unaware of any tobacco control on the campus, although males were more likely than females to report awareness (p < 0.001). An overwhelming majority in both years and among both sexes agreed that heavy fines should be imposed on those smoking within the campus. Surprisingly, only around a fifth of second year students and one-quarter of female students knew that the university was officially declared a "No- smoking University".

Nearly all of the students interviewed expressed a certain level of dissatisfaction with the measures taken to control tobacco on campus as well as a similar lack of awareness. These views are apparent in the following comments:

*There is no rule… no hard and fast rules… In a medical institute you [would] expect that it is being explained but [it isn't]. And there [are] no, as such, restrictions in the campus…*

**(A male student, ex-smoker)**

*If you go to the canteen … you will find bunch and bunch of boys smoking and smoking … whoever are sitting, even in points [buses] are smoking and the smoke comes even in the front.*

**(A female student, non-smoker)**

Others, however, were aware and noted the gap between policy and reality.

*I have seen that where the sign 'no smoking' is written the smokers smoke right beneath it and there is*

*no one to stop them.*

**(A male student, smoker)**

In Table 3, views on the significance of a doctor as a role model and tobacco control advocate are presented. A vast majority of students across years and among both sexes felt that a non-smoking doctor would be an ideal example for their patients. As well, an overwhelming majority of students in final year and among both sexes agreed that doctors should ask every patient about the use of tobacco. Some students during interviews also noted the need to ask about smokeless tobacco, given the prevalence of this practice in Pakistan.

All of the interviewed students, even current and ex-smokers, were emphatic about this aspect of a doctor's role.

*I think they can be the most effective source after media and it is of most importance. Because it is more than a media; a person believes on a doctor…*

**(A male student, smoker)**

*I think 'practice what you preach'. if the doctor smokes and if he is telling his patients that you shouldn't then I think he is a hypocrite…. That's what I think.*

**(A female student, ex-smoker)**

During interviews students also agreed that doctors should seize the clinical interview opportunity to investigate tobacco-related behaviour among patients as openings for health promotion. One student who highlighted this issue said (while noting the role of his own medical training),

*He should!! ... because we have gone through a number of diseases which are having smoking as a predisposing factor ... All these can have a smoking history as a predominating factor. So it is really necessary [to] ask [every] patient.*

**(A male student, smoker)**

## Discussion

This study found an overall prevalence of smoking of 14.5% among medical students in a private university in Karachi. Another recent study in Karachi reported virtually the same prevalence (14.4%) among medical students.[14] Earlier studies in the same city found slightly lower rates, i.e. around 11%.[13,15] The present study is consistent with other Pakistani studies showing comparatively lower overall smoking rates than in a number of Asian, European and African studies within medical schools, which reported rates between 22% and 45%.[10,16,17] However, some developed western countries (including the Republic of Ireland, the UK, Australia and the USA) have documented much lower rates among medical students[10,18] than found in this study.

One of the limitations of this study was the use of self-reported data. Even though the questionnaire was anonymous, it is possible that smoking was under-reported by the students, especially females, given that it is culturally unacceptable in Pakistani women to smoke. As well, the study sample has limitations, given that it was made up of students enrolled in two academic years from a single medical college in Karachi; hence, results cannot be generalized to other cohorts of medical students in Pakistan.

There are several important findings from this study. Keeping in mind that health professionals, whether they wish to or not, serve as role models for their patients as well as for the general public[8], and are seen to have an important role in helping people quit smoking[19], our results reveal a paradox. Despite students' expectations that they can and should be future non-smoking role models and advocates, their actual practices - for males at least - were disappointing. This situation was doubly paradoxical given that smoking was practiced within an officially declared smoke-free campus.

Another key finding is that more than half of smokers (51.7%) started smoking after entering the medical college. This finding needs to be considered in light of the fact that a significant number of medical students came from outside Karachi and were not living with their immediate family members. Wen et al (2005)[20] identified the role of an authoritarian parental influence as an important factor in general, and particularly in Asian cultures, in dissuading young people from smoking. The lack of parental influence might have affected those in our study who were living away from home. Interestingly, a recent study done in Karachi found that a large proportion of medical students in their study lived in hostels, and that up to 45% of participants began smoking during their medical studies.[14] Similarly, two Spanish studies each reported that almost 33% of medical students started smoking during their medical school years.[21,22] By contrast, no medical students began smoking after starting medical school in Philadelphia, USA.[18] Obviously, medical school - perhaps, especially, hostels themselves - presents an opportunity to prevent smoking initiation.

Finally, significant numbers of participants in the present study were unaware that they were studying in a "No-Smoking University". In addition, many expressed dissatisfaction regarding the control of tobacco use on campus, a finding that calls into question the university authorities' satisfaction with their handling of tobacco control on campus. The weak implementation of the campus smoke-free policy is apparent judging by the anecdotes related about practices, the number of smokers who started smoking after joining the medical college, and

the fact that many mentioned the influence of the hostel environment in their tobacco consumption. It is noteworthy that the students themselves were supportive of stronger tobacco control on campus; they overwhelmingly agreed that heavy fines should be imposed on those caught smoking on campus. This is in contrast with a study in the US which suggested a desire for softer penalties for those who are caught using tobacco.[23] There is evidence that campuses in other settings have experienced reduced tobacco use through strict tobacco control policies which include a ban on smoking on campus, prohibition of the sale and advertising of tobacco products, and a restriction of smoking to a minimum of 20 feet from building entrances, coupled with cessation programmes.[24] Wechsler (2001)[25] reported an association between smoke-free policies in student dwellings and lower smoking prevalence, particularly among students entering the college as regular smokers.

Although the university in the present study has an official no-smoking policy, it is not clearly defined, well-promoted or strongly enforced. Furthermore, the university has not established any cessation programmes for smokers. If the university is serious about the policy, more needs to be done in areas of control, prevention through education and regulation, and cessation for those already addicted.

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