Is Inclusion of a Dummy Drug Necessary for Estimating Perceived Prevalence of Substance Use by Classmates?

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Abstract

Background: Substance abuse among students is a worldwide concern. As a widely applied method, nominative technique is employed to estimate the prevalence of a specific behavior among a population by questioning informed people.

Objectives: The current study aimed at examining the necessity of including a dummy drug (i.e., relevin) in the list of drugs that are requested via nominative technique.

Patients and Methods: Totally, 12 schools were selected using a stratified cluster sampling method in Kerman city, Southeastern Iran, and all their grade 10 students were recruited in the current study. A well-validated questionnaire was also used to ask students about the frequency of using six substances among their classmates, in addition to the items associated with risk-taking tendency and self-report substance use by themselves. To analyze the data chi-square, Cramer's V, multiple logistic regression tests was used.

Results: The mean age of the students recruited in the current study was 16.2 ± 0.6 years (n = 830) and approximately 53% of them were female. The consumption of relevin by classmates was reported higher in females (10.2%) than males (6.1%), in urban areas (10.6%) than rural ones (4.0%), and in subjects with a higher tendency toward substance abuse (17.6%) (P < 0.05). The belief in the use of relevin by classmates was not correlated with perceived use of any drugs by classmates. Frequency of self-reported substance use in subjects choosing the use of relevin by classmates was also comparable to those who did not declare the use of relevin by classmates.

Conclusions: It was concluded that there might be no need for the inclusion of a dummy drug as an indicator of reliability to the list of substances that are being asked of students in the nominative technique.

Keywords: Drug-Related Side Effects and Adverse Reactions, Substance-Related Disorders, Iran

1. Background

Substance abuse among students is a worldwide concern. For many years the prevalence of this behavior among students is periodically measured in several Western countries (1, 2). The most common method is self-report measurement (3). In the majority of cases, self-report usually causes under-reporting (4). However, contextual factors can have impacts on self-report quality (5). For example, in a study in Canada, under-reporting rates were similar in males and females, but higher in young people and low-level consumers (6). The opposite is also evident in some cases, as some reports suggest that the probability of over-reporting in school-based surveys and in classroom settings can be greater since most of the youth tend to exaggerate their participation in high-risk behaviors (7). Hence, some recommend that a dummy drug should be included to enhance the reliability of the data in this domain (8), which is named using different terms such as fake drug (9), non-existing drug (5), and fictitious drug in the literature. Relevin is also usually the name given to this drug (8). Some researchers also state that there is no conclusive evidence that the studies marking relevin are unreliable (6). Therefore, there is still no consensus on the use of a dummy drug. In this regard, a study found that 4% of high school students had reported the use of a dummy drug (called bindro) (5). In another study, only 10 out of 12721 individuals had marked a fake drug (10).

One of the other methods employed in this domain is to estimate the prevalence via nominative techniques; therefore, respondents are asked to comment on the prevalence of specific behaviors, including substance use among others (11). This type of study describes indirect estimation of actual drug use in friends/peers/classmates of

the study participants and not the actual epidemiology of the behavior.

Most studies show that students tend to overestimate the prevalence of drug use by their peers and the subjects that are overestimating are more likely to use it (12). Students' behaviors about substance use are influenced not only by their attitudes towards drugs, but also their perceptions about others' behaviors referred to as perceived norms (13). The perceived norm itself consists of two components: descriptive norm and injunctive norm (13). According to social norms theory, behaviors are influenced by incorrect perceptions of others (14).

These misperceptions can come in different types, most notably pluralistic ignorance as the common type, in which the majority of subjects with healthy behaviors think they are in a minority. On the contrary, in false consensus, minority groups with unhealthy behaviors think that all people are in this canvas (14). Therefore, questioning the frequency of substance use among classmates is important from many aspects. To the best of authors' knowledge, no studies were conducted on the prevalence of substance use among high school students using a dummy drug to determine the reliability of data, although the use of such drugs based on self-report measurements was common in literature.

2. Objectives

The present study aimed at addressing the necessity of including a dummy drug (i.e., relevin) among questionnaire items about substance use among classmates.

3. Patients and Methods

3.1. Study Setting

The present study was conducted in the first half of 2017 in Kerman city, Kerman province, Southeastern Iran. This city has a population of over 800000 people, two-thirds of them live in urban areas and the rest as residents of rural areas. In the current study, relevin was considered as one of the items asked from the respondents about the prevalence of substance use among their classmates.

Totally, 12 schools were selected via stratified cluster sampling method. First, high schools were stratified into urban and rural regions (stratification variable); then, 12 schools (eight schools from urban areas and four from rural areas) were selected to ensure a representative sample of school characteristics such as type of school (public or private) and gender. Finally, all grade 10 students of the selected schools were invited to complete the questionnaires. Grade 10 students were selected since this grade is

a sensitive year of transition between middle school and high school (15).

The researchers attended the classrooms and justified the goals of the questionnaire and then the respondents completed the questionnaires and threw them into a box placed in the middle of the class (16). The students were placed in an order that could not see each other's sheets.

3.2. Ethical and Legal Considerations

The current study protocol was approved by the Ethics Committee of Kerman University of Medical Sciences (EC/96-34/KNRC). After explaining the study objectives and assuring the students about confidentiality of their information and, thereafter, obtaining verbal informed consent, they were invited to complete the questionnaires.

3.3. Measurement Tool

Considering its previously-confirmed validity and reliability (16), the study questionnaire consisted of four parts. The first part was a risk-taking tendency tool that included 20 items, 12 of which measured substance abuse tendency and eight items were related to other risky behaviors tendency. Substance abuse tendency segment consisted of sample items such as "If I am given alcohol at a party, I do not mind trying it" or "I do not refuse to smoke a hookah in friendly gatherings". Other risky behaviors included sexual behaviors and behaviors contributing to unintentional injuries and violence. They were measured by items such as "I have gotten into fights with my classmates" or "Most of my friends have had a sexual relationship". A score was also given to each of the items based on a five-point Likert scale from strongly disagree (score 1) to strongly agree (score 5); so the mean score of each of the two scales of the risk-taking tendency tool ranged from 1 (lowest risk) to 5 (highest risk). In the final assessment of this questionnaire, if the mean score of the items in each area was ≥ 3 (i.e., higher than third quartile score), the student's risk-taking tendency was considered high (17). In the second part, the students were asked about the lifetime use of the six most commonly used substances among Iranian students (cigarette, hookah, alcohol, marijuana, opium, and paan). Although the terms substance use and substance abuse may be used somewhat interchangeably (18), in the current study substance use was referred to any drug use regardless of its consequence. In the third part, they were asked: "What percentages of your classmates use each of these substances?" In addition to the six items above, relevin was also added to the list as a dummy drug. It should be noted that this substance was used in surveys conducted in Europe (7) and South America (9). In the final part, demographic characteristics (background variables)

including gender and age were asked from the students. Arbitrarily, private schools were considered as high socioeconomic indicators.

Each questionnaire took between 10 to 15 minutes to complete. Questionnaires were excluded from analysis if $\geq$ 15% of all their items were not filled or obviously gave frivolous responses (unqualified completion).

3.4. Statistical Analysis

To compare the percentages between the study groups, chi-square test was used. Cramer's V was computed to examine the strength of association between categorical variables. To retrieve percentage data from binary (yes/no) data, students were categorized into two groups; the ones declaring any percentage of relevin use by their classmates, and others. Moreover, multiple logistic regression analysis was utilized to find out the relationship between background variables and perceived use of any substances by classmates. The variables with P values less than 0.25 in bivariate analyses were included for further multivariable analysis (i.e., gender, residence, socioeconomic status, substance abuse tendency, other risky behaviors tendency, and selecting relevin). The Hosmer-Lemeshow test was used to check for the goodness-of-fit (19). SPSS version 20 (IBM Corp., Armonk, N.Y., USA) was used for analysis of data.

4. Results

According to the results of the current study, 830 out of 900 individuals invited to the study completed the questionnaires (a response rate of 92.2%). Of these, 41 questionnaires were excluded from the analysis due to unqualified completion. In this way, 87.6% of the students were included in the final analysis. The mean age of the students was 16.2 $\pm$ 0.6 years. Other demographic characteristics (background variables) are listed in Table 1.

Of the 789 students, 67 (8.5%) selected the use of relevin by classmates, which was higher for female urban residents, as well as those with a higher rate of substance abuse tendency (Table 2). According to Table 3, the perceived prevalence of substance use was the highest for hookah and the lowest for alcohol. In the view of the students, using relevin among classmates showed the lowest prevalence compared to other substances.

Most students (86.4%) believed that their classmates had a history of using at least one substance. In urban students and those with drug abuse tendency as well as other risky behaviors tendency, the results of the multiple logistic regression analysis showed a greater probability of reporting more substance use by classmates and marking of relevin was not related to substance use reports by classmates (Table 4).

Table 1. Demographic Characteristics of the Study Subjects

Demographic Characteristic	No. (%)
Gender	
Female	421 (53.4)
Male	345 (43.7)
Unknown	23 (2.9)
Residence	
Urban area	536 (67.9)
Rural area	253 (32.1)
Socioeconomic status	
Low	664 (84.2)
High	99 (12.5)
Unknown	26 (3.3)
Substance abuse tendency	
Low	687 (87.1)
High	102 (12.9)
Other risky behaviors tendency	
Low	437 (55.4)
High	352 (44.6)

Table 2. Baseline Characteristics of Respondents Claiming any Relevin Use by Classmates[a]

Demographic Characteristic	No.	Percent, %	P Value	Cramer's V
Gender			0.040	0.074
Female	43	10.2		
Male	21	6.1		
Residence			0.002	0.11
Urban area	57	10.6		
Rural area	10	4.0		
Socioeconomic status			0.946	0.002
Low	55	8.3		
High	8	8.1		
Substance abuse tendency			< 0.001	0.13
Low	49	7.1		
High	18	17.6		
Other risky behaviors tendency			0.424	0.03
Low	34	7.8		
High	33	9.4		

[a] In some variables, sample size may not add up to 67 due to missing values.

The prevalence of self-reported substance use in subjects choosing the use of relevin by classmates showed no significant differences in any of the substances compared to the ones that did not select this option (Table 5).

Table 3. Number of Students Declaring Substance Use by Their Classmates

Substance	No. (%)
Cigarette	482 (61.1)
Hookah	672 (85.2)
Paan	220 (27.9)
Marijuana	267 (33.8)
Opium	145 (18.4)
Alcohol	90 (11.4)
Relevin	67 (8.5)

Table 4. Multiple Logistic Regression Analysis of Relationships Between Perceived Use of any Substances by Classmates and Background Characteristics of Respondents

Baseline Characteristic	Adjusted Odds Ratio	95% Confidence Interval	P Value
Gender			0.102
Female	0.66	0.41 - 1.08	
Male	Ref.	-	
Residence			0.001
Urban area	2.17	1.38 - 3.44	
Rural area	Ref.	-	
Socioeconomic status			0.905
High	1.05	0.50 - 2.21	
Low	Ref.	-	
Substance abuse tendency			0.045
High	4.47	1.04 - 19.30	
Low	Ref.	-	
Other risky behaviors tendency			0.016
High	1.97	1.14 - 3.42	
Low	Ref.	-	
Report of relevin use by classmates			0.997
Yes	0.01	0.01 - 1.01	
No	Ref.		

5. Discussion

Similar to other countries, assessing the prevalence of substance use among students using reliable methods is of utmost importance in Iran (20). The results of the current study showed that selecting the option of using a dummy drug by classmates did not affect the perceived prevalence of any substance use by classmates, and also the prevalence of drug use based on students' self-reports was not associated with the reported or unreported use of a dummy drug by classmates.

In the current study, 86.4% of the students reported that their classmates had a history of using at least one substance, while 55.8% stated that they themselves had a history of using at least one drug. Apart from alcohol, students' estimates of the use of other substances by classmates were higher than those of their own. Most studies demonstrated that students tended to overestimate the prevalence of substance use by their peers, and subjects that were overestimating were more likely to use drugs (21). The extent to which individuals could overestimate drug use by others could also depend on their proximity to the target group (12). Although most surveys indicated an overestimation, underestimation was similarly observed in some cases (12). The reason for the exception of alcohol and its underestimation is that the alcohol is not a substance similar to the rest used in Islamic countries, and there is a religious prohibition for its consumption, in addition to being illegal. This could make an individual perceive that using this substance by their classmates was less likely. Totally, 8.5% of the respondents reported that their classmates were using relevin. The available studies in this domain commonly asked respondents about the use of a dummy drug from their own population, not among their classmates. In a nationwide study in Brazil on college students, less than 0.1% reported the use of relevin by themselves (10). A study in Norway also used a dummy drug named zetacyllin among school students as an indicator to discover false positive cases and removing them from the analysis. In this study, 1.26% of 326 students reported the use of this substance (22). In an investigation in Turkish schools, 9% of the students reiterated that they had heard about the relevin (23). Therefore, there was a great deal of variation in the statistics related to dummy drugs, which was somewhat related to questioning method, study setting, and cultural factors (5). The students' misperceptions regarding the high prevalence of using relevin among classmates also indicated social projection, which could be due to false consensus effect or pluralistic ignorance (14).

The report on the use of relevin in classmates was more common in urban female students, and the subjects with a higher substance abuse tendency, although the association was not strong according to Cramer's V values (24). The probability of overestimation was also usually greater in females than males (25). Most studies also suggested that the overestimation of using a substance among peers was associated with an increased risk of using the same substances among students (13, 25).

In the current study, the results of multiple logistic regression analysis showed that selecting the option of relevin use by classmates was not related to students' reports on at least one of the sixth substances used by their classmates, and subjects with a higher tendency toward use of drugs and other high-risk behaviors were more likely to report substance use by their classmates. On the other hand, there was no difference in the self-reported

Table 5. Comparison of Self-reported Substance Use Between the Subjects Selecting and Not Selecting Relevin Use by Classmates[a]

Substance	Total Sample Excluding Relevin Responses (N = 722)	Students Selecting Relevin (N = 67)	Self-Reported Lifetime Prevalence in Total Sample (N = 789)	P Value
Cigarette	160 (22.2)	21 (31.3)	181 (23.0)	0.091
Hookah	361 (50.0)	40 (59.7)	401 (55.2)	0.082
Paan	20 (2.8)	2 (3.0)	22 (2.8)	0.931
Marijuana	37 (5.1)	7 (10.4)	44 (5.6)	0.073
Opium	40 (5.5)	4 (6.0)	44 (5.6)	0.894
Alcohol	205 (28.4)	21 (31.3)	226 (28.9)	0.645
Any other drugs	397 (55.0)	43 (64.2)	440 (55.8)	0.147

[a]Values are expressed as No. (%).

prevalence of substance use between subjects reporting and not reporting the use of relevin in peers. Accordingly, researchers in some European countries, such as France, Norway, and Ireland concluded that the inclusion of a dummy drug was not valuable in studies measuring the prevalence of addiction with the aid of self-reports (7).

The limitation of the study was the exclusion of relevin from the list of drugs that might be used by students themselves. If it was included in the logistic regression model, it might have potential impact on the results.

Therefore, an incorrect perception about the use of a dummy drug may not be correlated with the estimate of substance use among classmates. There seems to be no need to include a dummy drug among the questionnaire items related to substance use by classmates to find false positive cases.

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Footnotes

Authors' Contribution: Writing of the proposal and drafting of the manuscript: Ali Bahramnejad, Abedin Iranpour, and Nouzar Nakhaee; collection of data: Ali Bahramnejad; statistical analysis: Nouzar Nakhaee.

Conflict of Interests: Authors declared no conflict of interest.

Ethical Approval: The protocol of this study was also approved by the Ethics Committee of the Kerman University of Medical Sciences (EC/96-34/KNRC). After explaining the study objectives to the students and assuring them about not mentioning their names and thereafter obtaining their verbal informed consent, they were invited to co-operate in completing the questionnaires.

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