Annals of Infectious Disease and Epidemiology

Research Article
Published: 20 Feb, 2017

Prevention of Club Drug use at LGBT Community Health Centers: What Socio-Cognitive Factors Predict the Intention and Whether the Prevention Education Work

*Chang Hsun Chen**

Department of Medicine, Chung Shan Medical University, Taiwan

Abstract

Background and Objectives: Currently the human immunodeficiency infection occurred mostly among young gay and bisexual men in Taiwan, and club drug use might be a factor related to their vulnerability. To explore the factor influencing the club drug use among them and evaluate the efficacy of prevention education, a questionnaire was developed based on the theory of reasoned action and self-efficacy. Value clarification and refusal skills were adopted into the regular club drug prevention education.

Methods: Participants were recruited using respondent driven sampling at 4 LGBT health center in Taiwan. One of them was selected as intervention group, which a value clarification of club drug use was provided. The number of participants recruited was 334,393, and 380 at the pre-test, post-test and post-post-test respectively.

Results: The theory of reasoned action and self-efficacy explained 58% of the variance of the intention to use or avoid club drug use. The self-efficacy was the most powerful predictor. In the intervention group, odds ratio of holding strong and weak attitude was significant when comparing post-post-test with pre-test.

Conclusion: The current findings suggest that self-efficacy, attitude and subjective norm are significant predictors of intention of club drug use. Attitude change was seen after a session of value clarification.

Scientific Significance: The current findings highlight the feasibility to use the theory of reasoned action and self-efficacy to explore the factors influencing the club drug use and develop countermeasures. Value clarification could be a simple and useful approach to induce attitude change toward avoiding club drug use.

OPEN ACCESS

Correspondence:
Chang Hsun Chen, Department of Medicine, Chung Shan Medical University, Taiwan, Tel: 886-2-23959825;
E-mail: leonardo@cdc.gov.tw

Received Date: *12 Dec 2016*
Accepted Date: *17 Feb 2017*
Published Date: *20 Feb 2017*

Citation:
Chen CH. Prevention of Club Drug use at LGBT Community Health Centers: What Socio-Cognitive Factors Predict the Intention and Whether the Prevention Education Work. Ann Infect Dis Epidemiol. 2017; 2(1): 1009.

Introduction

Currently the human immunodeficiency virus (HIV) infection occurs mostly among young men who have sex with men in Taiwan [1,2]. Investigation into it, quite a number of the reported cases used club drugs such as ketamine, methamphetamine, MDMA etc. which might be one of the predisposing factors of contracting HIV. A survey conducted in a gay sauna in Taiwan found that the almost 20% of the clients had the experience of using club drugs [3].

Club drugs are medicines being used for non-medical purpose, but instead, for pleasure. The initiation of using club drug usually began with the introduction of their friends and classmates [4]. And the use of these drugs is especially common among gay and bisexual men [5-7]. People using club drug tends to have risky sexual behavior [8-16] and thus is especially vulnerable to HIV and other sexually transmitted illnesses infection [17-19]. In this regard, Taiwan centers for disease control has been sponsoring several non-governmental organizations to establish community health center for lesbian, gay, bisexual and transgender (LGBT community health center) to serve as a platform to conduct health education and promotion.

The theory of reasoned action assumes the best predictor of a behavior is behavioral intention. And intention is influenced by attitude toward the behavior and social normative perceptions concerning the behaviors. Attitude is determined by the personal beliefs about outcomes of performing the behavior and evaluation of the outcome [20]. Subjective norm is determined by normative belief about whether important others approve of performing the behavior and

Table 1: Demographic characteristic of the participants.

Demographic characteristics		average/ frequency	S.D./ percentage
Age		28.6	6.54
Educational attainment	Junior high	4	1.2
	High school	47	14.1
	college	209	62.6
	Graduate school	74	22.2
Studying or working	working	213	63.8
	Studying	83	24.9
	Neither	38	11.4
Disclosure of sexual orientation	No	9	2.7
	Yes	325	97.3
Sex orientation	Homosexual	302	90.4
	Bisexual	32	9.6

motivation to comply [21]. The process of cognition plays an important role in gaining and maintaining a behavior. While another theory, the self-efficacy raised by Bandura, also explain how people can execute a behavior as a consequence of having confidence to perform the behavior successfully. From past studies, the theory of reasoned action successfully predicted intention and behavior of substance abuse [22-24]. Self-efficacy also demonstrated its capability in explaining substance abuse related behaviors [25-30]. In our study, we incorporate those 2 theories as the study structure to examine the factors related to club drug use among gay and bisexual men in Taiwan.

Except exploring the factors influence the intention of using club drug use, find out the effective prevention measures is also important. Individual's beliefs about how confident in accomplishing a task (self-efficacy) and the degree to which they believe that the task is worth pursuing (task value) are two key components for one's achievement behaviors and outcomes. The attitude serve to express one's central values and in turn value also explains and influences one's behavior. Thus, value clarification approach focuses on helping participants use both rational thinking and emotional awareness to examine personal behavior patterns and to clarify and actualize their values was introduced into the regular prevention education program for club drug. According to Raths et al. values are based on three processes, choosing, prizing, and acting. Seven criteria were developed accordingly including choosing freely, choosing from alternatives, choosing after thoughtful consideration of the consequences of each alternative, cherishing, willing to affirm the choice publicly, doing something with the choice, and repeatedly acting in some pattern of life. Diffusion of the values was expected to occur among peer and the change in attitude, self-efficacy and intention were evaluated.

Materials and Methods

Procedures

The study sample was recruited from 4 LGBT community health centers in Taipei, Hsin-chu, Taichung and Kaohsiung using respondent driven sampling. Two seeds were selected in each site first and then the seeds were asked to complete the questionnaire and then supplied with 3 coupons that they could give them to other people they knew in the target population and recruit them as participants. The person holding coupon who presented himself at the LGBT community health center and completed the questionnaire would become the next recruiter. The subjects were paid 6 USD for completing the questionnaire and would get additional 6 USD for every successfully recruitment. This procedure continued in this way until the sample size was reached i.e. 356samplesin current study calculated by the formula provided by Salganik and Heckathorn [31]. The participant should be male homosexual who aged above 18 years old to meet the inclusion criterion. The participants recruited at Taichung site was selected as the intervention group, and the others were control groups. Pre-test, post-test and post-post-test were conducted in all sites.

Questionnaire was developed based on the theory of reasoned action and self-efficacy theory adopting 7-point Likert scale for the assessment of participant's attitude, subjective norm, self-efficacy and behavior intention about club drugs.

A prevention education of club drug use adopting value clarification discussion was arranged before the post-test in the intervention group, while no intervention activity provided for the control group. The prevention education conducted in the manner of small group (3-5 participants) discussion which was a 40-minute program containing simple introduction to club drug, refusal skills and the session for value clarification discussion. The peer teacher was identified and given instruction about how to conduct the program in advance 9 (Table 1). The peer teacher was required to conduct the discussion without judgment and discourage any attempts by participants to challenge or mock other's opinion as well. The participant would be asked to explain the reason for holding a specific value position. After the program we expected the participants should be able to make judgment about club drug use, express their decision making about intention to use or not to use, and learning the skills to refuse if people provide club drugs.

Between September and November 2013, 334 individuals were recruited to participate in the pretest survey, including 99 in the intervention group and 235 in the control group. The recruitment at the Hsin-chu site was not satisfactory, so we abandoned Hsin-chu site in the subsequent recruitment. Between March and June 2014, 127 individuals were recruited in the intervention group and prevention education was provided in small group manner and post-test was conducted right after the end of the prevention education. During the same period 266 individuals were recruited in the control group for the post-test. In order to measure the delayed effect of the diffusion of value among the peer, post-post-test was conducted during August and October 2014 with 133 in the intervention group and 247 in the control group.

Measures

Background characteristics

Age, educational attainment, employment status, sexual preference, coming out of the closet or not, were assessed through self-report.

Club drug related experience

Experience of participating club drugs prevention activity, awareness about the hazard of club drug, source of related knowledge about club drugs, experience of using club drugs were assessed through self-report.

Attitude measure

The sub-constructs of attitude, behavioral belief and outcome evaluation were assessed by asking personal viewpoint regarding

Table 2: Distribution of scores on social cognitive variables.

Construct	Items	Frequency of scores on Likert scale							*Mean*
		1	2	3	4	5	6	7	*S.D.*
Behavioral belief	Using club drug will cause addiction	4 1.20%	7 2.10%	8 2.40%	28 8.40%	42 12.60%	110 32.90%	135 40.40%	5.9 1.31
	Using club drug has adverse impact on mental health	1 0.30%	2 0.60%	3 0.90%	26 7.80%	32 9.60%	119 35.60%	151 45.20%	6.13 1.05
	Using club drug has adverse impact on physical health	2 0.60%	2 0.60%	6 1.80%	24 7.20%	28 8.40%	107 32%	165 49.40%	6.16 1.12
	Using club drug might increase unsafe sexual behavior	2 0.60%	2 0.60%	2 0.60%	30 9%	36 10.80%	103 30.80%	159 47.60%	6.12 1.11
Outcome evaluation	Addiction due to club drug is good or bad	21 6.30%	48 14.40%	14 4.20%	35 10.50%	29 8.70%	54 16.20%	133 39.80%	5.09 2.08
	Mental problem due to club drug is good or bad	25 7.50%	47 14.10%	16 4.80%	43 12.90%	29 8.70%	45 13.50%	129 38.60%	4.96 2.12
	Physical problem due to club drug is good or bad	32 9.60%	46 13.80%	15 4.50%	34 10.20%	22 6.60%	49 14.70%	136 40.70%	4.97 2.2
	Unsafe sexual behavior due to club drug is good or bad	29 8.70%	42 12.60%	14 4.20%	44 13.20%	21 6.30%	52 15.60%	132 39.50%	5.01 2.14
Attitude	Is it good or not for me to use club drug	0 0%	1 0.30%	14 4.20%	54 16.20%	40 12%	45 13.50%	180 53.90%	5.96 1.32
	Is it worthy or not for me to use club drug	0 0%	2 0.60%	12 3.60%	57 17.10%	33 9.90%	55 16.50%	175 52.40%	5.95 1.31
	Is it necessary or not for me to use club drug	1 0.30%	2 0.60%	7 2.10%	45 13.50%	34 10.20%	59 17.70%	186 55.70%	6.08 1.25
Normative belief	My families think I should not use club drug My friends think I should not use club drug	0 0% 1	0 0% 2	0 0% 5	12 3.60% 53	13 3.90% 50 15%		259 77.50%	6.66 0.72
						41	54	178	6.01
		0.30%	0.60%	1.50%	15.90%	12.30%	16.20%	53.30%	1.27
	My partner thinks I should not use club drug	1 0.30%	1 0.30%	3 0.90%	59 17.70%	15 4.50%	58 17.40%	197 59%	6.14 1.24
	The LGBT health center thinks I should not use club drug	0 0%	0 0%	1 0.30%	104 31.10%	23 6.90%	49 14.70%	157 47%	6.37 1.02
	The health department thinks I should not use club drug	0 0%	0 0%	1 0.30%	36 10.80%	21 6.30%	56 16.80%	220 65.90%	5.5 1.82
Motivation to comply	I will comply with the opinion of my families	19	9	14	37	23	56	176	5.52
		5.70%	2.70%	4.20%	11.10%	6.90%	16.80%	52.70%	1.72
	I will comply with the opinion of my friends	21	11	9	59	23	62	149	6.35
		6.30%	3.30%	2.70%	17.70%	6.90%	18.60%	44.60%	1.01
	I will comply with the opinion of my partner	21	6	6	55	18	59	169	5.77
		6.30%	1.80%	1.80%	16.50%	5.40%	17.70%	50.60%	1.33
	I will comply with the opinion of LGBT health center	18	5	6	77	24	58	146	5.72
		5.40%	1.50%	1.80%	23.10%	7.20%	17.40%	43.70%	1.79
	I will comply with the opinion of the health department	22 6.60%	9 2.70%	9 2.70%	65 19.50%	29 8.70%	46 13.80%	154 46.10%	5.68 1.77
Subjective norm	I feel most important individuals to me think I should not use club drug	1 0.30%	0 0%	3 0.90%	24 7.20%	27 8.10%	74 22.20%	205 61.40%	5.47 1.84
	I feel most important individuals to me do not support club drug use	1 0.30%	0 0%	1 0.30%	26 7.80%	29 8.70%	71 21.30%	206 61.70%	6.35 1
	I feel most important groups to me think I should not use club drug	1 0.30%	0 0%	4 1.20%	33 9.90%	35 10.50%	68 20.40%	193 57.80%	6.22 1.1
	I feel most important groups to me do not support club drug use	1 0.30%	0 0%	2 0.60%	33 9.90%	34 10.20%	69 20.70%	195 58.40%	6.25 1.07
Self-efficacy	It is easy for me not to use it even I can get club drugs	4 1.20%	4 1.20%	28 8.40%	43 12.90%	23 6.90%	71 21.30%	161 48.20%	5.8 1.51
	It is easy for me not to use it even my friends are using club drug	2 0.60%	5 1.50%	17 5.10%	40 12%	34 10.20%	77 23.10%	159 47.60%	5.89 1.38
	It is easy for me not to use it even there is club drug in the party	3 0.90%	6 1.80%	21 6.30%	37 11.10%	38 11.40%	65 19.50%	164 49.10%	5.85 1.45
	It is easy for me not to use it even people offer club drug	4 1.20%	10 3%	26 7.80%	35 10.50%	34 10.20%	68 20.40%	157 47%	5.75 1.55
	It is easy for me not to use it even the club drug is inexpensive	4 1.20%	7 2.10%	19 5.70%	35 10.50%	28 8.40%	74 22.20%	167 50%	5.89 1.46
	It is easy for me not to use club drug in any condition	8 2.40%	8 2.40%	18 5.40%	53 15.90%	22 6.60%	58 17.40%	167 50%	5.74 1.62
	I don't agree that there are many temptations about club drug use	30 9%	34 10.20%	41 12.30%	39 11.70%	26 7.80%	48 14.40%	116 34.70%	4.81 2.11
Intention	I have no intention to use club drug in the next one month	5 1.50%	4 1.20%	11 3.30%	24 7.20%	19 5.70%	45 13.50%	226 67.70%	6.25 1.35
	I have no intention to use club drug in the next six month	4 1.20%	4 1.20%	10 3%	32 9.60%	24 7.20%	50 15%	210 62.90%	6.17 1.35
	I have no intention to use club drug ever after	4 1.20%	7 2.10%	20 6%	49 14.70%	28 8.40%	57 17.10%	169 50.60%	5.81 1.52

Table 3: Multiple regression model predicting the intention of club drug use.

Variables	Standardized Coefficients Beta	t	R^2	Adjusted R^2
AT	0.305	5.701***	0.584	0.58
SN	0.152	3.443**		
SE	0.428	8.945***		

**p<0.01, ***p<0.001, AT=attitude, SN- subjective norm, SE=self-efficacy

Table 4: Logistic regression model estimating the odds ratio between tests on BI, AT, and SE.

	Intervention group		Control group	
	Post-test/pre-test	Post-post-test/ pre-test	Post-test/pre-test	Post-post-test/ pre-test
BI	1.429 (0.525~3.890)	0.493 (0.145~1.684)	0.779 (0.349~1.737)	0. 894 (0.318~2.515)
AT	2.222 (0.939~5.253)	4.318* (1.396~13.358)	1.053 (0.514~2.159)	1.107 (0.540~2.799)
SE	0.802 (0.381~1.688)	0.864 (0.330~2.258)	0.812 (0.448~1.469)	1.164 (0.629~2.155)

*p<0.05; BI=behavioral intention, AT=attitude, SE=self-efficacy

issues related to club drug use such as addiction, physical effect, mental effect, risky sexual behavior (Cronbach's α=0.85), and the evaluation of the outcome if using club drugs (Cronbach's α=0.93). Attitude were measured by asking is it good/worthy/necessary or not about using club drug (Cronbach's α=0.94).

Subjective norm measure

The sub-constructs of subjective norm, normative beliefs and motivation to comply were assessed by asking whether the important others approve or disapprove of using club drug (Cronbach's α=0.79) and the motivation to comply with the expectation of important others (Cronbach's α=0.95). The important others herein refer to families, friends, partners, peers in the LGBT health center, health department of the government. Subjective norm were assessed by asking do important others think he should use the club drug and if they support him to use it (Cronbach's α=0.94).

Self-efficacy measure

Self-efficacy assessed one's belief in one's ability to refuse club drug use in several specific situations such as obtaining drugs easily, being with friend who use it, people or venue provide drugs, cheap drug, any temptation (Cronbach's α=0.91).

Intention measure

Intention was assessed by asking the strength of commitment of not using club drug in the next 1 month, 6 months, and ever-after (Cronbach's α=0.92).

Analysis plan

Descriptive statistics summarizes the background characteristics, club drug related information, and scoreson attitude, subjective norm, self-efficacy and intention of the study subjects. Multiple regressions examines the performance of the model and identified the strength of each component to predict behavioral intention. Logistic regression presents the odd ratios of individuals possess positivity of not using club drugs so as to evaluate the impact of prevention education among peers.

Results

The mean age of the participants at pre-test was 28.6 years old (SD=6.54), 84.8% of the participants had completed college degree, and 24.9% were studying. Most of the participants were employed (63.8%), but 11.4% of them neither working nor studying. The majority of the Participants had already disclosed their sexual orientation and/or gender identity, and around 10% of them were bisexual men.

About 30% of the participants had ever attended the club drug related prevention education activities in the LGBT health centers, and 92.2% of the participants reported being aware of the hazard of the club drugs which the main information source was from internet. Notably is that, 24.3% of the participants had experiences of using club drugs.

The scoreson social cognitive variables are presented in (Table 2). The participants cared most about the physical impact brought about by the club drug. However they scored highest on the evaluation of outcome about addiction. Seventy-two percent of the participants considered using club drug a bad thing, 61.4% thought it was unworthy to use it and almost 80% thought it was unnecessary. Over 96% of the participant believed their families did not want them to use club drug, and the motivation to comply with their expectation was also highest. Ninety percent of the participant thought important others did not want them to use club drug. Regarding self-efficacy, opinion about the presence of temptation about club drug scored 4.81 on average out of the total score 7, was the lowest one among all self-efficacy items which generally scored nearly 6 on average. The intention not to use club drug was staunchest when asking no intention to use club drug in the next one month, 89.6% of the participant reported no intention firmly. But for longer period, 76.1% of the participant still possessed firmed intention that they will not use the club drug. In general, participants' attitude, subjective norm, self-efficacy and intention were inclined to avoid club drug use.

The multiple regression model predicting behavioral intention of club drug use is reported in (Table 3). The full model explained 58% of the variance of behavioral intention. The self-efficacy was the most powerful predictor (b=0.428, t=8.945, p<0.001), following next was attitude (b=0.305, t=5.701, p<0.001) and subjective norm (b=0.152, t=3.443, p<0.01). Other external variables which correlate with behavioral intention significantly were put into the model in order to examine whether other external variable imposed addition effect on the model. Past experience of using club drug was finally included in the model, which increased the explanation of the variance by 0.8%.

The average scores at items under attitude, self-efficacy, and behavioral intention above 5 were categorized as high score group otherwise low score group. The ratio of those 2 groups was used to evaluate the impact of the prevention education. As the ratio between high score group and low score group increased, it mean that number of people have the intention to avoid club drug use expanded and people holding positive attitude, and self-efficacyabout avoid club drug use increased from test to test. Logistic regression adjusting significant correlated variables was used to examine the ratio between tests (Table 4). Summarized the results and only the post-post-test in the intervention group, compared with pre-test, participants holding positive attitude about avoid club drug use increased significantly (Odds ratio=4.3, p<0.05).

Discussion

In the present study, the theory of reasoned action and self-efficacy together explained 58% variance of intention to use club drug. The result of a study regarding young adults' willingness and intentions to use amphetamines showed that the components of the theory of reasoned action accounted for a significant 31% of the

variance of behavioral intention to use amphetamines [23]. Adding self-efficacy in the model seems to be feasible in the explanation of the behavioral intention to use or avoid club drug.

In average, eighty percent of the participant hold positive attitude toward avoiding club drug use. They considered using club drug was bad, unworthy and unnecessary. Nearly 90% of the participant agreed the adverse impact brought about by the club drug. However in the evaluation of the outcome, only around some sixty percent of the participant thought the outcome was not good. There was a gap existed regarding the value judgment about the outcome of using club drug.

Conclusion from a study targeted on drug use among gay and bisexual men at weekend dance parties suggested that normative beliefs are important predictors of drug use [32]. In our study, subjective norm which are composed of normative beliefs and motivation to comply was the least powerful predictor among the component, but it was still significant in statistical power. One important finding from the result is that the most prominent subjective norm was from the families, which reminded us not to neglect the role the families can play in the prevention of club drug use.

Since self-efficacy was the most powerful predictor of intention to use (avoid) club drug in our study. Approaches increases self-efficacy such as performance accomplishments, vicarious experience, verbal persuasion, and physiological arousal absolutely should be included in prevention program in addition to provide knowledge merely.

The results of a systematic review suggested that interactive delivery methods, community intervention, use of peer leader, adding life skill, and several other factors may strengthen effects of drug prevention programs [33]. Brown et al. suggested that effective drug prevention programs must be community based, personalized, and culturally relevant [34]. Mc Arthur et al. [35] conducted systematic review about studies targeting on tobacco, alcohol and drug use among adolescents and concluded that peer-led interventions were also associated with benefit in relation to use of those substance [35]. In our study, the distribution of the scores on attitude, subjective norm, self-efficacy and intention indicated that the majority of the participants were inclined to avoid club drug use. However there was 24.3% of the participants had experience of club drug use. Thus if the value regarding avoiding club drug use could be diffused to affect more peer to hold that same value and decrease the use of club drugs, we are able to further bring down the social impact derived from club drug. The result showed that comparing with the participants in the pretest, the odd that participants holding strong positive attitude toward avoiding club drug use (high score group) and the weak ones (low score group) in the post-post-test was higher with the odds ratio 4.3. The prevention education program of this study was arranged in the LGBT community health center and with their peer as the teacher which would be friendly and culturally appropriate for the intended audience. The process of value clarification let participants to interact with teacher and peer. In the program, teacher used "clarifying response" to get the participants went through the process of value establishment, choosing, prizing, and acting was helpful for the participants to clarify their thinking and examine their behavior. The peer teacher allowed participants to hold their own views and no direct attempt to change their views but giving the opportunity for them to reflect.

This study had several limitations to be noted. Firstly, we recruited the participant with respondent driven sampling which is a sampling method used for hidden population. There was not clear sample frame for gay and bisexual men. Thus the coupons were passed on via a chain-referral design that allowed respondents to recruit randomly from their friends. Thus we were not able to assure that we have exactly the same person in three different tests. Secondly, in the practice of respondent driven sampling, the participants are not required to divulge any sensitive information to the researcher, even there were participants repeatedly being recruited to participate in the survey, we were not able to match the same individual among tests due to the anonymous procedure. Thirdly, the data we obtained is batch data that limited its utilization of several statistical analysis tools such as analysis of covariance (ANCOVA) which can reduce within-group error variance and eliminate of confounds. Fourthly, the current study involves prevention of club drug use and the peer teachers in the LGBT health centers had been engaged in related prevention activities for a long time, the participant might answer the questionnaire in the way trying to meet the expectation of the peer teacher. Therefore experimenter effects might exist. Fifthly, small group clarification discussion might cause peer pressure resulting in ceiling effect on scores could not be ruled out completely.

But still, the current findings highlight the feasibility to use the theory of reasoned action and self-efficacy to explore the factors influencing the club drug use and develop countermeasures. Value clarification could be a simple and useful approach to induce attitude change toward avoiding club drug use.

Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

Acknowledgement

This research was funded by the Center for Disease Control, R.O.C. (Taiwan). The funding institute was not involved in the study design; in the collection, analysis, and interpretation of the data; and in the writing of the report. The funding institute was informed and agreed with the submission of the article for publication.

We thank the experts who assisted in the development of the questionnaire and provided research suggestions, and we offer our gratitude to the survey respondents.

References

1. Centers for disease control. HIV weekly report. 2016; 104-112.
2. Centers for disease control. Current situation of HIV infection in Taiwan. 2016.
3. Ko NY, Lee HC, Hung CC, Tseng FC, Chang JL, Lee NY, et al. Trends of HIV and sexually transmitted infections, estimated HIV incidence, and risky sexual behaviors among gay bathhouse attendees in Taiwan: 2004-2008. AIDS Behav. 2011; 15: 292-297.
4. Leung KS, Li JH, Tsay WI, Callahan C, Liu SF, Hsu J, et al. Dinosaur girls, candy girls, and Trinity: voices of Taiwanese club drug users. J Ethn Subst Abuse. 2008; 7: 237-257.
5. Fendrich M, Wislar JS, Johnson TP, Hubbell A. A contextual profile of club drug use among adults in Chicago. Addiction. 2003; 98: 1693-1703.
6. Cochran SD, Ackerman D, Mays VM, Ross MW. Prevalence of non-medical drug use and dependence among homosexually active men and women in the US population. Addiction. 2004; 99: 989-998.
7. Lea T, Reynolds R, de Wit J. Alcohol and club drug use among same-sex

attracted young people: associations with frequenting the lesbian and gay scene and other bars and nightclubs. Substance Use Misuse. 2013; 48: 129-136.

8. Bruno A, Scimeca G, Marino AG, Mento C, Mico U, Romeo VM, et al. Drugs and sexual behavior. Journal of Psychoactive Drugs. 2012; 44: 359-364.

9. Bellis MA, Hughes K, Calafat A, Juan M, Ramon A, Rodriguez JA, et al. Sexual uses of alcohol and drugs and the associated health risks: a cross sectional study of young people in nine European cities. BMC Public Health. 2008; 8: 155.

10. Sterk CE, Klein H, Elifson KW. Young Adult Ecstasy Users and Multiple Sexual Partners: Understanding the Factors Underlying this HIV Risk Practice. J Psychoactive Drugs. 2008; 40: 237-244.

11. Rusch M, Lampinen TM, Schilder A, Hogg RS. Unprotected anal intercourse associated with recreational drug use among young men who have sex with men depends on partner type and intercourse role. Sex Transm Dis. 2004; 31: 492-498.

12. Darrow WW, Biersteker S, Geiss T, Chevalier K, Clark J, Marrero Y, et al. Risky sexual behaviors associated with recreational drug use among men who have sex with men in an international resort area: challenges and opportunities. J Urban Health. 2005; 82: 601-609.

13. Parry C, Petersen P, Dewing S, Carney T, Needle R, Kroeger K, et al. Rapid assessment of drug-related HIV risk among men who have sex with men in three South African cities. Drug Alcohol Depend. 2008; 95: 45-53.

14. Chen TT, Yen CF. Sexual intercourse experience and engagement in unprotected sex in adolescent MDMA users in Taiwan. Subst Use Misuse. 2011; 46: 398-403.

15. Operario D, Smith CD, Arnold E, Kegeles S. Sexual risk and substance use behaviors among African American men who have sex with men and women. AIDS Behav. 2011; 15: 576-583.

16. Li S, Huang H, Xu G, Cai Y, Huang F, Ye X. Substance use, risky sexual behaviors, and their associations in a Chinese sample of senior high school students. BMC Public Health. 2013; 13: 295.

17. Drumright LN, Patterson TL, Strathdee SA. Club drugs as causal risk factors for HIV acquisition among men who have sex with men: a review. Subst Use Misuse. 2006; 41: 1551-1601.

18. Freeman P, Walker BC, Harris DR, Garofalo R, Willard N, Ellen JM; Adolescent Trials Network for HIV/ Aids Interventions 016b Team. Methamphetamine use and risk for HIV among young men who have sex with men in 8 US cities. Arch Pediatr Adolesce Med. 2011; 165: 736-740.

19. Heiligenberg M, Wermeling PR, van Rooijen MS, Urbanus AT, Speksnijder AG, Heijman T, et al. Recreational drug use during sex and sexually transmitted infections among clients of a city sexually transmitted infections clinic in Amsterdam, the Netherlands. Sex Transm Dis. 2012; 39: 518-527.

20. Wei C, Guadamuz TE, Lim SH, Huang Y, Koe S. Patterns and levels of illicit drug use among men who have sex with men in Asia. Drug Alcohol Depend. 2012; 120: 246-249.

21. Glanz K, Rimer BK, Viswanath K. Health behavior and health education-theory, research, and practice. 4th edition. San Francisco, CA; Jossey-Bass; 2008.

22. Morrison DM, Golder S, Keller T E, Gillmore MR. The theory of reasoned action as a model of marijuana use: tests of implicit assumptions and applicability to high-risk young women. Psycholo Addict Behav. 2002; 16: 212-224.

23. Litchfield RA, White KM. Young adults' willingness and intentions to use amphetamines: An application of the theory of reasoned action. E-Journal of Applied Psychology. 2006; 2: 1-8.

24. Crano WD, Gilbert C, Alvaro EM, Siegel JT. Enhancing prediction of inhalant abuse risk in samples of early adolescents: a secondary analysis. Addict Behav. 2008; 33: 895-905.

25. Yu RL, Ko HC. Cognitive determinants of MDMA use among college students in Southern Taiwan. Addict Behav. 2006; 31: 2199-2211.

26. Victoir A, Eertmans A, Van den Bergh O, Van den Broucke S. Association of substance-use behaviours and their social-cognitive determinants in secondary school students. Health Educ Res. 2007; 22: 81-94.

27. Senbanjo R, Wolff K, Marshall EJ, Strang J. Persistence of heroin use despite methadone treatment: Poor coping self-efficacy predicts continued heroin use. Drug Alcohol Rev. 2009; 28: 608–615.

28. Alessi SM, Petry NM. Smoking Reductions and Increased Self-Efficacy in a Randomized Controlled Trial of Smoking Abstinence-Contingent Incentives in Residential Substance Abuse Treatment Patients. Nicotine Tob Res. 2014; 16: 1436-1445.

29. Davis AK, Osborn LA, Leith J, Rosenberg H, Ashrafioun L, Hawley A, et al. Development and Evaluation of the Marijuana Reduction Strategies Self-Efficacy Scale. Psychol Addict Behav. 2014; 28: 575-579.

30. Liem A, Lau S, Nie Y. The role of self-efficacy, task value, and achievement goals in predicting learning strategies, task disengagement, peer relationship, and achievement outcome. Contemporary Educational Psychology. 2008; 33: 486-512.

31. Salganik MJ, Heckathorn DD. Variance estimation, design effects, and sample size calculations for respondent-driven sampling. J Urban Health. 2006; 83: I98-I112.

32. Ramchand R, Fisher MP, Griffin BA, Becker K, Iguchi MY. Drug use among gay and bisexual men at weekend dance parties: The role of intentions and perception of peer's behaviors. AIDS Behaviors. 2013; 17: 1540-1549.

33. Cuijpers P. Effective ingredients of school-based drug prevention programs- A systemic review. Addict Behav. 2002; 27: 1009-1023.

34. Brown EJ, Hill MA, Giroux SA. "A 28-day program ain't helping the crack smoker"--perceptions of effective drug abuse prevention interventions by north central Florida African Americans who use cocaine. J Rural Health. 2004; 20: 286-295.

35. McArthur GJ, Harrison S, Caldwell DM, Hickman M, Campbell R. Peer-led interventions to prevent tobacco, alcohol and/or drug use among young people aged 11-21 years: a systemic review and meta-analysis. Addiction. 2015; 111: 137-407.