Innovations

An Empirical Study of Drug Use, Smoking and Local Government Policy: An Example of Adolescents in Yunnan Province, China

Bao Meiyu[1], Mohd Syaiful Nizam Bin Abu Hassan[2*], Ahmed Ahmed Olaitan[3]

[1,2] Faculty of Applied Social Sciences, University Sultan Zainal Abidin, Malaysia

[3]Forestry Research Institute of Nigeria, Ibadan

Abstract: *Since the beginning of human history, the drug problem has been an important factor affecting the survival and development of human beings. How to prevent the harm brought by drugs is still a long and difficult task we face. Through research, it is found that many drug habits are formed in adolescence, and bad habits at a young age can have a lifelong impact. In addition, Yunnan Province is the most prolific province in China, with the largest number of drug users and the most serious situation.Therefore, this paper will investigate and analyze the causes of drug use among adolescents under 25 years old in Yunnan Province, so as to find out the current situation and characteristics of drug use among adolescents under 25 years old in Yunnan Province in 2023, as well as the causes of drug use, so as to propose a series of countermeasures to prevent the problem of drug use among adolescents.We distributed 100-150 questionnaires in 13 compulsory isolation and community drug treatment facilities in Yunnan Province, and a total of 1083 questionnaires were distributed and 1022 valid questionnaires were returned. In this paper, we will analyze the causes of drug use mainly from two aspects: the smoking status of adolescent drug users, and the local government policy on drug use. The degree of drug use is used as the dependent variable, while every adolescent goes through the student years, so the school environment for drug prevention education is used as the moderating variable.The above data were then analyzed empirically, the results were analyzed and discussed, and finally, specific countermeasures were proposed on how to prevent drug use among adolescents at the individual, school, and government levels, respectively.*

Keywrods: *Drug use, Smoking, Local government policy, Adolescents*

Introduction

According to the China Anti-Drug Report 2021, the "Clear the Source and Cut the Flow" strategy has continued to increase efforts to combat drug trafficking. As a result of these efforts, 54,000 drug crimes have been solved, 77,000 suspects have been arrested, 27 tonnes of drugs have been seized, and 326,000 drug addicts have been investigated. These numbers represent a decrease of 16.3 percent, 16.7 percent, 51.4 percent, and 50,000, respectively, when compared to the previous year. The number of drug users who were examined and given punishment fell by 16.3 percent, 16.7 percent, 51.4 percent, and 23.6 percent, respectively.

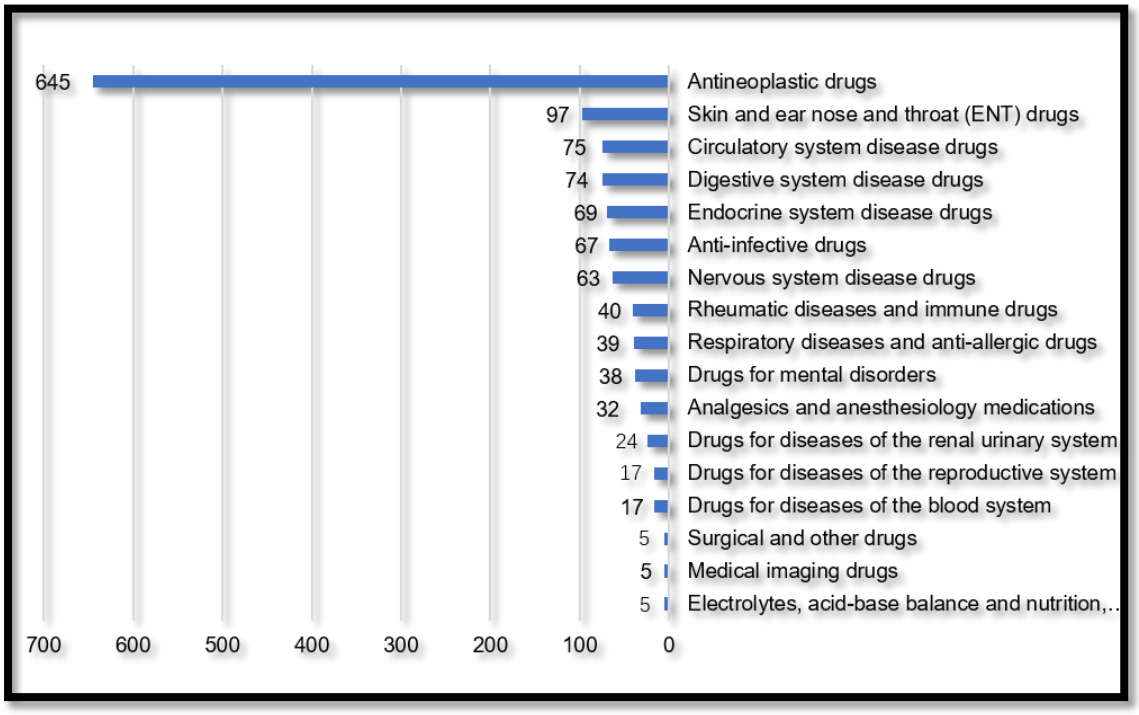

Figure 1: Number of approved chemical drug investigational newdrug in different indications.

The issue of adolescent drug use and smoking is a critical public health concern, with initiation during adolescence leading to harmful consumption patterns and adverse health consequences (U.S. Department of Health and Human Services, 2016). Adolescence is a vulnerable period due to various risk factors like peer pressure and the allure of experimentation (Hawkins et al., 1992). While these issues vary across regions, local government policies play a significant role in influencing drug use behaviors (Wagenaar et al., 2000).

Existing research, however, often overlooks the role of local government policies and the interconnectedness of drug use and smoking, known as 'poly-drug use' (Connor et al.,

2014). Local government policies can be crucial in shaping the landscape of adolescent drug use through direct and indirect means. Yet, there's a lack of empirical research focused on these local policies and their impact on adolescent behavior.

The cities and towns along the border in Yunnan Province, China, have become primary entry points for narcotics from the Golden Triangle, leading to a significant increase in drug addiction, particularly among young people under 25. This growing drug problem is a major concern because young people represent the future strength and progress of the nation. The tragic consequences of drug addiction among youth, including incarceration and loss of life, highlight the urgency of addressing youth drug abuse. Focusing on preventing and reducing youth drug-related delinquency is essential for protecting young people's healthy development, curbing the spread of drugs, and fostering a harmonious, healthy, and civilized society.

To summarise, the purpose of this paper is to conduct a study on youths who are under the age of 25 and who are located in Yunnan Province, a province that has a large number of people who are addicted to drugs. The authors hope to discover some of the causes of drug addiction based on empirical analysis and to devise relevant policies that will assist youths in avoiding and preventing the use of drugs.
Specifically, the following four research objectives are included:
Objective 1: To evaluate that adolescent smoking has a positive effect on adolescent drug use
Objective 2: To evaluate that drug prevention education in schools has a diminishing effect on hypothesis 1
Objective 3: To evaluate that current government drug policies have a negative effect on youth drug use
Objective 4: To evaluate that drug prevention education in schools has a reinforcing effect on hypothesis 3

Literature Review

Smoking and drug use:

Empirical studies conducted in recent decades have extensively explored the relationship between smoking and drug use, particularly among adolescents. Among the various theories examined, the "gateway" hypothesis has received significant attention. According to this theory, smoking often precedes and increases the risk of subsequent illicit drug use (Kandel, 1975). Notably, the New York Longitudinal Study conducted by Kandel and her colleagues found that adolescents who smoked were more likely to engage in marijuana

and other illicit drug use compared to non-smokers (Kandel, Yamaguchi, & Chen, 1992). Similarly, the National Epidemiological Study on Alcohol and Related Conditions, a longitudinal study, demonstrated a significant association between nicotine dependence and the risk of subsequent drug use disorders (Grant et al., 2006).However, it is important to note that not all studies support the gateway theory. Some researchers argue that the relationship between smoking and drug use can be better explained by the common liability to addiction theory. Vanyukov et al. (2012) proposed in their study that genetic and environmental factors may render certain individuals more susceptible to addiction, thus explaining the association between smoking and drug use among adolescents.In summary, research on the correlation between smoking and drug use among adolescents has taken a multifaceted approach, with numerous studies supporting the connection. Despite some differences in their theoretical orientation, most researchers agree that smoking is a significant predictor of drug use during adolescence.

Government policies and drug use:

The correlation between local government policies and drug use has been a widely explored topic in academic research, given the extensive impacts of these policies on public health, public safety, and socio-economic dynamics. One of the earliest studies to acknowledge the correlation between local government policy and drug use was conducted by Kandel and Logan (1984), who emphasized that law enforcement policies, availability, and perceived risk significantly influence marijuana use among young adults. The researchers proposed that government policies restricting drug availability and increasing perceived risk of use could lead to a decrease in drug use prevalence. This early study set the precedent for further research, considering the role of policy in drug use prevention. Later research further underscored this relationship. A study by Pacula et al. (2005) highlighted that state-level decriminalization of marijuana positively affected its use among adolescents. This study demonstrated a clear correlation between less restrictive government policy and increased drug use. Another important study by Chaloupka et al. (1999) found a direct relationship between higher cigarette prices, driven by tax policies, and decreased smoking rates among adolescents. existing research has shown a significant correlation between local government policies and adolescent drug use. These findings are diverse, focusing on enforcement and decriminalization policies, educational and preventive programs, tax policies, and the indirect effects of policies promoting healthier environments. Nevertheless, the complexity of this relationship, as indicated by some conflicting findings, signifies the need for continued research. This overview emphasizes the importance of integrating various policy approaches to address adolescent drug use, which underscores the need for a multifaceted understanding of the

correlation between local government policies and drug use.

School drug prevention education and drug use:

The correlation between drug prevention education and drug use among adolescents has been a matter of great debate within academic circles. The prevailing viewpoint suggests that appropriate school-based programs can potentially lead to reduced drug use among students (NIDA, 2014). This section reviews the existing literature surrounding this topic.One of the pioneering studies on this topic by Botvin, Baker, Dusenbury, Botvin, and Diaz (1995) argued that the Life Skills Training (LST) approach, an extensively implemented drug prevention program in American schools demonstrated significant effectiveness in reducing the consumption of tobacco, alcohol, and illicit drugs among middle school students. This approach included the development of self-management skills, social skills, and drug resistance skills, providing support to the claim that comprehensive education on drug resistance can effectively decrease the incidence of drug use.Likewise, a longitudinal study conducted by Faggiano et al. (2008) examined the effectiveness of the "Unplugged" program, a school-based drug prevention program implemented across Europe, significantly reduced the instances of drug use among students over a sustained period. The program followed the Comprehensive Social Influence Model, reinforcing the argument that education aimed at influencing social perception of drugs can be a successful deterrent. In conclusion, the body of literature on the relationship between drug prevention education and drug use among adolescents is extensive, with varied findings. While most research agrees on the potential benefits of these programs, their effectiveness hinges on multiple factors, including program design, implementation, the competence of educators, and the timing of intervention. Further research is recommended to understand the long-term effectiveness of these programs and the potential role of parents and family in this endeavor. Overall, it is evident that while drug prevention education can be influential, the effectiveness can largely depend on the program's design and execution. Further research is necessary to identify the most effective components and teaching methods in prevention education to maximize its impact on curbing adolescent drug use.

Methodology

Data Collection:

This research study on drug use and smoking among adolescents under 25 in Yunnan Province emphasizes data integrity, rigor, and ethical considerations. The primary data was gathered through questionnaires distributed to 13 compulsory isolation and community drug treatment facilities across the province, chosen to represent a range of

urban and rural areas, socio-economic backgrounds, and treatment approaches. Complementing this, secondary data from government reports, peer-reviewed articles, and publications by non-governmental organizations provided additional context and theoretical framework. After digitization, the data was coded and analyzed using SPSS, with strict measures to ensure security, including encryption and restricted access to a secure server. In addition, both the sample size and sampling techniques were rigorously considered and chosen to align with the specific needs and constraints of this study. This multi-faceted strategy serves to ensure a robust empirical foundation, enabling more confident and insightful analysis and interpretation of the collected data in understanding the dynamics of adolescent drug use and smoking in Yunnan Province.

Ethical considerations were at the forefront due to the vulnerability of the adolescent participants. These included informed consent from both the facilities and the adolescents, ensuring anonymity and confidentiality, minimizing risks of emotional distress, and securing ethical approval from an institutional review board. A multi-stage screening process was applied to the questionnaires to ensure validity, resulting in 1022 valid responses out of 1083 distributed. All data handling and analysis procedures followed stringent ethical guidelines, including anonymization prior to analysis. This meticulous approach to data collection and ethical adherence aims to provide a robust and ethically sound foundation for analyzing adolescent drug use and smoking in Yunnan Province.

The design of four sections of the questionnaire:

The primary objective of the questionnaire was to empirically examine the relationships between adolescent drug use, smoking behavior, and local government policy in Yunnan Province. This is part of a larger study aimed at informing policy decisions for effectively combating the high rates of drug use among adolescents in the region.

The first section of the questionnaire was designed to collect demographic information from the respondents, including gender, age, education level, and living expenses. This allows us to segment the data and examine how drug and smoking behaviors differ across various subgroups.

The second part of the questionnaire was aimed at gauging the smoking habits of the respondents. Questions in this section used a 5-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree," to assess the frequency and dependency related to smoking. The rationale behind this was to explore Hypothesis 1, positing a positive relationship between smoking and drug use.

This section was designed to understand perceptions of local government policies towards drug prevention, seizures, and arrests. We employed a 5-point Likert scale to measure the respondents' agreement or disagreement with the effectiveness and frequency of these

measures. The questions were formulated to probe into Hypothesis 3, which anticipates a negative relationship between current government policies and drug use.

The last section directly addressed drug use habits. Similar to the smoking section, a 5-point Likert scale was employed. The questions were chosen to gauge the frequency and history of drug use, allowing us to directly measure our dependent variable.

Given the sensitive nature of the topics covered, great care was taken to ensure that the questions were worded in a non-judgmental and neutral manner. Prior to finalization, the questionnaire was tested for understanding and sensitivity with a smaller group, and adjustments were made based on the feedback received.

Before large-scale distribution, the questionnaire underwent pilot testing with a small group to ensure clarity, ease of understanding, and time management. Ambiguities identified were rectified, and a final version was approved for large-scale data collection.

Due to the sensitive nature of the data being collected, all respondents were assured of their anonymity and the confidential nature of their responses. For respondents under the age of 18, parental or guardian consent was obtained in compliance with ethical standards.

Results

Descriptive statistics results:

As shown Table 1, the distribution of gender, educational qualifications, age, and living expenses among 1022 respondents reveals significant imbalances with potential implications for the research findings. Gender-wise, there is a notable split with 43.7% in category 1 and 56.3% in category 2, a discrepancy that's statistically significant and could skew results, especially if one category has different propensities for behaviors like drug use. Educational qualifications show a heavy skew towards category 2 (74.7%), suggesting a homogeneity in respondents' backgrounds. This concentration could limit the study's applicability across different educational levels, as drug use patterns might vary with education. The age distribution, centered on the second (30.9%) and third (34.7%) categories, indicates a focus on specific adolescent age groups. This could limit insights into drug use patterns among younger or older adolescents. Lastly, the living expenses category is significantly skewed towards the first group (69.8%), implying a predominance of respondents from similar economic backgrounds. This skewness could influence the study's relevance, particularly if socioeconomic status significantly impacts drug use. Each of these statistical imbalances is not just numerical but also has substantive implications for the study's validity, reliability, and generalizability. They could introduce biases affecting the study's conclusions and limit the applicability of the findings to a broader population. Therefore, it is crucial to consider these imbalances when interpreting the study's main findings, as they provide essential context for the research setting.

Table 1Descriptive statistics					
	N	minimum value	maximum	average	standard deviation
gender	1022	1	2	1.56	.496
Educational qualifications	1022	1	4	1.92	.503
age	1022	1	4	2.33	.953
living expenses	1022	1	2	1.30	.460
Valid N (list status)	1022				

gender					
		frequency	percentage	Valid percentage	cumulative percentage
efficient	1	447	43.7	43.7	43.7
	2	575	56.3	56.3	100.0
	total	1022	100.0	100.0	

Educational qualifications					
		frequency	percentage	effective percentage	cumulative percentage
efficient	1	171	16.7	16.7	16.7
	2	763	74.7	74.7	91.4
	3	86	8.4	8.4	99.8
	4	2	.2	.2	100.0
	total	1022	100.0	100.0	

age					
		frequency	percentage	effective percentage	cumulative percentage
efficient	1	240	23.5	23.5	23.5
	2	316	30.9	30.9	54.4
	3	355	34.7	34.7	89.1
	4	111	10.9	10.9	100.0
	total	1022	100.0	100.0	

living expenses					
		frequency	percentage	effective percentage	cumulative percentage
efficient	1	713	69.8	69.8	69.8
	2	309	30.2	30.2	100.0
	total	1022	100.0	100.0	

Reliability and validity results

As shown Table 2, we critically evaluate the measurement quality of our investigation into adolescent drug use in Yunnan Province, focusing on the impact of smoking and local government policies. The study's four hypotheses probe the interplay between smoking, school drug prevention education, government policies, and drug use. To ensure the integrity of our findings, we meticulously assess the internal consistency of our scales using Cronbach's alpha, which reflects the extent to which the items measure the same underlying construct. Our results show robust internal consistency for smoking level (0.824), effectiveness of government anti-drug propaganda (0.823), and drug use (0.879), all exceeding the acceptable threshold of 0.7, indicating reliable measurement scales.

Further, the Kaiser-Meyer-Olkin (KMO) measure, used to determine the suitability of our data for factor analysis, yields values of 0.714 for smoking level, 0.698 for government anti-drug propaganda, and 0.732 for drug use. These values, all above the 0.6 benchmark, suggest that our sample is apt for factor analysis. Notably, each variable is measured with only three items, yet demonstrates high reliability, evidenced by these Cronbach's alpha values.

Additionally, the factor loading, Combination Reliability (CR), and Average Extraction Volume (AVE) further validate our measures. For smoking level, factor loading ranges from 0.844 to 0.882, with a CR of 0.8951 and an AVE of 0.7399. The effectiveness of government anti-drug propaganda shows factor loading between 0.811 and 0.888, a CR of 0.8954, and an AVE of 0.7408. Drug use demonstrates factor loading from 0.886 to 0.887, a CR of 0.9255, and an AVE of 0.8054. These figures, well above the recommended thresholds, confirm the reliability and validity of the constructs.

Overall, the study's measures exhibit high reliability and validity, lending substantial credibility to our findings. The scales used are demonstrably suitable for addressing the research questions, ensuring confidence in the study's conclusions regarding the intricate factors influencing drug use among adolescents.

Table 2Reliability and validity

main cross section	Cronbach's alpha value	Kmo value	Number of items
Smoking level	0.824	0.714 _	3
The effectiveness of government anti-drug propaganda	0.823	0.698 _	3
drug use	0.879	0.7 32	3

variable	Measurement items	factor loading	Cronbach's alpha	Combination reliability (CR)	Average extraction volume (AVE)
Smoking level	A2	0.854	0.824	0.8951 _	0.7399
	A3	0.882			
	A4	0.844			
The effectiveness of government anti-drug	B1	0.881	0.823	0.8954 _	0.7408
	B2	0.888			
	B3	0.811			

propaganda					
drug use	C1	0.886	0.879	0.9255 _	0.8054
	C 2	0.887 _			
	C 3	0. 919			

Correlation analysis results

As shown Table 3, we examine the linear relationships between smoking, the effectiveness of government anti-drug propaganda, and drug use among adolescents under 25 in Yunnan Province. Utilizing the Collinear Pearson correlation coefficient, our analysis provides empirical validation for our four hypotheses, which explore these intricate relationships. The Pearson correlation coefficients, a measure of the strength and direction of linear relationships between two variables, reveal several key findings.

Firstly, the correlation between smoking level and the effectiveness of government anti-drug propaganda is -0.149, indicating a weak inverse relationship. This suggests that higher effectiveness in government anti-drug propaganda might slightly decrease smoking levels, providing some support for Hypotheses 1 and 3, which posit relationships between smoking and drug use and between government policies and drug use, respectively.

Secondly, the correlation coefficient of 0.272 between smoking level and drug use denotes a weak to moderate positive relationship. This aligns with Hypothesis 1 and offers empirical support to the idea that increased smoking is associated with higher drug use among adolescents.

Lastly, the correlation between the effectiveness of government anti-drug propaganda and drug use is -0.112, again indicating a weak inverse relationship. This finding is consistent with Hypothesis 3, suggesting that more effective government policies may be linked to reduced drug use.

These correlation coefficients, though indicating weak to moderate relationships, provide preliminary empirical evidence supporting the study's hypotheses. They lay the groundwork for further analysis, such as regression modeling, to delve deeper into these relationships. Thus, this section not only validates the hypotheses directionally but also strengthens the methodological robustness of the study, underpinning its overall validity and reinforcing the importance of these variables in understanding adolescent drug use.

Table 3Pearson correlation coefficient collinearity analysis table

	Smoking level	The effectiveness of government anti-drug propaganda	drug use
Smoking level	1		
The effectiveness of government anti-drug propaganda	- 0.149	1	
drug use	0.272	- 0.112	1

Multiple regression results

As shown Table 4, our study examined drug use among adolescents under 25 in Yunnan Province, focusing on the interplay of smoking, government anti-drug propaganda, and school drug prevention education. Employing hierarchical regression analysis, this section validates the study's four hypotheses, providing an in-depth look at how various factors contribute to adolescent drug use.

Firstly, the study finds that smoking levels among teenagers have a significant positive correlation with drug use, supporting Hypothesis 1. In Model M1, the coefficient is 0.274, rising to 0.396 in Model M2. This increase indicates that the relationship strengthens when controlling for other variables, highlighting smoking as a key predictor of drug use.

Model M2 introduces an interaction term between school drug prevention education and the extent of adolescent smoking, yielding a highly significant coefficient of -0.080. This supports Hypothesis 2, suggesting that effective school drug prevention education weakens the positive relationship between smoking and drug use. This finding emphasizes the potential impact of school-based interventions in mitigating smoking and drug use risks.

Regarding government anti-drug propaganda, the coefficients are -0.143 in Model M3 and -0.490 in Model M5, both significant, aligning with Hypothesis 3. This negative correlation suggests that effective government policies can notably reduce adolescent drug use. The marked increase in the coefficient from M3 to M5 implies that this relationship intensifies with the inclusion of additional predictors, underlining the importance of government interventions.

In Model M5, the coefficient for school drug prevention is -0.242, significantly supporting Hypothesis 4. It indicates that school drug prevention programs can enhance the

effectiveness of government policies in reducing drug use, emphasizing the role of educational institutions in this context.

Overall, the hierarchical regression analysis substantiates all four hypotheses, revealing significant and meaningful relationships between smoking, government policy effectiveness, school drug prevention, and adolescent drug use. These findings are not just statistically significant but also directionally consistent with the hypothesized relationships, showcasing a nuanced understanding of the interplay of these variables. The high statistical significance across the models ($p < 0.001$) bolsters confidence in these results.

These insights are invaluable for policymakers and educators, highlighting the effectiveness of school-based programs and government policies in combating adolescent drug use. Academically, this study contributes a validated model of factors influencing adolescent drug use, offering a framework that can be replicated or adapted in different contexts. The "Hypothesis Test Results [Analysis-Regression-Linearity]" section thus stands as a crucial component of the study, affirming its hypotheses and significantly enhancing the understanding of drug use dynamics among adolescents in Yunnan Province.

Table 4Hypothesis test results [Analysis-Regression-Linearity]Hierarchical regression results

variable	Teenagers taking drugs			
	M1	M2	M3	M5
Smoking levels among teenagers	0. 274 ***	0. 396 ***		
School Drug Prevention Education*Adolescent Smoking Extent		- 0.080 ***		
The effectiveness of government anti-drug propaganda			- 0.143 ***	- 0.490 ***
School drug prevention education*The effectiveness of government anti-drug propaganda				- 0.242 ***
gender	.241 ***	.241 ***	.302 ***	.247 ***

Educational qualifications	.032	.032	.082	.078
age	-.276 ***	-.274 ***	-.279 ***	-.281 ***
living expenses	-.068	-.059	-.037	-.023
R^2	0. 145	0. 146	0.092	0. 106
ΔR^2	0. 140	0. 141	0.088	0.101
f	34.369 ***	28.982 ***	20.685 ***	20.035 ***

Note: N= 1022; *represents P < 0.05, **represents P < 0.01, ***represents P < 0.001.

Discussion and Conclusion

Recommandation for Objective 1:

To address the correlation between adolescent smoking and drug abuse, it's essential to integrate smoking cessation education into school-based drug prevention curricula. This approach should encompass curriculum integration, focusing on the hazards and gateway nature of tobacco, along with specialized teacher training for effective classroom discussions. The incorporation of interactive learning tools, like apps and virtual reality, can further engage students. Regular program evaluation through surveys, monitoring smoking trends, and gathering feedback is critical. Additionally, community involvement through guest lectures and partnerships, coupled with an emphasis on mental health, can provide a holistic approach to reducing adolescent smoking and drug use.

Creating multi-purpose intervention centers in communities and schools offers a centralized resource for addressing adolescent smoking and drug abuse. These centers should be accessible and provide a range of services including educational resources, counseling, and medical assessments. Funding can be sourced collaboratively, and community input is vital for tailoring services. Regular evaluation, focusing on service utilization and substance abuse reduction, is necessary. The centers' welcoming environment, possibly enhanced with local art, is crucial for encouraging youth participation and fostering a sense of community ownership.

Recommandation for Objective 2:

Modernizing drug prevention education involves incorporating technology like mobile applications, online courses, and simulation software. Mobile apps can offer interactive learning and counseling, while online courses provide flexible, multimedia-rich learning experiences. Simulation software allows safe, immersive education on drug effects and coping strategies. Successful technology integration requires pedagogically sound

methods, ongoing teacher training, and ensuring access for all students. This approach, though technologically advanced, must be inclusive and continuously evaluated to ensure its effectiveness in drug prevention education.Integrating parents into drug and tobacco prevention strategies is vital. Schools should educate parents about drug trends and early signs of abuse, provide resource kits, and maintain open communication channels. Parents can also be guided in facilitating conversations about drug risks with their children. Collaborative interventions involving parents, teachers, and healthcare professionals are essential in cases of identified behavioral issues. The key is to foster a culture of openness and collaboration between parents and schools, enhancing the effectiveness of prevention efforts.

Recommandation for Objective 3:

Incorporating big data analytics and AI in public policy can revolutionize tackling drug abuse by identifying risk patterns. Collecting anonymized data from various sources, such as healthcare and law enforcement, allows AI to pinpoint high-risk demographics. However, ethical considerations, data security, and maintaining public trust are paramount. Insights should guide targeted interventions, necessitating collaboration among government, healthcare, and law enforcement. Ensuring data privacy and transparent, ethical use of AI is crucial for public acceptance. This strategy, if ethically managed, provides a powerful tool for proactive and effective drug abuse prevention.Revamping drug prevention education necessitates innovative approaches like Virtual Reality (VR). VR programs could vividly simulate the consequences of drug addiction, offering a more engaging and effective educational experience than traditional methods. Developed in collaboration with experts and ethically overseen, these programs should be integrated into a broader support system. Careful consideration of psychological impacts and user consent is essential. While initial costs may be high, the potential benefits in reducing drug abuse make VR a worthy investment in education reform.

Recommandation for Objective 4:

The "Drug Prevention Ambassadors" program, supported by creative competitions, leverages peer influence and creativity for drug abuse prevention. Student ambassadors, trained in drug abuse facts and communication skills, would lead educational and social media initiatives. Creative contests like poster and video challenges are designed to encourage wider student participation. Continuous evaluation of these programs is vital, focusing on engagement and impact. Funding and student recruitment are challenges, necessitating professional oversight and community partnerships. This approach aims to destigmatize drug prevention discussions and foster a proactive student community.

Revamping teacher training to include multidisciplinary drug prevention education and fostering partnerships with local communities and businesses are key strategies for effective drug prevention. Teachers should receive specialized training in public health, social work, and psychology, supplemented by online modules for up-to-date knowledge. Schools should also collaborate with local businesses and organizations for practical insights into drug abuse. Safety measures and meticulous planning for these activities are crucial. Regular feedback collection and analysis from all stakeholders will ensure the relevance and effectiveness of these initiatives. This approach extends education beyond the classroom, offering students a multifaceted understanding of drug abuse prevention.

Conclusion

This dissertation presents a comprehensive analysis of the factors driving drug use and smoking among adolescents under 25 in Yunnan Province, China, an area notably affected by these issues. Through an exhaustive methodology, including a literature review, hypothesis formulation, data collection from 1083 questionnaires across 13 drug treatment facilities, and analytical evaluation, the study aims to offer actionable insights and solutions.

The research was structured around four hypotheses: the correlation between smoking and drug use, the diminishing impact of school-based drug prevention education, the adverse effects of current government policies on drug abuse, and the amplification of governmental interventions through school education. The findings, based on substantial empirical data, support these hypotheses to varying extents and provide a foundation for targeted recommendations at individual, school, and government levels.

The implications of adolescent drug use are far-reaching, impacting not only individuals but entire communities. This research underscores the urgency for informed action, offering a strategic blueprint for policymakers in Yunnan Province and similar regions. Innovative propositions like increasing tobacco taxes and integrating AI for risk identification highlight the necessity of comprehensive, community-inclusive strategies.

The study's significance lies in its contribution to understanding the intricate dynamics of adolescent drug use and smoking in Yunnan Province. It aims to transcend academic discussions, prompting tangible changes and serving as an impetus for a concerted effort to tackle these challenges. By providing a detailed framework of solutions that involve various stakeholders, the dissertation seeks to catalyze a holistic and effective response to the pressing issue of drug use and smoking among adolescents in Yunnan and beyond.

Ethical Statement:

In accordance with international publication guidelines and our duty to uphold research ethics, we declare that we have no conflicts of interest and all respondents agreed to be interviewed and the research has considered all possible ethics implications throughout the research project. The risk and benefit to researchers, participants and others (for example, potentially stigmatised or marginalised groups) as a result of the research and the potential impact, knowledge exchange, dissemination activity and future re-use of the data has also been considered as part of the ethical research work.

References

1. *U.S. Department of Health and Human Services (2016). Facing addiction in America: The surgeon general's report on alcohol, drugs, and health. U.S. Department of Health and Human Services.*
2. *Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for drug abuse prevention. Psychological bulletin, 112(1), 64.*
3. *Wagenaar, A. C., Salois, M. J., & Komro, K. A. (2009). Effects of beverage alcohol price and tax levels on drinking: a meta-analysis of 1003 estimates from 112 studies. Addiction, 104(2), 179-190.*
4. *Connor, J. P., Gullo, M. J., White, A., & Kelly, A. B. (2014). Polydrug use: diagnostic challenges, patterns of use and health. Current Opinion in Psychiatry, 27(4), 269-275.*
5. *Kandel, D. B. (1975). Stages in adolescent involvement in drug use. Science, 190(4217), 912-914.*
6. *Kandel, D. B., Yamaguchi, K., & Chen, K. (1992). Stages of progression in drug involvement from adolescence to adulthood: Further evidence for the gateway theory. Journal of Studies on Alcohol, 53(5), 447-457.*
7. *Grant, B. F., Hasin, D. S., Chou, S. P., Stinson, F. S., & Dawson, D. A. (2006). Nicotine dependence and psychiatric disorders in the United States: Results from the national epidemiologic survey on alcohol and related conditions. Archives of General Psychiatry, 63(11), 1107–1115.*
8. *Vanyukov, M. M., Tarter, R. E., Kirillova, G. P., Kirisci, L., Reynolds, M. D., Kreek, M. J., ... & Ridenour, T. A. (2012). Common liability to addiction and "gateway hypothesis": Theoretical, empirical and evolutionary perspective. Drug and Alcohol Dependence, 123, S3-S17.*
9. *Kandel, D., & Logan, J. A. (1984). Patterns of drug use from adolescence to young adulthood: Periods of risk for initiation, continued use, and discontinuation. American Journal of Public Health, 74(7), 660-666.*

10. *Pacula, R. L., Chriqui, J. F., & King, J. (2005). Marijuana decriminalization: What does it mean in the United States? NBER Working Paper No. 9690.*
11. *Chaloupka, F. J., Grossman, M., & Tauras, J. A. (1999). Public policy and youth smoke. Journal of Policy Analysis and Management, 18(1), 3-19.*
12. *National Institute on Drug Abuse (NIDA). (2014). Preventing Drug Use among Children and Adolescents.*
13. *Botvin, G. J., Baker, E., Dusenbury, L., Botvin, E. M., & Diaz, T. (1995). Long-term follow-up results of a randomized drug abuse prevention trial in a white middle-class population. JAMA, 273(14), 1106-1112.*
14. *Faggiano, F., Vigna-Taglianti, F. D., Versino, E., Zambon, A., Borraccino, A., & Lemma, P. (2008). School-based prevention for illicit drugs use: A systematic review. Preventive Medicine, 46(5), 385-396.*

Appendices

Questionnaires Content

Hello! I'm doing research on " An empirical study of drug use and smoking, local government policy among adolescents ". Looking forward to your participation in the answer. This will help my dissertation analysis. Thanks!

1.Basic information

1.1 Gender:

1. Male _ 2. Female _

1.2 Education level:

1. Elementary school 2. Junior high school and below 3. High school, junior college 4 university

1.3 Your age:

1. Under 18 years old 2.18-20 years old 3.20-22 years old 4.22-25 years old

1.4 Your living expenses

1. Below 1,000 2. 1,000-2000 3. 2,000-3,000 4. Above 3,000 _ _

1.5The school has a drug prevention policy

1.Yes _ _2.No _ _

2 .Smoking status

	1 No often No same meaning	2 disagree	3 not bad	4 Agree	5strongly agree
1. you smoke frequently					
2. You have been smoking for a long time					
3. you are dependent on nicotine					

3.local government policy

	1 No often No Same meaning	2 disagree	3 not bad	4 Agree	5strongly agree
1. There have been many drug seizures by local authorities					
2. The local government arrests drug traffickers a lot					
3. The local government often conducts drug prevention activities					

4.drug use

	1 No often No Same meaning	2 disagree	3 okay	4 agree	5 strongly agree
1. You use drugs frequently					
2. How long have you been taking drugs					
3. You were heavily dependent on drugs					