

## ABSTRACT

**Background:** Tobacco smoking is one of the leading causes of preventable death worldwide. In the occupied Palestinian territory (oPt), lung cancer ranked first in mortality-leading cancers in 2014, with smoking as a contributing factor. The Palestinian Central Bureau of Statistics reported that in 2010, 22.5% and 15.4% of adults ( $\geq 18$  years old) and youth (15-29 years old), respectively, were current tobacco smokers. Recent data are capturing a change in the prevalence of waterpipe tobacco smoking (WTS), with an indication towards an increase. For instance, data among youth (13-15 years old) show that the prevalence of WTS changed from 16.6% and 7.8% in 2000 to 16.7% and 11.7% in 2005, for the West Bank and Gaza Strip, respectively, and the highest prevalence reported among health science university students was 30.9% in 2007. However, while data show a high WTS prevalence, studies among university students specifically targeting WTS prevalence, patterns and associated factors are limited in the scope of faculties of study and year at university of students, regional variation and number of universities.

**Aims:** To estimate the WTS prevalence among a sample of university students in the West Bank and Gaza Strip and investigate possible associated factors with current WTS status.

**Methodology:** A cross-sectional web-based survey was conducted among 2,146 university students in the oPt. The study took place between February-April, 2015.

Six Palestinian universities were selected, of which four were in the West Bank and two in the Gaza Strip. The participants in the selected universities were invited to participate in the study through an online link to the questionnaire posted on their student-university portal page. The study survey consisted of eight sections and questions were mainly adopted from the Arabic translated and validated Global Adults Tobacco Survey. The primary outcome of the survey was current WTS status. Univariate analysis described the means and proportions of the study variables. Chi-square tests were used to examine significant associations between our primary outcome and selected study variables (socio-demographic and university-related characteristics and social factors). Three multiple logistic regression models were computed to determine the associated factors with current WTS status, for total sample, women only and men only.

**Results:** The mean age of the study sample was 20.1 (SD=2.1) with an approximately equal gender distribution (50.2% women). The main findings indicated that the prevalence of current WTS among the study sample was 25.9%, with a higher prevalence among men (37.7%) compared to women (14.2%), and a higher prevalence of WTS compared to current cigarette smoking (19.5%). The WTS prevalence also showed regional variation, with the highest prevalence among the Arab American University Jenin students and lowest among Al-Islamic University Gaza students. In the logistic regression model for the total study sample, results showed that overall, being a male student, attending a university in the northern area

of the oPt, a good-excellent self-reported economic standing, having a low cumulative grade, being a current cigarette smoker, owning a waterpipe and having at least one waterpipe smoker at current residence to be associated factors with current WTS status. A gender variation was observed in some of these associated factors in their respective regression models.

**Conclusions:** The prevalence of WTS is high and has surpassed the prevalence of cigarette smoking in our study sample. These findings call attention for concerted efforts and interventions by health professionals, educators and policy-makers to curb the WTS prevalence from increasing. Interventions should take into account the region and context-specific nature of WTS and tailor them differently to women and men. Future research may target the social smoking environment that is conducive to WTS among university students.