

**Table 2 Characteristics of studies included in systematic review and meta-analysis of cigarette smoking prevalence in Iranian university students**

Author	Year of publication	City	Sample size			Life-time prevalence		
			Total	Female	Male	Total	Female	Male
Ahmadi	2004	Shiraz	400	343	57	25.3	19.4	59.3
Pour ali	2005	Ardebil	1106	779	327	13.9	3.7	38.3
Zarrabi	2005-2006	Gilun	827	—	—	26.4	—	—
Shamsi Meymandi	2010	Kerman	1677	872	805	31.0	15.0	51.0
Amin-Esmaeili	2013	Tehran	1761	1162	599	34.0	16.4	43.8
Amin-Esmaeili	2013	Tehran	1741	1107	629	32.7	15.4	42.8
Amin-Esmaeili	2013	Tehran	1755	1159	591	29.6	12.5	38.5
Amin-Esmaeili	2013	Tehran	1568	1043	518	31.7	10.0	39.1
Mohammadpoorasl	2014	Tabriz	1837	1100	737	15.6	4.2	11.4
Fajani	2015	Isfahan	1512	765	747	33.7	22.8	44.9
Jalilian	2016	Kermanshah	620	—	—	11.6	—	—
Kabir	2016	Karaj	1959	1301	658	7.2	6.3	9.1
Mozafarina	2017	Tehran	422	—	—	26.3	—	—
Sahbehagh	2017	Qazvin	521	357	164	8.6	3.0	20.7
Tarrahi	2017	Khorramabad	1131	701	430	1.6	0.9	2.8
Abbasi-Ghahramanloo	2018	Tehran	1985	1376	609	17.6	10.6	33.5
Author	Year of publication	City	Sample size			Regular prevalence		
			Total	Female	Male	Total	Female	Male
Nakhaee	2009	Kerman	833	—	—	4.5	—	—
Mohtasham-Amiri	2011	Guilan	3700	—	—	16.0	—	—
Amin-Esmaeili	2013	Tehran	1761	1162	599	5.9	0.6	8.7
Amin-Esmaeili	2013	Tehran	1741	1107	629	6.2	0.9	9.3
Amin-Esmaeili	2013	Tehran	1755	1159	591	5.3	0.4	7.9
Amin-Esmaeili	2013	Tehran	1568	1043	518	3.9	0.1	5.4
Mohammadpoorasl	2013	Tabriz	1837	1100	734	15.8	7.1	28.5
Taheri	2015	Mashhad	936	519	417	9.8	2.5	18.9
Kabir	2016	Karaj	1959	1301	658	4.8	1.2	11.9
Menati	2016	Ilam			1824			16.6
Mozafarina	2017	Tehran	422	—	—	8.5	—	—
Tarrahi	2017	Khorramabad	1131	701	430	0.8	0.3	1.6
Abbasi-Ghahramanloo	2018	Tehran	1985	1376	609	1.9	0.2	5.7
Author	Year of publication	City	Sample size			Current prevalence		
			Total	Female	Male	Total	Female	Male
Ahmadi	2004	Shiraz	400	343	57	3.3	1.2	15.3
pour ali	2005	Ardebil	1106	779	327	7.4	1.2	32.0
Zarrabi	2005-2006	Guilan	827	—	—	9.6	—	—
Nojomi	2006	Tehran	1000	—	—	5.6	—	—
Rahimi Rad	2007	Urmia	1500	908	592	8.1	2.3	17.1
Mohtasham-Amiri	2009	Astara	1226	—	—	19.5	—	—
Shoja	2010	Gorgan	538	362	176	6.1	0.8	17.3
Shamsi Meymandi	2010	Kerman	1677	872	805	11.0	2.0	21.5
Nazary	2010	Semnan	—	—	320	—	—	14.4
Kasiri	2011	Ahvaz	—	—	745	—	—	15.0
Jafari	2011	Tehran	400	201	199	30.0	15.9	44.7
Tavakolizadeh	2011	Gonabad	279	125	154	9.8	4.1	14.4
Jafari	2011	Tehran	400	143	257	27.3	12.6	35.4
Mohtasham-Amiri	2011	Guilan	3700	1870	1800	19.5	6.5	33.0

**Table 2 Characteristics of studies included in systematic review and meta-analysis of cigarette smoking prevalence in Iranian university students (concluded)**

Author	Year of publication	City	Sample size			Current prevalence		
			Total	Female	Male	Total	Female	Male
Ghodsí	2012	Guilan	—	—	222	—	—	23.0
Ghodosi	2012	Isfahan	537	292	245	18.6	4.5	35.5
Jamali	2013	Tehran	1086	—	—	11.9	—	—
Amin-Esmaeili	2013	Tehran	1761	1162	599	12.4	3.8	16.8
Amin-Esmaeili	2013	Tehran	1741	1107	629	11.9	2.4	17.4
Amin-Esmaeili	2013	Tehran	1755	1159	591	11.2	2.0	14.1
Amin-Esmaeili	2013	Tehran	1568	1043	518	10.5	1.3	15.1
Machowicz	2013	Tehran	170	—	—	3.5	—	—
Nasirian	2013	Kerman	772	—	—	15.8	—	—
Seghatoleslam	2014	Tehran	500	—	—	27.0	—	—
Shojaa	2014	Gorgan	538	362	176	6.1	0.8	17.0
Babaei Heydarabadi	2015	Tehran	604	—	—	10.4	—	—
Fajani	2015	Isfahan	1512	765	747	32.8	27.4	38.2
Mozafarina	2017	Tehran	422	—	—	3.8	—	—
Poorolajal	2017	Hamedan	1259	765	494	16.2	6.3	31.6
Abbasi-Ghahramanloo	2018	Tehran	1985	1376	609	5.3	1.5	14.0
Rahimi Pordanjani	2018	Yazd	250	—	—	19.2	—	—

42% and 19%, respectively (120). Lack of awareness of the negative effects of water-pipe smoking and lower stigma toward its use are factors that explain this pattern (121).

In male high school students, the prevalence of current cigarette smoking was lower than among university students (9% vs 22%). However, for girls and women, the prevalence was similar among high school and university students (3% vs 5%). A meta-analysis of 12–15-year-old adolescents of 68 low- and middle-income countries indicated that 13.3% of boys and 6% of girls currently smoked cigarettes (11). The highest prevalence for boys was for the Western Pacific Region (17.5%) followed by the Eastern Mediterranean Region (13.3%), whereas for girls, the highest prevalence was reported in the Western Pacific Region (10.0%) and Region of the Americas (8.7%). The corresponding prevalence in the Eastern Mediterranean Region for girls was estimated at 3.8%, which was close to our estimate (11), while the prevalence of current smoking among Iranian high school boys (9%) seems to be lower than the overall estimate in the Eastern Mediterranean Region (13.3%).

We showed that in both age groups, male students smoked cigarettes more than female students smoked. The sex ratio varied from 2 (for life-time smoking in high school) to 11 (for regular smoking among university students). Global estimates indicate that men smoke 5 times as much as women smoke (124). A variety of national studies have confirmed the higher prevalence of smoking in Iranian men (122, 123). The lower prevalence of cigarette smoking among women may be due to greater stigma that exists toward smoking among women.

We found that the prevalence of smoking was higher in large cities compared to small cities. Despite a slight increase in prevalence of smoking within more recent years, the prevalence of life-time smoking decreased. This decrease may have been due to several factors including increasing awareness of young people about tobacco hazards, tendency to use other drugs, including hookah, and success of tobacco control programmes. In the Islamic Republic of Iran, it is culturally inappropriate for girls to smoke (124). Around 15% of the 80 million Iranian population is aged 15–24 years and half of them are men. Among > 2 million high school students and ~4 million university students, more than half are male (125,126). Extrapolating our results to these populations reflects the alarming rate of cigarette smoking among Iranian adolescents. A growing body of evidence indicates that smoking initiation at lower ages is strongly related to subsequent smoking behaviour, including regular and heavy smoking in adulthood, which highlights the importance of early interventions for smoking prevention (127). According to the World Health Organization report on the national tobacco control programme, the Islamic Republic of Iran has performed well compared to other countries in the Eastern Mediterranean Region in many aspects of smoking control (including monitoring and smoke-free policies, smoking cessation programmes, health warnings on cigarette packages, and mass media and advertising bans for tobacco use). However, more action is needed in the field of taxation and affordability of tobacco, especially in large cities (128,129). The nature of the tobacco epidemic requires a comprehensive prevention and intervention plan focusing on the community as well as schools. A variety of strategies should be reinforced