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Childhood Trauma Linked to Adult Waterpipe Smoking: A Survey of Health Science Students in Iran

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Original Article

Abstract

Background: Explaining the risk and protective factors of waterpipe tobacco smoking (WTS) is the most important principle in designing preventive interventions. This study examined the relationship between self-reported childhood abuse and WTS among health science students in Iran.

Methods: This cross-sectional study was conducted among 776 health science students in Kerman City, located in southeast of Iran, who were selected by quota sampling approach. The study was performed using two valid short instruments for measuring WTS and child abuse including physical, emotional, and sexual abuse using a self-report method.

Findings: The prevalence of ever use and current use (last 30 days) of WTS among participants was 49.6% and 33.4%, respectively. The initiation age of WTS in 60% of students was < 18 years. Child sexual abuse (CSA) was [odds ratio (OR) = 3.05, 95% confidence interval (CI): 2.06-4.52, P < 0.001] the main predictor for WTS among students.

Conclusion: Protecting children during childhood to prevent them from becoming victims may be an essential primordial preventive strategy for WTS.

Keyword: Child abuse; Adolescent; Students; Water pipe smoking

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Introduction

Waterpipe tobacco smoking (WTS) (also known as water pipe, hookah, shisha, arghile, and narghile) is one of the traditional methods of tobacco use in recent decades, especially among young people, and the leading cause of mortality and morbidity. The results of 2012 National Health Interview Survey (NHIS) in the United States (US) showed that the largest WTS smokers in the world were school and university students.[1] WTS starts mostly in adolescent years, but it peaks in younger adulthood.[2] Many users consider the harms of WTS less than cigarette smoking.[3,4] Ample evidence indicates that nicotine dependence and smoking-related diseases including cardiovascular diseases (CVDs), esophageal and bladder cancers, lung disease, and adverse pregnancy outcomes such as low birth weight and mental disorder as well as periodontal disease are also seen in waterpipe smokers.[3,4] WTS leads to drug use and predicts the use of other tobacco products.[5] The prevalence of WTS in the world has increased dramatically. For example, US national data showed that its prevalence among tenth-grade students increased from 17.0% in 2010 to 19.8% in 2015.[6] Also, current use of WTS has been reported among students from three countries in the Eastern Mediterranean Regional Office (EMRO) including Egypt (60.7%), Jordan (67.7%), and Palestine (63.1%).[7] Evidence shows that the prevalence of WTS among young people in Lebanon is 36.9%.[8]

A review study reported WTS at least once in a lifetime among male, female, and total students as 37.0%, 17.0%, and 25.0%, respectively.[9] Also, 48.0% of women and 52.0% of men who were health science students at a medical university in Iran had the experience of WTS.[10] In one study, the prevalence of WTS ever use was reported to be 47.9% among the students of Kerman University of Medical Sciences, Kerman, Iran[11] and it was reported as 43.8% in boys and 27% in girls among high school students in Kerman Province.[12] Understanding the factors that contribute to the initiation and continuation of WTS is essential in order to design policies and interventions that will be effective in reducing the prevalence of WTS.

One of the most important risk factors for starting smoking in adolescents is adverse childhood experiences (ACEs). The term ACEs includes important stresses and all kinds of violence against people under the age of 18. For infants and younger children, it mainly involves a variety of physical, emotional, and sexual abuse.[13-15] ACE is an important determinant of physical, mental, social, and behavioral health in adulthood.

Physiological and bimolecular studies have shown that childhood exposure to chronic stress can lead to changes in the endocrine and nervous and immune systems of individuals,[16] leading to impaired cognitive, social, and emotional functioning.[17]

These disorders are an important predictor of mental disorders in the later life, and studies conducted with ACE Questionnaire (ACE-Q) have shown that higher scores on general mental health questionnaires such as ATOD (alcohol, tobacco, other drugs), relationship problems, worker performance, financial problems, inability to control anger, homelessness, current family problems, depression, post-traumatic stress disorder (PTSD), psychosis, suicide,[18] aggression, victimhood, and perpetration increase sexually-transmitted diseases (STDs),[19] sexual risk behaviors, and unintended pregnancy.[20] Various studies have shown that the annual cost of ACEs in the world is very high, and it is estimated to be 581 billion dollars in Europe and 748 billion dollars in North America annually.[15,21] In addition, economically, it is one of the most important obstacles to the development of countries.

Due to the recognition of the role of ACEs in physical, mental, and social health in recent decades, more research has been focused on its prevalence in the world. In a systematic review in ten European countries, more than half of young adult students reported ACE at least once.[22] In one survey, the physical and sexual abuse in the US was reported to be 28.5% and 27.4%, respectively.[23] In Turkey, the prevalence of sexual abuse among female and male students was reported to be 7.2% and 8.7%, respectively; emotional abuse was reported to be 10.7% and 8.9%, respectively, and the prevalence of physical abuse was reported to be 16.3% and 26.2%, respectively.[24]

Different systematic reviews have indicated that exposure to each category of ACEs increases the risk of cigarette smoking among different types of ACEs.[17,20,25] This has similar results in different populations. The ACE-Q score increases the risk of cigarette smoking by 20% to 30%.[26] The

role of early physical and sexual abuse as important predictor of smoking in adulthood has been clearly demonstrated. For instance, in a large study concerning women's health (n = 68505), findings revealed a strong relationship between frequency and severity of physical and sexual abuse and smoking.[27] In this study, women with child abuse smoked twice as much at the age of 14. Given that the pattern of tobacco use among adolescents and young people has changed and the major form of use has become WTS, it is necessary to examine the relationship between ACEs and WTS, which has become a common tool. Due to the paucity of relevant researches as well as the importance of this issue, we aimed to determine the prevalence of ACEs and its effect on WTS among students of Kerman University of Medical Sciences in Iran.

Methods

Setting: This cross-sectional study was conducted in Kerman, with a population of 750000 people, the capital of Iran's largest province in the southeast, where 99.9% of the population are Muslim.

The response rate in this study was 94%. Participants included 820 male and female students of Kerman University of Medical Sciences in all fields of study (who were selected by quota and nonprobability sampling method) during January and February 2019. From the selected sample, 776 people completed the questionnaires and entered the study. This study was undertaken in 8 schools: medicine, dentistry, pharmacy, Iranian medicine, health, nursing, paramedical, and management. Besides, it was conducted among five different degrees [general and specialized Doctor of Philosophy (PhD), master's degree, and bachelor's degree]. The sample size was selected from each school and degree according to the number of students.

Measurement tools: The tools used in this study to measure WTS were a valid short questionnaire containing five questions with a yes/no scale regarding ever use and current use (last 30 days), the amount of use, and the age of first-use.[12,28,29] We employed The Adverse Childhood Experiences Abuse Short Form (ACE-ASF) to measure child abuse including physical, emotional, and sexual child abuse victimization.

This tool was designed to measure physical, emotional, and sexual life time exposure with eight items. The validation of this tool was done in one study.[30]

The Childhood Trauma Questionnaire (CTQ) included eight questions with a yes/no scale in three areas of physical abuse (two questions), emotional abuse (two questions), and sexual abuse (four questions). The time to answer these questions was 7 minutes (range: 5-9).

Procedure: We used quota sampling with quotas based on college type to recruit participants. The survey was conducted by two trained questioners with the same sex after self-report classroom completion. In this way, after explaining the research objectives, students were asked to complete the questionnaires anonymously. They could put the completed anonymous questionnaires inside a sealed ballot box in the middle of the classroom.

Ethical considerations: This study has an ethical code number (IR.KMU.REC.1398.440) from Kerman University of Medical Sciences. The purpose of the intervention was fully explained to the students participating in the study and their oral consent was obtained. The questions were designed and selected as insensitively as possible and the privacy issues were considered in the survey in order to observe confidentiality and obtain more accurate answers.

Data analysis was performed using SPSS software (version 22, IBM Corporation, Armonk, NY, USA) and the significance level was 0.05. To determine the frequencies, the descriptive tests of median and standard deviation (SD) were used and to find out the relationship between the variables, logistic regression was applied. After performing the single-variable test, those variables with a P-value greater than 0.20 were entered into multi-variable regression model. The model fitness was also tested with the Hosmer-Lemeshow test. No evidence of multicollinearity was seen according to variance inflation factor (VIF) (< 0.25).[31]

Results

Demographic results: The average age of students was 22.2 ± 3.1 years. From 776 people who participated in the study, 409 were women and the rest were men. Also, 655 (84.4%) people were single. Out of those studied, 556 (71.6%) people were residents of university dormitories, 55.8% were undergraduate students, and the rest were

postgraduate or PhD students.

WTS: Among those surveyed, 49.6% were waterpipe ever useres and 33.4% were current users. Also, 60.2% of waterpipe smokers in our study were daily smokers. More than 59.0% of students reported first waterpipe use before the age of 18 (Table 1).

Table 1. Comparison of the prevalence of ever use and current use of waterpipe and its initiation age according to sex

Gender	Male	Female	Total	P
	n (%)	n (%)	n (%)	
Ever use	233 (63.5)	152 (37.2)	385 (49.6)	< 0.001
Current use	177 (48.2)	83 (20.0)	259 (33.4)	< 0.001
Initiation age < 18 years	164 (70.1)	64 (43.5)	228 (59.8)	< 0.001

Child abuse: Nearly 42.4% of the subjects reported physical abuse, 74.9% reported emotional abuse, and 29.9% reported child abuse, which was 24.9% in girls and 35.4% in boys (P = 0.009). Significantly, in all cases, boys were more likely to be abused than girls (Table 2).

Table 2. Prevalence of child abuse experience in the subjects and comparison between the two sexes

Gender	Male	Female	Total	P
Abuse	n (%)	n (%)	n (%)	
Physical	210 (57.2)	119 (29.1)	329 (42.4)	< 0.001
Emotional	320 (87.2)	261 (63.8)	581 (74.9)	< 0.001
Sexual	130 (35.4)	102 (24.9)	232 (29.9)	0.001

Based on the results of the multivariate logistic test, regarding the physical, emotional, and sexual abuse, only child sexual abuse (CSA) was an important predictor of WTS. The chances of WTS were significantly higher in those who reported experiencing CSA in childhood [odds ratio (OR) = 3.05]. Also, boys had a higher chance of using drugs than girls (OR = 2.45) (Table 3). It should be noted that single and multivariate logistic regression tests were performed first by gender. As there was no significant difference in the results between the two sexes, we reported the results of total regression.

Discussion

To the best of our knowledge, this work was the first study to measure the relationship between ACEs and WTS. As a whole, few studies have been conducted in Islamic countries concerning ACEs.

Findings revealed that all three types of physical, emotional, and sexual abuse were prevalent among the subjects. In this regard, CSA had an effect on WTS in the subjects. This finding has been documented in previous studies on smoking.[17,32-34]

The prevalence of WTS among the students in this study was high compared to other studies in Iran,[9,10] which is similar to its prevalence in Egypt, Jordan, and Palestine.[7] This indicates that its use among Iranian students is increasing too. The average age on the initiation of WTS in the present study in 59.8% was before the age of 18. This finding is a very significant point in intervention programs. The prevalence of WTS is on the rise due to the introduction of flavored waterpipe tobacco,[35] the intersection between the social nature of WTS and café culture,[36] the Internet, mass, and social media, and lack of waterpipe specific policies and regulations. We believe that access limitation to WTS is not feasible in the near future.[37]

Table 3. Socio-demographic characteristics and their association with waterpipe smoking among students

Variable	Univariate logistic regression		Multivariate logistic regression	
	OR (95% CI)	P	OR (95% CI)	P
Age	1.01 (0.96-1.07)	0.620	1.00 (0.96-1.06)	0.800
Gender				
Female	Ref		Ref	
Male	2.91 (2.17-3.89)	< 0.001	2.45 (0.30-0.56)	< 0.001
Degree level				
Undergraduate		Ref		
Postgraduate	1.76 (1.32-2.34)	< 0.001	1.30 (0.93-1.80)	0.120
Physical abuse	2.52 (1.89-3.50)	< 0.001	1.34 (0.91-1.98)	0.130
Emotional abuse	2.70 (2.00-3.64)	< 0.001	1.30 (0.90-1.90)	0.160
Sexual abuse	3.73 (2.62-5.30)	< 0.001	3.05 (2.06-4.52)	< 0.001

OR: Odds ratio; CI: Confidence interval; Ref: Reference

Since WTS is known as a gateway and can increase substance abuse in adulthood, thus, prevention of WTS should start from childhood (i.e., primordial prevention). Drug use and other behavioral problems, although occurring in adolescent years, are rooted in the evolutionary changes that occur in previous years of life. Therefore, prevention at a younger age, when it is possible to increase protective factors and reduce further risk factors, will be more effective.[38]

The results of our study showed that among the ACEs categories, CSA is an important risk factor and predictor of WTS. In this regard, families must be vigilant concerning the significance of ACEs, especially CSA and its consequences to protect their children. By the same token, prevention strategies with the focus on supporting parents, caregivers, and families as well as helping children and adolescents to manage risks and challenges can be beneficial in this regard. Last but not least, the implementation of laws and policies to protect children should move to the forefront of the health professional programs and subsequent policies.[39]

It is not possible to comment with certainty on whether CSA is lower or higher in this study compared to other countries, since its prevalence in diverse countries is reported differently due to its underestimation in self-reports. However, according to World Health Organization (WHO) report,[13] the prevalence of CSA in general population in the world is very variable and it is reported from 8% to 31% for girls and 3% to 17% for boys in different sources.[40] Compared to global statistics, the prevalence of CSA was higher among the people we studied. The prevalence of ACEs in a study in five states of the US for physical abuse and sexual abuse was reported to be 28.5% and 27.4%, respectively.[23] Therefore, in order to sensitize politicians and families in Iran toward CSA, it is necessary to conduct strong epidemiological studies on the prevalence and study of its trend.

Despite strong evidence for the devastating effects of CSA on children's psychological well-being and their development into adulthood as well as the quality of life in later life, there is no doubt about its importance. In different studies, the association of CSA with antisocial behaviors such as drug and alcohol use has also been verified.[27,41]

Sexual abuse has been reported more in girls than in boys.[42] However, in our study, CSA was more reported in boys. This finding is consistent with the results of a survey among Turkish students in which the prevalence of CSA was reported to be 8.7% in boys and 7.2% in girls.[33] Another important reason discussed in other studies is the cultural factors that influence its reporting. Since in the Muslim community of Iran and Turkey, sexual abuse of girls is much more stigmatized than that of boys and can jeopardize their future lives and even their marriages, thus, researchers have learned not to report such issues. In a similar line, the supervision of families on girls is higher than that of boys.[43] On the other hand, studies have shown that the prevalence of CSA depends on the data collection method.[42,44] Some reviews have shown that in studies which use interview as data collection method, CSA prevalence has been reported to be higher than the studies which use the questionnaire method.[42,44] Although some studies do not confirm this,[45] given the cultural condition of our society, this can be true, and we think underreporting, as Koss[46] stated, is common in rape.

We think that the experience of sexual abuse among young people is greater than this number, because our study was conducted among the students of medical sciences in Iran, the fields which are preferred by more educated people, who are naturally from higher economic and social groups. Thus, as Goldman and Padayachi[47] state, we have these relations in a psychologically healthier group, and in a general population where families have lower socioeconomic status and less control over their children, such an experience can be more.

Therefore, attention to CSA as an important factor in mental disorders in the later life is very important with increasing family support, because various studies have clearly shown that it can affect the physical, mental, and social health of individuals and the development of countries.[33,41,42,48,49] Thus, in addition to educating children in primary schools, parents and caregivers should pay more attention to this issue in order to prevent perpetrator's access to children and their victimization, since studies have indicated that a lack of caregiver supervision causes sexual offenders' access to children and CSA.[50]

Based on our findings, girls who reported WTS after the age of 18 were more than boys. This

signifies that the risk factors for WTS increased in these girls in comparison to the pre-university period. Separation from the family and reduced parental supervision due to their staying in dormitories may be one of the reasons for this increase. Thus, it is important to continue programs which prevent behavioral problems in students seriously.

Conclusion

Considering that WTS is both a factor to start the use of other drugs and a factor in many health and social risks, preventing its use seems necessary. Therefore, it is required to pay more attention to primordial prevention, individuals' health, and protection in their childhood to prevent their victimization.

Limitations: We only conducted this study on health science students using a questionnaire and only at one university. It is recommended that in order to find better results for primordial prevention, more extensive and even national studies be conducted among students of other fields of study and general population with methods other than questionnaires such as interviews.

Conflict of Interests

The authors have no conflict of interest.

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Authors' Contribution

Both authors contributed to all steps in the preparation of this article.

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بررسی ارتباط سوء رفتار دوران کودکی با مصرف قلیان در بزرگسالی: مطالعه‌ای در دانشجویان علوم پزشکی ایران

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مقاله پژوهشی

چکیده

مقدمه: تبیین عوامل خطر و محافظت‌کننده مصرف قلیان، مهم‌ترین اصل در طراحی مداخلات پیشگیری از مصرف آن است. هدف از انجام پژوهش حاضر، بررسی ارتباط بین سوء رفتار دوران کودکی با مصرف قلیان در بزرگسالی در بین دانشجویان علوم پزشکی در ایران بود.

روش‌ها: افراد مورد بررسی این مطالعه مقطعی را ۷۷۶ نفر از دانشجویان دانشگاه علوم پزشکی کرمان تشکیل دادند که به روش نمونه‌گیری سهمیه‌ای انتخاب شدند. جهت تعیین سوء استفاده دوران کودکی، از پرسش‌نامه معتبر سوء استفاده فیزیکی، عاطفی و جنسی و به منظور بررسی مصرف قلیان نیز از پرسش‌نامه کوتاه مصرف قلیان استفاده شد که به روش خودایفا تکمیل گردید.

یافته‌ها: شیوع مصرف قلیان در طول عمر و طی سی روز اخیر در بین مشارکت‌کنندگان به ترتیب ۴۹/۶ و ۳۳/۴ درصد گزارش شد. سن شروع مصرف قلیان در ۶۰ درصد از افراد مورد مطالعه قبل از ۱۸ سالگی بود. مورد سوء استفاده جنسی قرار گرفتن در کودکی، مهم‌ترین پیش‌بینی‌کننده مصرف قلیان در بین دانشجویان عنوان گردید [P < ۰/۰۰۱، ۴/۵۲- ۲/۰۶ = Confidence interval (CI)، ۳/۰۵ = Odds ratio (OR)].

نتیجه‌گیری: حمایت از کودکان در دوران کودکی برای جلوگیری از قربانی شدن آن‌ها، یک استراتژی اساسی جهت پیشگیری از استعمال قلیان در بزرگسالی می‌باشد.

واژگان کلیدی: سوء استفاده کودکی؛ نوجوانی؛ دانشجویان؛ مصرف قلیان

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