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Factors associated with dual use of waterpipe tobacco and cigarettes among adults in Pakistan

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Abstract

Background: Little is known about dual use of waterpipe tobacco and cigarettes, especially in countries where both are prevalent.

Aims: This study aimed to assess demographic correlates, patterns of use and quit behaviours of waterpipe users in Pakistan who also smoke cigarettes.

Methods: Data were taken from a randomized controlled trial in Pakistan that assessed smoking cessation in 510 adult waterpipe users, stratified on concurrent cigarette use. Logistic regression analysis was done to assess the association between waterpipe tobacco users who also smoke cigarettes (dual use) and their demographic characteristics, smoking history and quit behaviour. Unadjusted odds ratios (OR) and adjusted OR (ORa) and 95% confidence intervals (CI) were determined.

Results: Dual use was significantly associated with younger age (ORa = 0.36, 95% CI: 0.19–0.70) and middle-school educational level (11–15 years), versus no formal education, (ORa = 2.01, 95% CI: 1.15–3.50). Dual use was also associated with smoking less than all day versus all day (defined as continuously for several hours) (ORa = 2.71, 95% CI: 1.73–4.25) and younger age at starting smoking (ORa = 0.95, 95% CI: 0.93–0.98). No association was found between dual use and sex, marital status, duration of smoking, nicotine dependence or quit history.

Conclusion: Waterpipe tobacco users who also smoke cigarettes differ from waterpipe-only users, particularly in demographic characteristics. More research is needed to explore the interaction between these two smoking behaviours. Health promotion and cessation interventions in Pakistan should consider tailoring their approach to account for the unique characteristics of dual waterpipe and cigarette users.

Keywords: waterpipe, hookah, shisha, cigarettes, tobacco, Pakistan

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Introduction

Waterpipe tobacco use is a centuries old practice in Middle Eastern and South Asian cultures, usually among older males in rural settings (1). The 1990s saw the mass manufacture of flavoured *mo'assel* (honeyed) waterpipe tobacco, which gained popularity in young people in these regions and spread to North American and European countries (2,3). The Middle East and South Asia have the highest prevalence of waterpipe tobacco use globally. However, according to the Global Youth Tobacco Survey, more than 10% of schoolchildren were current (past 30 days) users in the Czech Republic, Estonia, Hungary, Latvia, Poland, Romania, Slovakia, Slovenia and Ukraine (4). The 2017 National Youth Tobacco Survey in the United States of America (USA) reported that 3.3% of high-school students were current waterpipe users (5).

The global rise of waterpipe tobacco smoking, and indeed other non-cigarette tobacco products, has led to an increasing prevalence of dual and polytobacco use, which is a public health concern. Modelling estimates suggest that waterpipe tobacco users who also use cigarettes,

smoke both products more frequently and intensely than those who only use one smoking method, thereby exposing them to even more tobacco-related harm (6). A recent systematic review has shown that waterpipe tobacco use predicts later initiation of cigarette smoking (7). In addition, a randomized controlled trial found that some smokers who successfully quit cigarettes were found to then start using waterpipe tobacco (8). Smoking the waterpipe to complement or substitute for other types of tobacco use undermines the public health gains made in tobacco control and requires more investigation.

While much research exploring the reasons for waterpipe tobacco smoking has been done (9,10), few studies have examined dual use of the waterpipe and cigarettes. Cigarette smoking tends to fulfil an individual need that may include coping with stress and satisfying nicotine cravings. Waterpipe tobacco smoking, however, is often described as a pleasurable experience that centres on socializing with others (11). Nearly all research on the differences between dual and waterpipe-only tobacco use has been done in the USA or the United

Kingdom, and such studies are generally limited to assessing sociodemographic differences (12–17). Only a few studies have assessed patterns of use in more detail. For example, in a small sample of Arab-Americans in the USA, dual waterpipe and cigarette users were found to be more dependent on cigarettes and had more barriers to stopping smoking than cigarette-only users (18). In a large cross-sectional study in the Islamic Republic of Iran, dual waterpipe and cigarette users were more likely to be male and smoke waterpipe tobacco more regularly and in different venues compared with waterpipe-only users (19). This suggests that dual users may respond differently to interventions to control waterpipe use, such as health awareness campaigns and behavioural change techniques, but more research is needed to confirm this assumption in different settings.

To our knowledge, only one study in the Islamic Republic of Iran (19) and another in schoolchildren in Jordan (20) have assessed dual waterpipe tobacco and cigarette use outside of North American and European settings. This is of concern given that both waterpipe tobacco and cigarette use are far more prevalent in the Middle East and South Asia than elsewhere (21). Attitudes to tobacco use, quitting and tobacco control policies may also be different in dual users (15,16). Pakistan, in particular, has a unique waterpipe tobacco context that is largely unexplored and users of waterpipe tobacco in Pakistan are among the most nicotine-dependent globally (22,23). This is the result of a national ban on flavoured *mo'assel* waterpipe tobacco (24) and the predominant use of an unflavoured and traditional tobacco type that has a high nicotine content (25). Little is known about the patterns of use of unflavoured waterpipe tobacco in areas where it is used and it is unclear whether dual waterpipe tobacco and cigarette users differ from waterpipe-only users in Pakistan. This has implications for the design of tobacco cessation interventions and tobacco control in general.

This study aimed to assess the demographic characteristics, patterns of use and quit behaviour of waterpipe tobacco users in Pakistan who also smoke cigarettes compared to those who only use the waterpipe.

Methods

Study setting, design and sample

Data were analysed from participants recruited to a randomized controlled trial in 2016 testing the effect of varenicline on smoking cessation among adult waterpipe smokers in Pakistan (23). The trial protocol and full methods are published elsewhere (26). Briefly, the study recruited adult participants from four districts of Punjab, Pakistan, who smoked waterpipe tobacco daily (> 25 days a month) for at least six months. Concurrent cigarette use was employed as a stratifying variable in the study design based on the prevalence of dual use found in a previous smoking cessation trial in Pakistan (22). Recruitment was done in hospitals through distribution of posters and leaflets and in the community through local media and com-

munity networks. People were eligible for inclusion in the trial if they intended to quit waterpipe use, but were excluded if they had used pharmacotherapy for tobacco dependence in the past 30 days; were pregnant, lactating or planning to become pregnant; had a medical condition requiring hospitalization; had a previous allergic reaction to varenicline; had a history of heart disease, stroke, epilepsy or mental health conditions; or if they currently used smokeless tobacco or other substances (including alcohol misuse) besides smoked tobacco. Ethical approval for the randomized controlled trial was obtained from the National Bioethics Committee of the Pakistan Medical Research Council and the Research Governance Committee at the University of York, United Kingdom. Informed consent was obtained from each participant.

Measures

A questionnaire developed on the existing literature (27–29) was distributed. This questionnaire recorded demographic data, smoking patterns and history, motivation to quit, withdrawal symptoms and dependency measures (based on the Lebanon Waterpipe Dependence Scale score). The outcome measure of interest for the current study was dual waterpipe and cigarette use. Waterpipe use was defined as smoking at least 25 days a month for at least the past six months, and cigarette use was defined as smoking cigarettes at least once in the past 30 days.

Demographic information recorded included age, sex, marital status, educational level and occupation. Waterpipe smoking history included: daily use (all day, defined as many continuous hours of smoking at a time/less than all day); length of smoking sessions (smoking without a break) in minutes; smoking duration in years; age at starting smoking; and total dependency score based on the Lebanon Waterpipe Dependence Scale. This tool is adapted from the Fagerstrom Test for Nicotine Dependence and DSM-IV for substance addiction and has been validated in other low- and middle-income countries (29,30). Waterpipe quit history variables included: previous quit attempts (yes/no), and, if yes, the number of previous quit attempts, time since last quit attempt and longest abstinence time.

Statistical analysis

Data were analysed descriptively using frequency counts and percentages for categorical variables and data and the mean and standard deviation (SD) for continuous variables (or the median and interquartile range if the data were skewed). Demographic characteristics, waterpipe smoking history, waterpipe quit history and quit outcome were cross-tabulated by dual use of waterpipe and cigarettes. We then constructed logistic regression models to test the relationship between dual waterpipe and cigarette use and the independent variables. We checked for collinearity between independent variables by assessing the variance inflation factor, which was less than two for all variables. Model 1 examined associations without adjusting for confounding and presents the unadjusted odds ratios (ORs) and 95% confidence intervals (95% CIs).

Variables that were statistically significant at $P < 0.05$ in model 1 were entered into model 2, which was adjusted for all variables in the model. We took an alpha value of less than 0.05 to be statistically significant and presented adjusted odds ratios (ORa) with 95% CI. All analyses were done using Stata 15.0.

Results

A total of 510 participants were included in the study; their characteristics are shown in Table 1. The median age of the participants was 48 years, 429 (84.1%) were male (by

design of the trial), 440 (86.3%) were married, 187 (36.7%) had no formal education and 195 (38.2%) worked in agriculture. The median duration of waterpipe smoking was 25 years and median length of smoking sessions was 10 minutes (range 1–79 minutes). As regards daily use, 128 (25.1%) smoked the waterpipe all day (continuously for hours) as opposed to less than all day. The mean age at starting smoking was 21.9 years. The mean score on the Lebanon Waterpipe Dependence Scale was 19.2 (SD 4.0), indicating a highly nicotine-dependent sample. Previous quit attempts were reported by 95 (18.6%) participants;

Table 1 Demographic and smoking characteristics of the sample by waterpipe-only and dual (waterpipe and cigarettes) use

Variable	Total (n = 510)	Waterpipe-only users (n = 249)	Dual users (n = 261)
Demographic characteristics			
Age, median (IQR)	48 (37–60)	50 (40–62)	46 (35–57)
Sex, no. (%)			
Female	81 (15.9)	41 (16.5)	40 (15.3)
Male	429 (84.1)	208 (83.5)	221 (84.7)
Marital status, no. (%)			
Married	440 (86.3)	212 (85.1)	228 (87.4)
Other (unmarried, divorced, widowed)	70 (13.7)	37 (14.9)	33 (12.6)
Educational level, no. (%)			
No formal education	187 (36.7)	107 (43.0)	80 (30.7)
Primary	147 (28.8)	71 (28.5)	76 (29.1)
Middle	104 (20.4)	39 (15.7)	65 (24.9)
Secondary or higher	72 (14.1)	32 (12.9)	40 (15.3)
Occupation, no. (%)			
Professional, clerical or sales	56 (11.0)	34 (13.7)	22 (8.4)
Skilled or unskilled manual	61 (12.0)	28 (11.2)	33 (12.6)
Domestic service	98 (19.2)	53 (21.3)	45 (17.2)
Agricultural	195 (38.2)	97 (39.0)	98 (37.6)
Daily wage earner	52 (10.2)	21 (8.4)	31 (11.9)
Other ^a	48 (9.4)	16 (6.4)	32 (12.3)
Waterpipe smoking history			
Daily use, no. (%)			
All day (continuously for several hours)	128 (25.1)	81 (32.5)	47 (18.0)
Less than all day	382 (74.9)	168 (67.5)	214 (82.0)
Session length, median (IQR) (minutes)	10 (5–10)	10 (6–10)	9 (5–10)
Smoking duration, median (IQR) (years)	25 (15–38)	25 (15–40)	25 (14–35)
Age started smoking, mean (SD) (years)	21.9 (8.5)	23.6 (9.6)	20.4 (7.1)
LWDS score, mean (SD)	19.2 (4.0)	19.4 (3.7)	18.9 (4.3)
Waterpipe quit history			
Previous quit attempt, no. (%)			
No	415 (81.4)	210 (84.3)	205 (78.5)
Yes	95 (18.6)	39 (15.7)	56 (21.5)
Number of quit attempts, median (IQR)			
	1 (1–3)	1 (1–3)	1 (1–3)
Time since last quit attempt, median (IQR) (years)			
	2 (1–7)	2 (0.7–7)	2 (1–5)
Longest abstinence length, median (IQR) (years)			
	0.3 (0.3–1)	0.3 (0.3–1)	0.3 (0.3–1)

IQR: interquartile range, SD: standard deviation, LWDS: Lebanon Waterpipe Dependence Scale.

^aOther: other occupations, unemployed, retired or student.

the median number of quit attempts was 1, the median time since the last quit attempt was 2 years, and the median longest abstinence time was 0.3 years.

Table 1 also shows cross-tabulations between the outcome variable (dual use) and the independent variables (demographic and waterpipe smoking characteristics). Just over half the sample (261, 51.2%) were dual waterpipe and cigarette users, reflecting the stratification process of the study design. Dual users were about 4 years younger than waterpipe-only users (46 versus 50 years), and had reached a higher educational level and different occupations. Both waterpipe-only and dual users had smoked waterpipe tobacco for 25 years, and had similar lengths of smoking sessions and scores on the Lebanon Waterpipe Dependence Scale (LWDS). More waterpipe-only users reported smoking waterpipe tobacco all day (continuously for hours) compared with dual users (63.3% versus 36.7%). The two groups were broadly similar with respect to waterpipe quit history.

Table 2 shows the results of the logistic regression analyses assessing the association of demographic and waterpipe smoking characteristics with dual use. The unadjusted model (model 1) showed that dual use was significantly associated with younger age, middle-school education (compared with no education) and working as a daily wage earner or in other occupations (including unemployed or retired people or students). We found no statistically significant association between dual use and sex or marital status. Dual use was also associated with smoking less than all day rather than all day (continuously for hours), shorter session lengths and younger age at starting smoking. We found no statistically significant association between waterpipe quit history and dual use.

In the adjusted model (model 2), the association between dual use and age, middle-school education, less than daily use, and younger age at starting smoking remained statistically significant. One main difference between model 2 and model 1 was that all other occupation categories were more likely to report dual use compared with professional, clerical or sales occupations. Another main difference was that the length of waterpipe sessions was not associated with dual use in adjusted model, although the 95% CIs could not rule out a tentative association (ORa = 0.73, 95% CI: 0.52–1.01).

Discussion

We found that age, educational level, occupation, daily use and age at starting smoking differed significantly between dual and waterpipe-only users in Pakistan. Dual users smoked waterpipe tobacco less intensely each day, and possibly had shorter waterpipe sessions, but showed no difference in dependence or quit measures compared with waterpipe-only users. Our findings provide insight into tobacco use behaviours in waterpipe users in Pakistan, which may help generate hypotheses for future research and approaches for behavioural change interventions to help smokers quit in Pakistan and the Region.

Several factors may explain the findings, although these are tentative and need to be more fully investigated

in future research. Firstly, there was a possible socioeconomic gradient with respect to dual use and educational level. This may be because dual use is a more expensive habit to maintain than waterpipe-only use. More educated smokers may have more disposable income to afford dual use. Secondly, a single session of waterpipe tobacco use may last over an hour, and a quarter of our sample reported smoking it all day (continuously for hours). Participants who reported smoking waterpipe tobacco all day were less likely to report dual use, which might reflect the lack of time to also smoke cigarettes or that there was no need for additional nicotine. The very LWDS scores in this study suggests a highly nicotine-dependent sample, regardless of concurrent cigarette use. Thirdly, occupations that were significantly associated with dual use may be less restrictive on any form of smoking at the workplace (e.g. agricultural work, casual work). Professional, clerical or sales occupations may be more likely to be indoor jobs and therefore subject to indoor smoking restrictions. In addition, assembling and smoking waterpipe tobacco indoors may be more difficult given that waterpipes are big and the preparation process is long.

Our findings differ from the literature and may reflect the unique tobacco control context in Pakistan and also our recruitment criteria. Our study suggests that dual users of waterpipe and cigarettes are less intense users of waterpipe tobacco than waterpipe-only users. A cross-sectional study in adults in the Islamic Republic of Iran showed the opposite; 80.3% of dual waterpipe tobacco and cigarette users smoked waterpipe more than 3–4 times a month (which is considered quite regular) compared with 60.7% of waterpipe-only users (19). The greater use of waterpipe tobacco among dual users was also reported in schoolchildren in the Middle East (6). Dual or polytobacco users of products other than waterpipe tobacco also report more dependence (31,32). The difference with our findings may reflect the fact the most of the Iranian sample smoked flavoured waterpipe tobacco (most probably *mo'assel*), which contains less nicotine and is mostly used intermittently, whereas the sample all smoked an unflavoured type of tobacco on at least 25 days a month. The sample was also limited to participants who smoked waterpipe tobacco daily, whereas other studies of dual use had no restrictions on the frequency of waterpipe smoking.

Conclusion

These findings can be used to tailor more effective health education interventions for dual users of waterpipe tobacco and cigarettes. Cessation services should consider designing programmes that include dual or polytobacco use. Pakistan recently decreased taxes on tobacco (33); given the known effectiveness of this intervention in reducing smoking and benefitting public health, this reduction should be urgently reversed. In view of the distinct characteristics of dual waterpipe and cigarette users compared with waterpipe-only users, how changes in tobacco control policies, such as taxation, affect sociodemo-

Table 2 Association of demographic and waterpipe smoking characteristics with dual use (waterpipe and cigarettes): logistics regression analyses

Variable	Model 1 (unadjusted) OR (95% CI)	Model 2 (adjusted ^b) ORa (95% CI)
Demographic characteristics		
Age	0.41 (0.24–0.72)**	0.36 (0.19–0.70)**
Sex		
Female	1.00	–
Male	1.09 (0.68–1.75)	–
Marital status		
Married	1.00	–
Other (unmarried, divorced, widowed)	0.83 (0.50–1.37)	–
Educational level		
No formal education	1.00	1.00
Primary	1.43 (0.93–2.21)	1.41 (0.87–2.27)
Middle	2.23 (1.36–3.64)**	2.01 (1.15–3.50)*
Secondary or higher	1.67 (0.97–2.89)	1.73 (0.90–3.34)
Occupation		
Professional, clerical or sales	1.00	1.00
Skilled or unskilled manual	1.82 (0.87–3.80)	2.44 (1.06–5.60)*
Domestic service	1.31 (0.67–2.56)	2.20 (1.01–4.78)*
Agricultural	1.56 (0.85–2.86)	2.32 (1.16–4.64)*
Daily wage earner	2.28 (1.06–4.93)*	3.30 (1.39–7.82)**
Other ^c	3.09 (1.38–6.91)**	5.39 (2.16–13.41)***
Waterpipe smoking history		
Daily use		
All day (continuously for several hours)	1.00	1.00
Less than all day	2.20 (1.45–3.32)***	2.71 (1.73–4.25)***
Session length	0.74 (0.54–1.00)*	0.73 (0.52–1.01)
Smoking duration	0.99 (0.79–1.25)	–
Age at starting smoking	0.95 (0.93–0.97)***	0.95 (0.93–0.98)***
LWDS score	0.97 (0.93–1.01)	–
Waterpipe quit history		
Previous quit attempt		
No	1.00	–
Yes	1.47 (0.94–1.31)	–
Number of quit attempts	1.03 (0.54–1.95)	–
Time since last quit attempt (years)	0.98 (0.72–1.34)	–
Longest abstinence length (years)	0.98 (0.52–1.84)	–

LWDS: Lebanon Waterpipe Dependence Scale, OR: odds ratio, CI: confidence interval.

*P < 0.05, **P < 0.01, ***P < 0.001.

^cOther occupations, unemployed, retired or student.

^bAdjusted for all variables in the model.

graphic inequalities in waterpipe tobacco use, needs to be understood. Policy-makers should be mindful of possible substitution of products so any tax increases should be simultaneous and comparable across waterpipe tobacco and cigarettes (34). Public awareness activities on the harmful effects of waterpipe tobacco smoking are also urgently needed to change the attitudes and beliefs about this form of smoking and reduce motivation to use it.

This study is one of the first to examine dual waterpipe tobacco and cigarette use in Pakistan, an area where the use of waterpipe tobacco is prevalent and traditional. Future research should explore the age at starting to use both products and the reasons for doing this, knowledge of the health effects of waterpipe tobacco smoking and the specific barriers to quitting. The main limitation of this study is that the results are

not generalizable, since it was a relatively healthy sample of waterpipe smokers who wanted to quit smoking and was geographically restricted to Punjab. Other forms of tobacco use were excluded; there are likely to be many polytobacco users in Pakistan who may also have distinct sociodemographic and tobacco use characteristics. In addition, the trial excluded waterpipe smokers who had no intention of quitting and who may also have distinct sociodemographic and tobacco use characteristics. The trial did not include exclusive cigarette smokers, which meant that a comparison of dual users with this group could not be made. However, a previous study in people with lung disease in Pakistan showed differences in

cigarette-only users and dual users. For example, dual users were older and had smoked for longer, and more dual users were female, had higher carbon monoxide levels and had higher nicotine-dependency scores than the cigarette-only smokers (35).

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Competing interests: None declared.

Facteurs associés au double usage du tabac pour pipe à eau et des cigarettes chez les adultes au Pakistan

Résumé

Contexte : Les données sur le double usage du tabac pour pipe à eau et des cigarettes sont rares, notamment dans les pays où les deux sont répandus.

Objectif : La présente étude avait pour objectif d'évaluer les corrélats démographiques, les schémas de consommation et les comportements de sevrage des utilisateurs pakistanais de pipe à eau qui fument également des cigarettes.

Méthodes : Les données ont été tirées d'un essai contrôlé randomisé mené au Pakistan qui a évalué le sevrage tabagique chez 510 utilisateurs adultes de pipe à eau, avec stratification sur la consommation simultanée de cigarettes. Une analyse de régression logistique a été réalisée pour évaluer le lien entre les consommateurs de tabac pour pipe à eau qui fument également des cigarettes (double usage) et leurs caractéristiques démographiques, leurs antécédents de tabagisme et leur comportement en matière de sevrage tabagique. Des odds ratios non ajustés (OR) et ajustés (ORa) et des intervalles de confiance à 95 % ont été déterminés.

Résultats : Le double usage était significativement lié à un âge plus jeune (ORa = 0,36, IC à 95 % : 0,19-0,70) et à un niveau d'éducation correspondant au collège (11-15 ans) par rapport à l'absence d'éducation formelle (ORa = 2,01, IC à 95 % : 1,15-3,50). Le double usage était également associé à une consommation qui ne s'étendait pas sur toute la journée par rapport à une consommation sur toute la journée (définie comme continue pendant plusieurs heures) (ORa = 2,71, IC à 95 % : 1,73-4,25) et à un âge plus jeune au début du tabagisme (ORa = 0,95, IC à 95 % : 0,93-0,98). Aucun lien n'a été établi entre le double usage et le sexe, l'état matrimonial, la durée du tabagisme, la dépendance nicotinique ou l'historique des sevrages.

Conclusion : Les consommateurs de tabac pour pipe à eau qui fument également des cigarettes se différencient des consommateurs de tabac pour pipe à eau seul, surtout du point de vue des caractéristiques démographiques. Des recherches supplémentaires sont requises pour étudier l'interaction entre ces deux comportements tabagiques. Les approches de promotion de la santé et les interventions en faveur du sevrage tabagique au Pakistan devraient être adaptées en tenant compte des caractéristiques uniques des consommateurs de tabac pour pipe à eau et de cigarettes.

العوامل المرتبطة بالاستخدام المزدوج لتبغ النرجيلة والسجائر بين البالغين في باكستان

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الخلاصة

الخلفية: لا يُعرف سوى قدر ضئيل من المعلومات عن الاستخدام المزدوج لتبغ النرجيلة والسجائر، خاصة في البلدان التي ينتشر فيها تعاطيها. الأهداف: هدفت هذه الدراسة إلى تقييم العوامل السكانية، وأنماط الاستخدام، وسلوكيات الإقلاع التي ينتهجها متعاطو النرجيلة في باكستان الذين يدخنون السجائر أيضاً.

طرق البحث: مُجمعت البيانات من خلال مجموعة تجارب عشوائية مُضَبَّطة في باكستان لتقييم الإقلاع عن التدخين على مستوى ٥١٠ أشخاص بالغين يتعاطون النرجيلة، مُقسَّمين إلى طبقات حسب التدخين المتزامن للسجائر. وقد أُجري تحليل الانحدار اللوجستي لتقييم الارتباط بين متعاطي تبغ النرجيلة الذين يدخنون السجائر أيضاً (الاستخدام المزدوج)، وخصائصهم السكانية، وتاريخهم في تعاطي التبغ وسلوكهم في الإقلاع عنه. وتحددت نسبتا الأرجحية المصححة وغير المصححة وفواصل الثقة بنسبة ٩٥٪.

النتائج: ارتبط الاستخدام المزدوج ارتباطاً كبيراً بالسن الأصغر (نسبة الأرجحية المصححة = ٠,٣٦، فاصل الثقة ٩٥٪: ٠,١٩-٠,٧٠)، والمستوى التعليمي المتوسط (١١-١٥ عاماً) (مقابل عدم الحصول على تعليم رسمي، نسبة الأرجحية المصححة = ٢,٠١، فاصل الثقة ٩٥٪: ١,٥٠-٣,١٥). كذلك ارتبط الاستخدام المزدوج بالتدخين خلال مدة أقل من يوم كامل (مقابل يوم كامل، نسبة الأرجحية المصححة = ٢,٧١، فاصل الثقة ٩٥٪: ١,٧٣-٤,٢٥) وبالسن الأصغر عند بدء التدخين (نسبة الأرجحية المصححة = ٠,٩٥، فاصل الثقة ٩٥٪: ٠,٩٣-٠,٩٨). ولم يتبين وجود أي رابط بين الاستخدام المزدوج ونوع الجنس، أو الحالة الزوجية، أو طول مدة التدخين، أو إدمان النيكوتين، أو تاريخ الإقلاع عن التدخين.

الاستنتاج: يختلف متعاطو تبغ النرجيلة الذين يدخنون السجائر أيضاً عن الذين يتعاطون النرجيلة فقط، لا سيما في الخصائص السكانية. ويلزم إجراء مزيد من البحث لاستكشاف التفاعل بين هذين النوعين من سلوكيات التدخين. ويتعين على التدخلات المعنية بتعزيز الصحة والمساعدة في الإقلاع عن التدخين في باكستان النظر في إمكانية مواءمة النهج الذي تسلكه لكي تأخذ بعين الاعتبار الخصائص الفريدة لمتعاطي تبغ النرجيلة بالتزامن مع تدخين السجائر (الاستخدام المزدوج).

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