RISK FACTORS OF SHISHA SMOKING AMONG COLLEGE STUDENTS: A CASE CONTROL STUDY

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ABSTRACT

Background: Shisha is a widely used form of tobacco, immensely popular among youth. Globally, more than 100 million people are found to be shisha smokers. **Objective:** The purpose of the current study was to identify the factors in connection with the usage of shisha among male students from colleges of Dera Ghazi Khan. **Methodology:** A sample consisting of 194 respondents with a 97% response rate served as the basis for this case-control study. A well-structured questionnaire was used to collect the data, which covered the demographic profile, interpersonal, intrapersonal and community aspects. **Results:** All of the respondents were college students, ranging from 16 to 24 years. Shisha smoking was found to be more common in the 16 to 18-year age range (47%), and the majority of respondents (84%) were single. The analysis's findings showed that shisha use among males was significantly associated with the area (OR: 3.469, 95% CI: 1.893–6.357), father education (OR: 2.650, 95% CI: 1.412-4.971), mother education (OR: 0.463, 95% CI: 0.259 – 0.827), marital status (OR: 0.190, 95% CI: 0.074 – 0.488), parent's use (OR: 10.423, 95% CI: 5.367-20.241), friend's use (OR: 2.124, 95% CI: 1.196 – 3.769), physical health awareness (OR:3.166, 95% CI: 1.757 – 5.706), attitude towards shisha smoking (OR: 2.951, 95% CI: 1.536 – 5.672), psychological needs (OR: 0.394, 95% CI: 0.202 – 0.769), Parental role (OR: 0.340, 95% CI: 0.180 – 0.642), peer pressure (OR: 3.553, 95% CI: 1.872 – 6.743), media influence (OR: 2.188, 95% CI: 1.217 – 3.932) and control polices (OR: 3.284, 95% CI: 1.777 – 6.071). **Conclusion:** Shisha use was observed more prominent with the aforementioned factors. The results also depict those students who are single and between the ages of 16 and 18 have a high prevalence of shisha use. It can be concluded from the current results that shisha smoking is dominant among the teenagers of D. G. Khan..

INTRODUCTION

The tobacco epidemic remains one of the biggest public health challenges the world has ever faced.[1] Worldwide, nearly 1.3 billion people aged 15 years and above are current smokers, 80% of whom live in low- and middle-income countries where the illness and death-related burden of tobacco is heaviest.[2] As estimated by the Global Burden of Disease Study, smoking tobacco use accounted for approximately 7.69 million deaths and 200 million disability-adjusted life-years around the world in 2019.[3] Several factors, including population growth, tobacco's increasing accessibility, income growth and strong marketing in such nations, contribute to an increase in the number of smokers in emerging nations.[1]

Industrial cigarettes, shisha (water pipe/ hookah), chewable pan, gutka and naswar, etc. are the different forms of tobacco used in Pakistan.[4] Shisha is a widely used form of tobacco, immensely popular among youth (boys & girls).[5] In different countries, it has

different names such as Water pipe, nargile, Hubble bubble and ghoza smoking.[6] On the international level more than 100 million people founded to be shisha smokers.[7] Generally, a shisha smoking session ends in 45-50 minutes and sometimes it increases to many hours.[8] Originally, shisha was introduced in the time of Emperor Akbar, doctor Hakim Abdul Fatih for fewer effects of this menace.[9] But there is also evidence of the invention of shisha in South Africa, Persia and Ethiopia and now it is commonly used in Turkey, Pakistan, China and India.[10] Shisha affects health as respiratory problems and lung injuries and may lead to developing cancer.[11] Low fetal birth weight is also the effect of shisha during pregnancy.[12]

Data on the rising popularity of shisha smoking among Pakistani youth, particularly college students, remained scarce This growing trend has become an alarming situation for parents and ultimately for society. Therefore, it was imperative to carry out a research study to identify the risk factors for rising shisha usage. The outcomes of this study will also assist parents, institutional administrators, and policymakers in addressing this issue by facilitating the development of programs aimed at enhancing awareness of health hazards, facilitating cessation support, and fostering an atmosphere that dissuades shisha use.

MATERIAL AND METHODS

Study Design: A case-control study
Setting: Study was done among male students in Dera Ghazi Khan colleges.
Duration: Study was completed during January 2019 to December 2019
Population: The study's population was split into the case group and the control group. Students between the age of 18 and 24 years who did smoke shisha made up the case group while those who did not smoke shisha were in the control group.

Sampling Techniques: In terms of sampling technique, we used snowball sampling, a non-probability sampling technique. Snowball sampling usually uses networks to select the samples. This technique is appropriate when a researcher wishes to focus on one or two members of the target population and guide or lead the researcher to other individuals in the population.

Sample Size:200 students compromising of 100 cases and 100 controls with a 97 % response rate participated in the study. Inclusion Criteria and Exclusion Criteria: The study only included male college students between the ages of 16 and 24 who use shisha regularly and it excluded students who smoke shisha but are not enrolled in college.

Data Collection methods: Data were collected using an anonymous and self-administrated questionnaire, with its defined pros and cons because the questionnaire describes the keystone of any type of survey. We took all the standards and characteristics of a questionnaire into account while creating it. The questionnaire's first part consists of demographic information, whereas factors-related information was included in the other portions.

Data Analysis Plan: Statistical software "Statistical Package for Social Sciences (SPSS)" version-26 was used for data analyses. After displaying demographic features using frequency tables and graphs, categorical variables were summarized in contingency tables and the chi-square analysis was used to find the association between-group differences. The odds ratio and 95% confidence interval were then obtained.

RESULTS

Table 1 illustrates the baseline characteristics of the study's participants. The majority of respondents (n=53) who used shisha were between the ages of 16 and 18, while most participants who did not use shisha were between the ages of 19 and 21.

In terms of location, a majority of respondents (n=53) who use shisha reside in urban areas, while the majority of respondents (n=72) who do not use shisha belonged to rural areas. The majority of participants were single, whether they used shisha or not. The majority of case group participants had intermediate education, whereas the vast majority of control group individuals had a bachelor's level education. The mothers of most shisha users were illiterate, While the majority of the mothers of other respondents were literate. The parents of 25 (n=25) respondents in the control category and the parents of 76 (n=76) respondents in the case category, respectively, smoke shisha. The majority of the respondent's friends in the case group use shisha while most friends of the control group respondents did not use shisha.

Regarding the age at which shisha users first began using it, approximately 11% (n=11) start it when they were between the ages of 10 and 12, thirty-two percent (n=31) began using it between the ages of 13 and 15 while thirty-six percent of users (n=35) began using it between the ages of 16 and 18; and the remaining about twenty-one percent (n=20) began using it after the age of 18.

Table No.1 Baseline Characteristics of the Study's Participants

Variables	Categories	Case	Control
		Frequency (%)	Frequency (%)
Age	16 - 18 Years	53 (27.3)	37 (19.1)
	19 - 21 Years	42 (21.6)	46 (23.7)
	22 - 24 Years	2 (1)	14 (7.2)
Area	Rural	44 (22.7)	72 (37.1)
	Urban	53 (27.3)	25 (12.9)
Marital Status	Unmarried	91 (46.9)	72 (37.1)
	Married	6 (3.1)	25 (12.9)
Education	Intermediate	57 (29.4)	32 (16.5)
	Bachelors	26 (13.4)	40 (20.6)
	Masters	14 (7.2)	25 (12.9)
Father's Education	Illiterate	21 (10.8)	41 (21.1)
	Literate	76 (39.2)	56 (28.9)
Mother's Education	Illiterate	50 (25.8)	32 (16.5)
	Literate	47 (24.2)	65 (33.5)
Parent's Use	No	21 (10.8)	72 (37.1)
	Yes	76 (39.2)	25 (12.9)
Friend's Use	No	37 (19.1)	55 (28.4)
	Yes	60 (30.9)	42 (21.6)

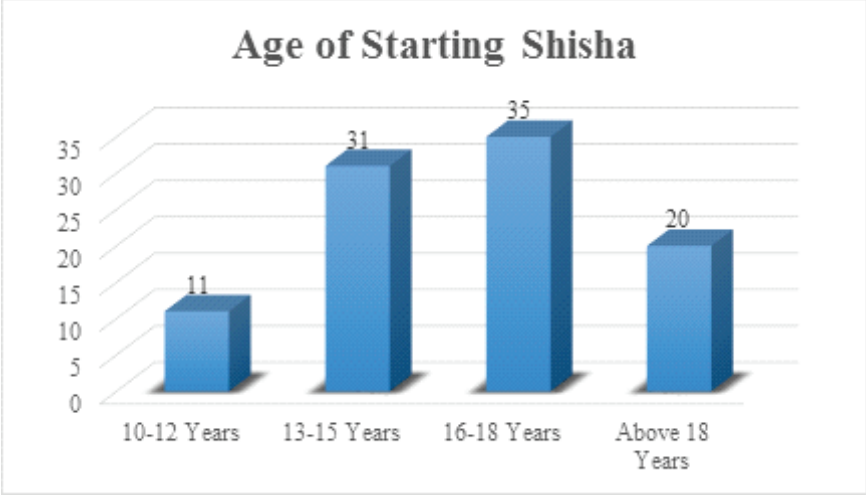

Figure 1: Age of starting shisha smoking

Regarding the age at which shisha users first began using it, approximately 11% (n=11) start it when they were between the ages of 10 and 12, thirty-two percent (n=31) began using it between the ages of 13 and 15 while thirty-six percent of users (n=35) began using it between the ages of 16 and 18; and the remaining about twenty-one percent (n=20) began using it after the age of 18.

The majority of shisha users (48%) prefer to use it at cafes or clubs, while 29% prefer to use it anywhere with friends, 18% prefer to use it in public places, and 5% prefer to use it at home

Thirty percent (n=29) of shisha user's families always discourage them from using it, while thirteen percent (n=13) of user's families often oppose it. Similar to this, 11% (n=11) and 36% (n=35) of respondents' family members give opposing counsel frequently and infrequently, respectively. Less than ten percent (n=9) of respondents' families never advise against using shisha as shown in Figures 1, 2 and 3.

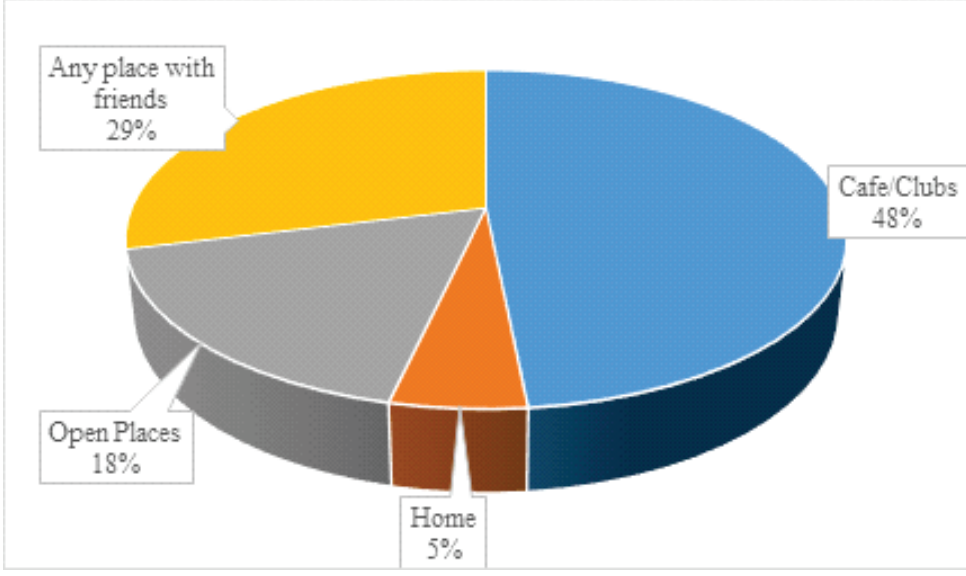

Figure 2: Favorite place of using shisha

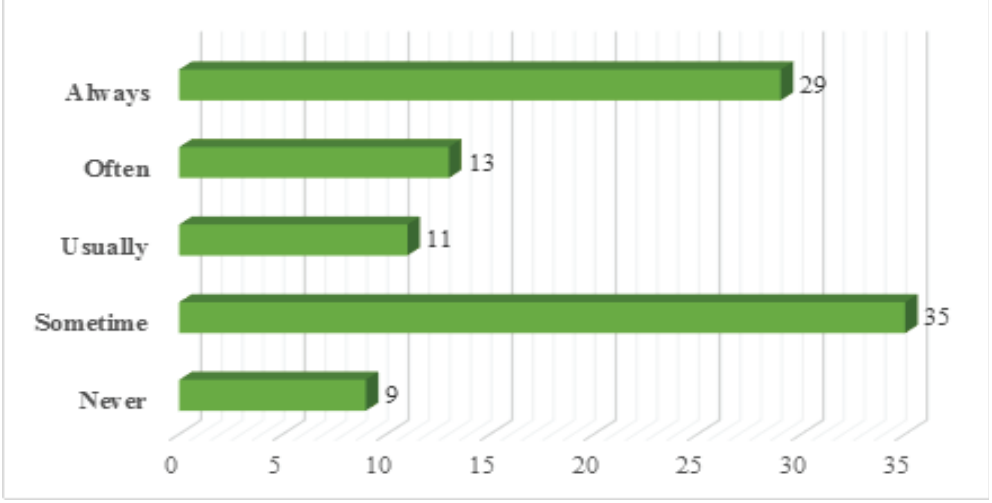

Figure 3: Anti-advice from home

Table 2: ORs and 95% CIs for factors of smoking status among College going students

Factors	Categories	Shisha Smoking Status		Odds Ratio	95% Confidence Interval	p-value
		Case	Control			
Area	Rural	72	44	3.469	1.893 – 6.357	0.000
	Urban	25	53			
Marital Status	Unmarried	72	91	0.190	0.074 – 0.488	0.000
	Married	25	6			
Father Education	Illiterate	41	21	2.650	1.412 - 4.971	0.003
	Literate	56	76			
Mother Education	Illiterate	32	50	0.463	0.259 – 0.827	0.000
	Literate	65	47			
Parent's Usage	No	72	21	10.423	5.367 - 20.241	0.000
	Yes	25	76			
Friend's Usage	No	55	37	2.124	1.196 – 3.769	0.014
	Yes	42	60			
Physical Health Awareness	Low	66	39	3.166	1.757 – 5.706	0.000
	High	31	58			
Attitude	Low	39	18	2.951	1.536 – 5.672	0.001
	High	58	79			
Psychological Needs	Low	17	34	0.394	0.202 – 0.769	0.009
	High	80	63			
Parental Role	Low	20	42	0.340	0.180 – 0.642	0.001
	High	77	55			
peer Pressure	Low	45	19	3.553	1.872 – 6.743	0.000
	High	52	78			
Media Influence	Low	48	30	2.188	1.217 – 3.932	0.013
	High	49	67			
Control Policies	Low	49	23	3.284	1.777 - 6.071	0.000
	High	48	74			

ODDS RATIO

Table 2 indicates the odds ratio of the dependent variable (Case or Control) with independent variables (Area, Marital Status, Father Education, Mother Education, Parent's Usage, Friend's Usage, Physical Health Awareness, Attitude toward Shisha, Psychological Needs, Parental Role, Peer Pressure, Media influence and control policies). The likelihood of students from rural areas smoking shisha was greater than three times that of those from urban areas (OR: 3.469, 95% CI: 1.893–6.357, p=0.000). The odds of using shisha 81 times decreased with the respondent's marital status being married (OR: 0.190, 95% CI: 0.074 – 0.488 p=0.000). While having an illiterate mother decreased the likelihood of smoking by almost 54% (OR: 0.463, 95% CI: 0.259 – 0.827 p=0.000), having an illiterate father increased the likelihood of smoking shisha by almost three times (OR: 2.650, 95% CI: 1.412-4.971, p=0.003). Having parents who smoke shisha increased the risk of respondents smoking by over 11 times (OR: 10.423, 95% CI: 5.367-20.241, p=0.000) while having friends who smoke shisha increased the likelihood of respondents smoking by almost two times (OR: 2.124, 95% CI: 1.196 – 3.769 p=0.014). The likelihood of smoking shisha increased by more than three times among users who had a low physical health awareness of the practice (OR:3.166, 95% CI: 1.757 – 5.706, p=0.000). Users who had a low attitude towards shisha were approximately three times more likely to smoke it (OR: 2.951, 95% CI: 1.536 – 5.672, p=0.001). To compare the likelihood of being a user with low psychological needs to a user with high psychological needs, an odds ratio of 0.394 is used. Therefore, users with low psychological needs have a 61% lower chance of using (OR: 0.394, 95% CI: 0.202 – 0.769, p=0.009). Low parental role reduces the likelihood of smoking shisha by 66% compared to high the role of parents (OR: 0.340, 95% CI: 0.180 – 0.642, p=0.001) while the likelihood of smoking shisha increased nearly four times due to lower peer pressure (OR: 3.553, 95% CI: 1.872 – 6.743, p=0.000). Shisha users with low media influence were more than twice as likely to smoke shisha as those who had high media influence (OR: 2.188, 95% CI: 1.217 – 3.932, p=0.013). In a similar vein, people with low control policies were more likely to smoke shisha than people with greater control policies (OR: 3.284, 95% CI: 1.777 – 6.071, p=0.000).

Results from the analyses also show factors (Area, Marital Status, Father Education, Mother Education, Parent's Usage, Friend's Usage, Physical Health Awareness, Attitude Towards Shisha, Psychological Needs, Parental Role, Peer Pressure, Media influence and control policies) are significantly associated with whether or not individual's smokes shisha.

DISCUSSION

Nafae et al. were the first to pinpoint the causes and dangers of water pipe smoking in 1973.[13] The literature amassed strong evidence during the following three decades about the risks of water pipe smoking.[14] However, despite mounting evidence contradicting the misrepresented "innocence" of water pipe smoking, the practice has only grown. The East Mediterranean region, South-East Asia, and North Africa were declared to have the highest rates of water pipe smoking by the World Health Organization (WHO). The rate at which the practice is being adopted by people in North America, Brazil, and Europe is alarming.[15] There is evidence of a slow increase in young adults using water pipes even in the United States.[16-18] In Pakistan, tobacco usage is still

very common, with rates as high as 33% among middle-aged males.[19] In Pakistan, there is a wide variety of ways to smoke, including cigarettes, beedis, chewing tobacco, hookah, and chillum. One in five Pakistani men has smoked more than 100 cigarettes, beedis, chillums, or hookahs in their lifetimes, according to a large-scale poll.[20]

The purpose of this study was to know the prevalence of shisha smoking among male college students of Dera Ghazi Khan and to explore the possible determinants and their influence on developing the habit of shisha smoking among young students. Our study showed that area and some intrapersonal factors marital status, physical health awareness, attitude towards shisha and psychological needs, were associated with shisha smoking in young male college students. The data also shows that interpersonal factors (parental role, father education, mother education, parent usage, friend's usage, peer pressure), as well as community and organizational factors (Media influence and control policies), are significantly associated with the use of tobacco smoking among male teenagers. The findings of this study also revealed a significant distinction between regular shisha smokers and non-regular shisha smokers in terms of location, marital status, father's educ-ational level, parent's usage, friend's usage, physical health awareness, attitude towards shisha, peer pressure, and media influence and control policies. In addition to marital status, mothers' education, psychological needs, and parental role have a detrimental impact on using shisha. Therefore, in contrast to earlier studies, this was a novel finding in our study.

CONCLUSION

We conclude that all study-related criteria are significant in college students' usage of shisha. Factors such as physical health awareness, parental influence, and peer influence demonstrate notable impacts on students' behavior regarding shisha consumption. High odds ratios in the case group compared to the control group highlight the substantial risk associated with shisha use among students.

Recommendations

The findings of the study, emphasize the urgent need for proactive measures to tackle shisha smoking among college students. It suggests implementing strict regulations to limit access to shisha products and establishing comprehensive intervention programs. These programs should increase awareness of the health risks, support quitting, and promote an environment that discourages shisha use. Furthermore, it highlights the importance of further research to understand the motivations behind shisha consumption, aiding in the development of more targeted interventions.

LIMITATIONS

This report contains several limitations. To begin with, statistics were only gathered from a few colleges in Dera Ghazi Khan. The population is not accurately represented by this sample. Data from every college should be gathered for better study. Second, there was no biochemical testing to confirm the self-reported smoking status. The study was limited to D G Khan; therefore, conclusions cannot be applied to rural populations. Thirdly, because of time constraints and a lack of funding, some of the more crucial aspects of shisha are not being explored.

AUTHORS CONTRIBUTION

UUR: Idea conception, write up,
MTB: data collection, review literature, write up

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