Trends in health-risk behaviors among Chinese adolescents

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Created by: Ciyong Lu

Adolescent health-risk behaviors can have longlasting negative effects throughout individuals’ life, and cause a major economic and social burden to the society. This study aimed to estimate the prevalence of the health-risk behaviors among Chinese adolescents, and to test the trends in health-risk behaviors without and with adjusting for sociodemographic characteristics. Data were drawn from the School-based Chinese Adolescents Health Survey, which is an ongoing school-based study about the health-risk behaviors among Chinese adolescents (7th to 12th grade). During the first wave through the third wave, the prevalence of lifetime, past 12-month, and past 30-day use of opioid decreased by 4.19%, 0.63%, and 0.56%, respectively. Moreover, the prevalence of lifetime, past 12-month, and past 30-day sedative use decreased by 3.03%, 0.65%, and 0.35%, respectively. During the 3 waves, most trends in the prevalence of health-risk behaviors were downward, with a few exceptions: the prevalence of lifetime smoking, drinking, methamphetamine use, and sleep disturbance increased by 7.15%, 13.08%, 0.48%, and 9.06%, respectively. The prevalence of lifetime 3,4-methylene dioxy methamphetamine use (from 0.49% to 0.48%), lifetime mephedrone use (from 0.30% to 0.24%), or suicide attempts (from 2.41% to 2.46%) remained stable.

Based on the data of the 71,083 sampled students (13 to 20 years old) retrieved from the SCAHS during the first wave (2012-2013) through the third wave (2016-2017), the prevalence of lifetime opioid use decreased by 4.19% (from 6.18% to 1.99%, $P_{\text{adjusted trend}}<0.001$), the prevalence of past 12-month opioid use modestly decreased by 0.63% (from 1.74% to 1.11%, $P_{\text{adjusted trend}}<0.001$), and the prevalence of past 30-day opioid use modestly decreased by 0.56% (from 1.08% to 0.52%, $P_{\text{adjusted trend}}<0.001$). Moreover, the prevalence of lifetime sedative use decreased by 3.03% (from 4.05% to 1.02%, $P_{\text{adjusted trend}}<0.001$), the prevalence of past 12-month sedative use modestly decreased by 0.65% (from 1.37% to 0.72%, $P_{\text{adjusted trend}}<0.001$), and the prevalence of past 30-day sedative use modestly decreased by 0.35% (from 0.77% to 0.42%, $P_{\text{adjusted trend}}<0.001$). Regarding the illicit drug use, the prevalence of ketamine use modestly decreased by 0.11% (from 0.65% to 0.54%, $P_{\text{adjusted trend}}<0.001$). During the 3 waves, most trends in the prevalence rates of HRBs were downward, with a few exceptions: the prevalence of lifetime smoking increased by 7.15% (from 5.24% to 12.39%), the prevalence of lifetime drinking increased by 9.05% (from 20.10% to 29.15%), the prevalence of lifetime methamphetamine use increased by 0.48% (from 0 to 0.48%), and the prevalence of sleep disturbance increased by 9.06% (from 43.67% to 52.73%). Additionally, the prevalence of lifetime MDMA use (from 0.49% to 0.48%), lifetime Mephedrone use (from 0.30% to 0.24%), or suicide attempts (from 2.41% to 2.46%) showed a steady change during the 3 waves.

Without adjusting for sociodemographic characteristics, the prevalence of lifetime and past 30-day use of opioid, lifetime mephedrone use, or lifetime ketamine use among adolescents steadily decreased during the 3 waves ($P<0.05$). Most of the downward trends remained statistically significant after adjusting for age, gender, living arrangement, HSS, classmate relations, and teacher-classmate relations (adjusted trend, $P<0.05$). However, the downward trend of lifetime ketamine use was no longer significant after adjusting for sociodemographic characteristics. Moreover, the prevalence rates of lifetime smoking, lifetime drinking, and suicide attempts steadily increased during the 3 waves, and these upward trends remained significant after adjusting for sociodemographic characteristics (adjusted trend, $P<0.05$). Additionally, the prevalence of the past 12-month opioid use, lifetime sedative use, past 12-month sedative use, or past 30-day sedative use increased first in the second wave (2014-2015), and then decreased in the third wave (2016-2017). The fluctuant trends remained statistically significant after adjusting for age, gender, living arrangement, HSS, classmate relations, and teacher-classmate relations (adjusted trend, $P<0.05$). The trends of lifetime MDMA use and sleep disturbance decreased first in the second wave, and then increased in the third wave; these fluctuant trends remained significant after
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As shown in Table 2, without adjusting for sociodemographic characteristics, the prevalence of lifetime and past 30-day use of opioid, lifetime mephedrone use, or lifetime ketamine use among adolescents steadily decreased during the 3 waves (\( P < 0.05 \)). Most of the downward trends remained statistically significant after adjusting for age, gender, living arrangement, HSS, classmate relations, and teacher-classmate relations (adjusted trend, \( P < 0.05 \)). However, the downward trend of lifetime ketamine use was no longer significant after adjusting for sociodemographic characteristics. Moreover, the prevalence rates of lifetime smoking, lifetime drinking, and suicide attempts steadily increased during the 3 waves, and these upward trends remained significant after adjusting for sociodemographic characteristics (adjusted trend, \( P < 0.05 \)). Additionally, the prevalence of the past 12-month opioid use, lifetime sedative use, past 12-month sedative use, or past 30-day sedative use increased first in the second wave (2014-2015), and then decreased in the third wave (2016-2017). The fluctuant trends remained statistically significant after adjusting for age, gender, living arrangement, HSS, classmate relations, and teacher-classmate relations (adjusted trend, \( P < 0.05 \)). The trends of lifetime MDMA use and sleep disturbance decreased first in the second wave, and then increased in the third wave; these fluctuant trends remained significant after adjusting for sociodemographic characteristics (adjusted trend, \( P < 0.05 \)).

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**Figure 1.** Trends in health-risk behaviors among Chinese adolescents in Guangdong Province.

**Keywords**

Health-risk behavior; trend; adolescent; wave

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