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Non-medical use of psychoactive drugs in relation to suicide tendencies among Chinese adolescents

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HIGHLIGHTS

- We examined NMUPD and its relation to suicide tendencies among Chinese adolescents.
- Male adolescents had higher prevalence rates of non-medical opioid use than females.
- Younger adolescents were more likely to engage in non-medical use of opioids.
- NMUPD positively correlated with suicide tendencies among Chinese adolescents.
- Adolescents engaged in last month NMUPD had the greatest odds of suicide tendencies.

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ABSTRACT

Introduction: To investigate the prevalence of non-medical use of psychoactive prescription drug (NMUPD) among adolescents and to explore the associations between non-medical psychoactive prescription drug use and depressive symptoms, poor sleep quality, deliberate self-harm, and suicide.
Methods: A two-stage stratified cluster sample design produced a representative sample of 12–19-year-old students in grades 1–6 who attended public middle schools in Guangdong province. Prevalence estimates (SE) of non-medical psychoactive prescription drug use were calculated, and logistic regression was used to examine its association with depressive symptoms, poor sleep quality, deliberate self-harm, and suicide.
Results: Overall, 7.5% of adolescents reported non-medical use of opioids, and 4.8% of adolescents reported non-medical use of sedatives. Lifetime, last-year, and last-month non-medical use of opioids and sedatives were positively associated with depressive symptoms, poor sleep quality, deliberate self-harm, suicidal ideation, and suicidal attempts among different gender and age-group adolescents. Those who reported last month non-medical use of opioids and sedatives had the greatest odds of reporting depressive symptoms, poor sleep quality, deliberate self-harm, suicidal ideation, and suicidal attempts. Males who were last month non-medical users of opioids or sedative had 8.9 or 10.7 times greater odds of reporting a suicidal attempt, and 8.8 or 9.8 times greater odds of reporting a suicidal attempt were observed among adolescents aged 16–19 who were last-month non-medical users of opioids or sedatives.
Conclusions: These findings provide evidence for improving adolescents' suicide prevention strategy by targeting supervision on high risk current non-medical users of psychoactive drug.

1. Introduction

The non-medical use of psychoactive prescription drugs (NMUPD) has increased substantially in recent years (Blanco et al., 2007; Friedman, 2003; Kuehn, 2006; Zarocostas, 2007); which is growing at a faster rate than that of most illegal drugs (Catalano, White, Fleming, & Haggerty, 2010; McCabe, Teter, & Boyd, 2005). According to the United States National Institute on Drug Abuse, 15.4% of high school seniors engaged in the nonmedical use of at least one over-the-counter or prescription drug during the year prior to being surveyed (National Institute on Drug Abuse, 2008). Though a nationwide prevalence study for non-medical psychoactive drug use in China is lacking, studies from the Guangdong province suggest that non-medical use of

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psychoactive prescription drugs among adolescents is a serious issue: 11.2% of the adolescent population was found to engage in non-medical use of psychoactive prescription drug (He, 2009). More than 2000 adolescents received drug addiction treatment (about 98% of the total number of patients) in the armed police hospital of Guangdong province in the last four years (He, 2009).

Although suicidality is multifactorial, approximately 90% of individuals who die from suicide suffer from depression or other mental disorders, a substance-abuse disorder, or a combination of both (Moscicki, 2001; National Institute of Mental Health (NIMH) (NIMH), 2010). In fact, data from the U.S. Substance Abuse and Mental Health Services Administration suggested that the most commonly used drugs in suicide attempts were pain relievers (involved in 37.3%), psychotherapeutic agents (29.4%), benzodiazepines (28.0%), and other drugs to treat insomnia and anxiety (14.2%) (Substance Abuse and Mental Health Services Administration (SAMHSA) (SAMHSA), 2011). Moreover, data from the 2007 U.S. National Violent Death Reporting System found that nearly 1 in 5 suicides had evidence of opiate, including heroin, and prescription pain killer use (CDC, 2009).

Youths in China are among the most vulnerable groups for attempted suicide and suicide mortality. Among young adults aged 15–34 years, suicide accounts for 19% of all deaths and is the leading cause of death (Liu, Sun, & Yang, 2008). Some studies have demonstrated a connection between non-medical psychoactive prescription drug use and depression (Goodwin & Hasin, 2002; Martins et al., 2012; Schepis & McCabe, 2012; Zullig & Divin, 2012), but a small amount of literature examined non-medical psychoactive prescription drug use and suicide (United States Army, 2010; Vidourek, King, & Knopf, 2010; Zullig & Divin, 2012). Therefore, very little is known about the relationship between NMUPD and suicidal tendencies among Chinese adolescents. The aim of this study was to offer the first known study of the prevalence of non-medical psychoactive prescription drug use among a large sample of Chinese youth sampled from each of the 21 cities in the Guangdong provinces. Analyses were broken down by two categories of psychoactive prescription drugs: opioids and sedatives; and into four different types of users: lifetime users, last-year users, last-month users, and nonusers. The relationship between non-medical psychoactive prescription drug use and depressive symptoms, poor sleep quality, deliberate self-harm, and suicide were explored. We hypothesized there would be associations between depressive symptoms, poor sleep quality, deliberate self-harm, suicidal ideation and suicidal attempts and each of the categories of prescription drugs, and the effects would vary by different types of users.

2. Methods

2.1. Survey design

This study analyzed the data from survey on youth non-medical use of psychoactive drug conducted in the Guangdong Province in 2012. This was a school-based survey that investigated youth non-medical use of psychoactive drug including related attitudes, perceptions, and knowledge; demographic characteristics; alcohol, tobacco, and other drug use; and mental and physical health. In 2012, a two-stage stratified cluster sample design produced a representative sample of 12–19-year-old students in grades 1–6 who attended public middle schools (including junior high school, senior high school, and vocational high school). In the first stage of sampling, the total numbers of the three types of schools in each 21 cities of the Guangdong provinces were obtained. The number of each type of school in the sample was determined proportionally to the total number of each type of school in the cities. At least 6 junior high schools, 4 senior high schools, and 2 vocational high schools, a total of 12 middle schools, were requested to participate in each of the 21 cities. The largest sampling number of schools in this study was 28 from provincial capital. In total, 291 schools from 21 cities were surveyed in this study. In the second stage of sampling, two classes were selected at random from the chosen schools for each grade, 1–6. All students in selected classes were eligible to participate. Students in other classes would be surveyed complementally to guarantee at least 40 students surveyed in each class.

2.2. Study sample

The 2012 Guangdong youth non-medical use of psychoactive drug survey had a high response rate of 99.2%. 84,184 questionnaires were completed in 291 schools. After removing those with incomplete data on any of the study dependent variables (n = 908, 1.1%), only those with complete information on the variables of interest (n = 83,276) were included in subsequent analyses. The Kappa scores for test–retest reliability of the survey range from 0.923 to 0.962.

2.3. Measures

2.3.1. Demographic questions

A number of demographic characteristics were included, such as age (12–19) and gender (female = 0, male = 1). The family economic status was classified into three categories: excellent or very good, good, and fair or poor. Additionally, the educational background of parents was classified into three categories: primary education or below, secondary education and post-secondary education.

2.3.2. Non-medical use of psychoactive drug

Non-medical use of psychoactive drug was defined as any self-reported use of a psychoactive drug that was not prescribed for the respondent or if the respondent only took the drug for the experience or feeling that they caused (SAMHSA, 2009). A series of separate questions were presented to respondents to assess the respondents' non-medical use of psychoactive drug. Questions took the format of "Have you ever/how many times in the last year/how many times in the last month (30 days) have you used the following investigated psychoactive drugs for nonmedical purpose?" Non-medical use of investigated psychoactive drug was determined separately for opioids and sedatives. Opioids included compound liquorice tablets (opium), compound codeine phosphate oral solution (codeine), tramadol hydrochloride, and diphenoxylate. Sedatives included phenobarbital and scopolamine hydrobromide tablets (barbiturates), compound aminopyrine phenacetin tablets (barbiturates), and diazepam (benzodiazepines). Students' responses to the questions regarding non-medical opioids use were used to create a measure of non-medical opioids use status with the following categories: last-month non-medical use (indicate any versus no involvement in non-medical opioids use in the last 30 days); last-year non-medical use (indicate any versus no involvement in non-medical opioids use in the last year but not in the last month); lifetime non-medical use (indicate ever having tried opioids non-medically, but not in the last year or in the last month); and nonuser (never used opioids non-medically). Students' responses to the questions regarding non-medical sedatives use were used to create a measure of non-medical sedatives use status with the following categories: last-month non-medical use (indicate any versus no involvement in non-medical sedatives use in the last 30 days); last-year non-medical use (indicate any versus no involvement in non-medical sedatives use in the last year but not in the last month); lifetime non-medical use (indicate ever tried sedatives non-medically, but not in the last year and last month); and nonuser (never non-medically used sedatives).

2.3.3. Depressive symptoms, sleep quality, and suicide tendencies

Depressive symptoms were measured using the Center for Epidemiological Studies—Depression (CESD) scale (Radloff, 1977). This 20-item measure assesses how frequently subjects experienced a range of psychological and physical symptoms of depression during the past week. Higher scores indicate more severe depressive symptomatology, with a maximum score of 60. In epidemiological research, scores are