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Risk Factors and Onset of Illicit Drug Use among Filipino Youth: A Cross-sectional Analysis of Sociodemographic and Environmental Influences

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ABSTRACT

Background and Objectives. The drug problem in the Philippines is influenced by various factors, but research on the specific risk factors and onset of drug use—an early predictor of severe drug abuse—is limited. This cross-sectional study aims to identify factors associated with the onset of illicit drug use, focusing on variables such as sex, perceived socioeconomic status, adverse life events (including physical, verbal, and sexual abuse, and bullying), adverse home environments (like family substance abuse and parental separation), and premorbidities (such as anxiety and depression). Understanding these factors is crucial since early drug use often predicts more severe abuse later.

Methods. This cross-sectional study involved 354 participants aged 7 to 34 years, all undergoing rehabilitation for at least three months. Data were collected through self-administered questionnaires at their rehabilitation centers. Regression analysis was used to examine the relationship between the onset of drug use and the identified risk factors.

Results. Regression analysis revealed that, apart from premorbidities, all the examined factors were significantly correlated with the onset of drug use. Specifically, being male, having higher affluence, experiencing more adverse life events, and living in a more adverse home environment were associated with an earlier onset of drug use. Among these factors, adverse life events and home environment were the strongest predictors of the onset of illicit drug use, while premorbidities did not show a significant relationship with drug use onset.

Conclusion. The study highlights that sex, socioeconomic status, adverse life events, and home environment are significant in the early onset of drug use, while premorbidities are not. Early intervention should focus on these key risk factors. A risk-focused approach, guided by biopsychosocial perspectives, is recommended. Targeted interventions should address adverse life events and home environments to prevent early drug use and subsequent abuse effectively.

Keywords: onset, risk factors, adverse life events, home environment, risk-focused approach

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INTRODUCTION

Drug abuse is a pervasive problem globally, and in the Philippines, this issue has persisted over the years.[1] Annual reports from 2013 to 2023 on admissions to Drug Abuse Treatment and Rehabilitation Centers (DATRCs) show more years with significant increase in admissions indicating an upward trend over the long term.[2] It is a critical area of focus due to its extensive effects, encompassing medical, social, economic, and criminal justice concerns.[3] Although numerous studies on illicit drug use among young populations exist globally, it remains understudied in the Philippines.[4]

According to National Institute on Drug Abuse (NIDA)[3] in the United States, prevention is the most effective strategy to address this growing problem. The most promising route to effective prevention of drug use in children and adolescents is through a risk-focused approach. Studies have shown that by identifying and addressing risk and protective factors in drug use, it is possible to prevent undesired health outcomes such as drug dependence.[5,6] Griffin and Botvin's[7] approach to drug use prevention aligns with a risk-focused strategy by systematically addressing underlying risk factors and equipping adolescents with skills and resources to make informed, healthy choices. The extent to which adolescents engage in substance use is often influenced by the negative pro-drug social pressures they experience. This approach works by boosting protective factors and eliminating or reducing risk factors for drug use.[3] In the Philippines, the Dangerous Drugs Board (DDB)[1] has adopted the United Nations Office on Drug and Crime's (UNODC) strategies, which include drug demand reduction and drug advocacy or awareness. Implementing prevention programs requires identifying causal and risk factors for drug use. This is complex, as no single factor determines drug abuse; it is an interplay of biological, environmental, and developmental factors.3 Thus, there is a need to understand the factors related to drug use in the Philippine context to be able to provide evidence-based prevention interventions.

Gender Differences

Studies have shown that gender is a significant predictor for drug use.[8,9] Men are more likely than women to use nearly all types of drugs.[10,11] Additionally, drug use among men is more frequently associated with emergency department visits and overdose deaths compared to women.[12] In the Philippines, government statistics also show a greater number of males engaging in drug use[1], mirroring global patterns. As cited in the UN's Policy Brief on gender and drugs[13], UNODC's World Drug Report shows that males are 2-3 times more likely to have used an illicit drug. However, females who use drugs often have more serious social, psychological, and health problems, and tend to develop the consequences of drug use faster than males, including more difficulty quitting and a higher likelihood of relapse.

Genetic Predisposition

Several studies have supported that people with a family history of illicit drug use have a greater predisposition to develop drug use later in life. Heritability estimates for substance use disorders vary, ranging from the lowest for hallucinogens (0.39) to the highest for cocaine use (0.72).[14,15] Research also indicates that genetic factors significantly impact the risk of developing alcohol and drug dependence, with heritability estimates often exceeding 50 percent.[16] According to NIDA[3], studies estimate that genetic factors account for between 40 and 60 percent of the susceptibility to drug use. In a review of literature on genetic epidemiology of various substance use disorders, Deak and Johnson[14] revealed that heritability estimates from twin studies suggest that genetic factors play a significant role in cannabis use disorder (CanUD) and opioid use disorder, with estimates ranging from 0.51 to 0.59 for CanUD and around 50% for opioid dependence. Studies also indicate that shared genetic and environmental influences affect the stages of cannabis use and abuse, with availability playing a major role in initiation and abuse.[17] Cocaine use disorder (CocUD) heritability estimates vary widely from 0.40 to 0.80, with common genetic vulnerabilities shared with other substance use disorders (SUDs), particularly cannabis. Twin studies reveal common genetic factors among substance use (alcohol, tobacco, cannabis) and stronger genetic overlap among measures of problem use. A systematic review on genetic basis of cannabis use disorder found that several genes are implicated in cannabis use.[18]

Socio-economic Status

Studies on the social determinants of drug use show that the relationship between socio-economic status (SES) and drug use is complex and bi-directional. Low SES is associated with illicit drug use, and to a lesser extent, drug use can lower SES.[19] Low SES also precipitates a number of environmental risks such as limited access to resources, social support, and less parental supervision.[20-22] While some studies show significant associations between low SES and drug use, others do not.[23] In contrast, some studies indicate that higher childhood family SES was associated with increased alcohol and marijuana use in young adulthood.[24,25]

Psychological Disorders

Numerous researches have linked the presence of psychological disorders to increased risk for drug use. Those with mood and anxiety disorders are about twice more likely to abuse illicit drugs.[26] Adolescents with a history of mental disorders showed high rates of alcohol and illicit drug abuse, particularly those with anxiety, depression, post- traumatic stress disorder, eating disorder or behavior disorders, and were significantly more likely to progress from nonuse to first use and from use to problematic use.[26-28] Other psychological disorders are associated with lifetime drug use dependency, including personality disorders, social phobia, bipolar disorder, and panic disorder.[11] Ilomaki et al.[29]

observed that about 50 percent of adolescents with phobic disorders developed substance dependence within three years after the onset of the phobia. Several studies also associated aggressive behaviors in childhood to the development of drug use problems later in life.[30]

Family Structure and Interaction

Family influence, especially during childhood, is a very important factor because adverse home environments can increase the risk of young people developing drug problems. Studies have shown that parental divorce in childhood is strongly associated with later drug use.[31,32] Other family-related risk factors associated with illicit drug use later in life include lower family cohesion[33,34], family conflicts, lack of parental supervision[35], and absence of a warm and emotionally supportive home environment[36]. According to NIDA[1], exposure of children to the following home conditions is attributed to a higher risk: ineffective parenting, chaotic home environment, lack of significant relationship with an adult, a caregiver who abuses drugs, suffers from mental illness, or engages in criminal behavior. In contrast, higher levels of parental involvement among adolescents were linked to lower rates of substance use such tobacco use, drunkenness, and illicit drug use.[37]

Adverse Life Events

Research has shown that adverse childhood experiences (ACES) are linked to the development of drug abuse behavior later in life. For example, experiencing multiple adverse events during childhood significantly increases the risk of early opioid initiation, as well as the likelihood of injection drug use and overdose.[38,39] ACEs were found to be prevalent among adults reporting stimulant use, with greater ACE exposure linked to earlier onset of use and significantly associated with both stimulant use and use disorders.[40] In addition, three forms of ACEs–sexual abuse, physical abuse, and exposure to parental domestic violence– are strongly linked with alcohol and drug dependence.[41] Interestingly, a study showed that cumulative ACEs are associated with greater odds of cannabis use and illicit drug use in females compared to males.[42] Furthermore, individuals who experienced secondary trauma in childhood, such as parental death or parental assault are twice as likely to develop drug use disorder.[43]

Early Onset of Illicit Drug Use

Several studies have noted that early onset of drug use predicts more serious drug abuse later in life.[44] For instance, among young adults in the United States (US), starting to use alcohol and marijuana at an early age is often connected to their unsanctioned use of prescription drugs, cocaine, crystal methamphetamine, and other illegal drugs.[45] Results from the national survey in the US between 2005-2018 has shown that the age of onset for cocaine or methamphetamine use is before the age of 20, raising significant concerns as substance use during adolescence can lead to poorer outcomes later in life.[44] Moreover, gateway drugs are also shown to influence the development of drug dependent behaviors later in life. Research showed that a significant number of people who use cannabis eventually use other illegal drugs.[46] In their historical analysis of the patterns of gateway drugs used by adolescents from 1976 to 2016, Keyes and colleagues[47] found that marijuana is now often the first substance used by adolescents and those who also use alcohol and cigarettes are becoming an increasingly high-risk group for marijuana use. In addition, Jordan and Andersen[48] reviewed various evidence suggesting that drug exposure starting in early adolescence significantly increases the risk of long-term substance use disorder primarily because the tendency for risk-taking during this developmental period heightens the likelihood of lifelong addiction. While teenagers aged 15-17 are the most likely to experiment with drugs, those who begin substance use before age 14, combined with early risk factors during this sensitive period, face the highest risk of developing abuse or dependence later in life. NIDA[1] also considers early drug use as a key factor in more serious abuse later in life.

As evidenced by literature, drug use is a multifactorial public health concern encompassing different aspects of an individual's life. Thus, this study utilized the biopsychosocial model to determine the risk factors that predict the early onset of illicit drug use. Specifically, it examines whether being male, having a lower socio-economic status, experiencing cumulative adverse events, and exhibiting symptoms of psychological disorders are associated with an earlier initiation of drug use. The variables considered in this study are categorized into Adverse Home Environment (AHE), which includes events occurring in the person's home or family, and Adverse Life Events (ALE), which encompass personal experiences of abuse or other adverse events. Table 1 outlines these variables.

Quantification of Variables

From Table 1, the following provides an elaboration on how each variable was quantified, as well as the level of measurement applied to each:

1. **Gender (Nominal Variable)**: Gender was measured as a **nominal variable**, with two categories: **Male** and **Female**. This classification allows for comparison between males and females in terms of their mean age of onset of illicit drug use.
2. **Perceived Socioeconomic Status (SES) (Nominal Variable)**: **Perceived SES** was measured based on the respondent's self-assessment of their family's financial situation. Two categories were used to reflect this perception: **"Poor"** and **"Just Right"**. These categories were created to reflect the individual's subjective view of their socioeconomic status.
3. **Adverse Home Environment (AHE) and Adverse Life Events (ALE) (Ordinal Variables)**: The variables for **AHE** and **ALE** were quantified as **ordinal variables**, which means that the variables reflect ordered categories

Table 1. Variables and Levels of Measurement Considered for Predicting Illicit Drug Use

	Variable	Definition	Level of Measurement
I.	***Gender***	Males vs. Females	Nominal
II.	***Socio-economic Status (SES)***	**Perceived socio-economic status:** Socio-economic status based on the respondent's perception, with levels: "Poor" and "Just right."	Nominal
III.	***Adverse Home Environment (AHE)***	**Family** refers to the **family of origin**, including both nuclear and extended family members, to avoid ambiguity.	
		Alcohol abuse in the family: Presence of alcohol abuse in the family while growing up.	Ordinal
		Drug abuse in the family: Presence of drug abuse in the family while growing up, distinct from mere substance use	Ordinal
		Psychological disorder in the family: Presence of a family member with a psychological or mental disorder while growing up.	Ordinal
		Suicidality in the family: Presence of a family member who committed suicide (successful or not) while growing up.	Ordinal
		Criminals in the family: Growing up with a family member who committed a crime.	Ordinal
		Unstable family life: Growing up in a family where members frequently fought.	Ordinal
		Separation of parents: Parents are separated, either legally or not.	Ordinal
IV.	***Adverse Life Events (ALE)***	**Physical abuse:** Direct experience of physical abuse.	Ordinal
		Verbal abuse: Direct experience of verbal abuse.	Ordinal
		Sexual abuse: Direct experience of sexual abuse.	Ordinal
		Bullying: Direct experience of bullying.	Ordinal
V.	***Psychological or Mental Disorders***	**Depression:** Presence of depressive symptoms before onset of drug use.	Interval
		Anxiety: Presence of symptoms of anxiety before onset of drug use.	Interval
		Delusion: Presence of delusions before onset of drug use.	Interval
		Hallucination: Presence of hallucinations before onset of drug use.	Interval
		Anger Control: Difficulty managing anger before onset of drug use.	Interval
		Suicide: Tried suicide or had suicidal thoughts before onset of drug use.	Interval

Table 2. Descriptive Statistics Showing Summary of Respondents' Profiles

Variable	N	Min	Max	Mean	Std. Deviation
Onset Age	343	7	34	16.49	4.240
Gender (Female)	356	0	1	0.14	0.348
Perceived SES	357	0	1	0.51	0.501
Adverse Home Environment (AHE)	339	0	7	1.88	1.755
Adverse Life Events (ALE)	342	0	4	1.68	1.216
Psychological Symptoms	326	0	6	1.81	1.646

based on the number of adverse experiences the respondent reported. For example, the **AHE** variable includes categories based on the number of adverse situations reported, such as alcohol abuse, drug abuse, and family instability. The more adverse experiences reported, the higher the score. The same principle was applied to **ALE**, which measured the frequency of negative life events such as physical abuse, verbal abuse, bullying, etc.

4. **Psychological Symptoms (Interval Variable)**: The psychological symptoms were quantified as **interval variables**. This was based on the total number of symptoms (such as anxiety, depression, anger control, and suicidal thoughts) reported by respondents before the onset of illicit drug use. The interval scale used allowed for precise measurement and comparison of psychological symptom severity across respondents.

METHODS

Research Methods

This study employed a quantitative research method using a cross-sectional survey design to examine the factors associated with the onset of illicit drug use among Filipino youth. The cross-sectional survey design allowed for the gathering of quantifiable data from a substantial number of respondents, enabling statistical analysis to identify patterns and relationships between the onset of drug use and various factors such as sex, perceived socioeconomic status, adverse home environment, and adverse life events.

Recruitment and data collection were carried out over a period of approximately three months, providing sufficient time to gather data. The study originally aimed to recruit 358 respondents, with an inclusive age range of 10 to 35 years.

However, the final dataset included 354 respondents, whose ages ranged from 7 to 34 years, drawn from five drug abuse treatment and rehabilitation centers (DATRCs) in Metro Manila and neighboring provinces. Variability in responses, as shown in Table 2, was observed across several key variables, including gender, perceived socioeconomic status, adverse home environments, life events, and psychological symptoms.

All respondents were admitted as "in-patients" to these rehabilitation centers, receiving treatment for substance use disorders at the time of data collection. Data were collected through self-administered questionnaires that were specifically developed and pre-tested for use in this study. The questionnaire was designed to measure sociodemographic factors (e.g., age, gender, perceived socioeconomic status), adverse life events (e.g., physical abuse, bullying), and psychological symptoms (e.g., anxiety, depression).

To ensure the validity and reliability of the instrument, the questionnaire underwent a pre-testing phase with a small sample of individuals similar to the target population. This pre-testing helped identify any ambiguities or issues with wording and allowed for adjustments to be made prior to the main data collection. In addition to the questionnaire, the research team ensured that all participants fully understood the purpose of the study and provided informed consent, following ethical guidelines.

Quantitative analysis, including descriptive statistics, regression analysis, analysis of variance (ANOVA), and t-tests, provided robust statistical insights into the significance and strength of these relationships. The use of multiple regression analysis further allowed for the examination of the combined effects of these factors, providing a comprehensive understanding of how these variables interact to influence the age of onset of drug use.

Ethical Considerations

This research adhered to strict ethical guidelines to ensure the protection and well- being of all participants. Informed consent was obtained from all respondents. Confidentiality and anonymity were rigorously maintained throughout the study to protect participants' privacy; all data were de-identified and securely stored. Participation was voluntary, and respondents were informed of their right to withdraw from the study at any time without any consequence. The study received ethical clearance from the relevant institutional review board, UP Manila Research Ethics Board (UPMREB), ensuring that all procedures met ethical standards for research involving human participants and exploring sensitive topics like drug use. Additionally, the questionnaires were designed to minimize distress, and participants had access to support services if any discomfort arose during the study.

RESULTS

Sociodemographic Profile of Respondents

The sociodemographic characteristics of the respondents, as summarized in Table 2, provide important context for understanding the factors influencing illicit drug use initiation. The sample consisted of individuals with a wide range of ages, with a mean age of onset for drug use at 16.49 years (SD = 4.240), spanning from 7 to 34 years. This variability suggests that age of initiation is influenced by a variety of factors beyond just chronological age.

Gender distribution within the sample was notably skewed, with only 14% of the respondents being female. This gender disparity is critical to consider when analyzing the results, as it may reflect gendered patterns in drug use and treatment seeking. The sample was composed entirely of "in-patient" individuals undergoing rehabilitation at drug abuse treatment and rehabilitation centers (DATRCs) in Metro Manila and surrounding areas. The specific selection criteria of the DATRCs emphasize the unique nature of this sample in the context of drug treatment populations.

Socioeconomic status (SES) was assessed based on the respondents' perceptions of their family's financial stability. A slight majority (51%) of the respondents reported coming from families that were not considered poor, indicating a moderate level of financial stability. The mean SES score of 0.51 (range 0 to 1) shows that respondents' families, on average, had a balanced distribution of perceived affluence.

When considering the impact of adverse home environments (AHE), the findings show that 71.8% of respondents reported experiencing at least one adverse childhood home condition. The mean number of adverse experiences reported was 1.88 (SD = 1.755), indicating a significant proportion of individuals who grew up in challenging home environments. This variability suggests that different levels of familial adversity may have contributed to the onset of illicit drug use.

Similarly, the majority of respondents (80.7%) had experienced at least one form of abuse or other adverse life events (ALE) during childhood. The mean number of forms of abuse reported was 1.68 (SD = 1.216), further emphasizing the role of early trauma in the initiation of drug use. These findings suggest that the emotional and psychological impact of such experiences may be a significant factor in the pathways leading to illicit drug use.

The respondents also reported experiencing an average of 2 psychological symptoms (M = 1.81, SD = 1.646) prior to the onset of drug use. Notably, 76% of participants had experienced at least one psychological symptom, such as depression or anxiety, prior to beginning drug use. This aligns with the theory that mental health struggles may contribute to the initiation of illicit drug use, although the specific relationship is nuanced.

Relationship of Sociodemographic and Psychological Factors with Age of Onset

The analysis of how sociodemographic and psychological factors relate to the age of onset of illicit drug use is presented in Table 3. Point-biserial correlations revealed a modest, positive relationship between gender and age of onset (r = 0.192, p = 0.001). This finding suggests that males tend to initiate drug use at a younger age compared to females. While the effect size is small, the statistical significance indicates that this gender difference is not likely to have occurred by chance.

A negative correlation was found between perceived SES and the age of onset of drug use (r = -0.120, p = 0.022), suggesting that individuals from families perceived to have higher socioeconomic status are more likely to begin using illicit drugs at an earlier age. This relationship may point to greater access to substances or exposure to environments where drug use is more prevalent, even in families that are financially stable.

Table 4 further explores the relationship between age of onset and various factors using Pearson's correlation coefficients. The results demonstrate a range of significant relationships. A negative, statistically significant correlation was observed between age of onset and both adverse home environments (r = -0.214, p = 0.000) and adverse life events (r = -0.141, p = 0.009). These findings highlight that those individuals who experienced more adversity in their home environments and those who underwent more forms of abuse tended to start using illicit drugs at a younger age. This supports the hypothesis that early life stressors, such as family dysfunction or abuse, can precipitate early drug use initiation.

Interestingly, psychological symptoms were not significantly correlated with the age of onset of illicit drug use (r = -0.019, p = 0.378). This suggests that, in this sample, the presence of mental health symptoms prior to drug use did not have a strong influence on the timing of first use, although this may warrant further exploration in future research.

Table 3. Point-Biserial Correlation of Age of Onset of Illicit Drug Use by Gender and Perceived SES

Variable	Group	Point-Biserial Correlation (r)	Significance (*p*-value)
Gender	Male Female	0.192**	0.001
Perceived SES	Poor Just Right	-0.120*	0.022

*Note: * – p <0.05, ** – p <0.01*

Table 4. Correlation of Factors with Age of Onset of Illicit Drug Use

Factors	Onset Age	
	r	*p*-value
Female	0.192**	0.001
Perceived SES	-0.120*	0.022
Adverse Home Environment (AHE)	-0.214**	0.000
Adverse Life Events (ALE)	-0.141**	0.009
Psychological Symptoms	-0.019	0.378

*Note: * – p <0.05, ** – p <0.01*

Multiple Regression Analysis

A multiple regression model was constructed to further investigate the predictive value of sociodemographic and psychological factors on the age of onset of illicit drug use. The model included gender, perceived SES, AHE, ALE, and psychological symptoms as predictors. The overall model was significant (F = 8.274, p = 0.000), explaining 13% of the variability in age of onset (R^2 = 0.13). This indicates that while the model accounts for some variability in age of onset, other unmeasured factors likely play a role.

The regression coefficients, as presented in Table 5, provide additional insight into the relative contributions of each predictor. Gender emerged as the most significant predictor, with females starting drug use, on average, 3.03 years later than males (b = 3.030, p <0.001). This supports the observed gender differences in drug use initiation.

Among the other predictors, adverse home environment (b = -0.534, p <0.001) and adverse life events (b = -0.449, p = 0.031) were also significant, indicating that individuals who experienced greater adversity in their home lives or who were exposed to more forms of abuse tended to initiate drug use at younger ages. In contrast, higher perceived socioeconomic status was associated with an earlier onset of drug use (b = - 1.187, p = 0.012), suggesting that individuals from more affluent backgrounds may have greater access to drugs or experience environments where illicit drug use is more normalized.

Interestingly, psychological symptoms (b = 0.072, p = 0.626) did not emerge as a significant predictor of age of

Table 5. Coefficients for Multiple Regression Model Predicting Age of Onset of Illicit Drug Use

Factors of Drug Use Onset	B	Std. Error	*p*-value	95% CI for B	Zero-order	Partial	Part
Female	3.030**	0.702	<0.001	[1.649, 4.411]	0.192	0.252	0.242
Perceived SES	-1.187*	0.468	0.012	[-2.108, 0.267]	-0.120	-0.151	-0.142
Adverse Home Environment (AHE)	-0.534**	0.141	<0.001	[-0.811, -0.257]	-0.214	-0.223	-0.213
Adverse Life Events (ALE)	-0.449*	0.207	0.031	[-0.856, -0.042]	-0.141	-0.130	-0.122
Psychological Symptoms	0.072	0.148	0.626	[-0.219, 0.364]	-0.019	0.029	0.027

*Note: * – p <0.05, ** – p <0.01*

onset, suggesting that mental health symptoms alone do not significantly influence when individuals first use illicit drugs in this sample.

DISCUSSION

Overview of Risk Factors

While the correlations identified in this study are statistically significant, their weak effect sizes suggest that the sociodemographic and psychological factors considered here account for only a small portion of the variance in the age of drug use initiation. The relationships observed are complex, and many additional, unmeasured factors may contribute to the onset of drug use. While risk factors for illicit drug use are well-established, predictors of early initiation remain underexplored. This study supports some existing theories while challenging others. Consistent with prior research, males initiate drug use earlier than females[49], with a three-year gender gap predicted by the model. This can be attributed to males' higher propensity for risk-taking behaviors and the social stigma faced by females regarding substance use.[13,50] These gender differences highlight the need for targeted prevention strategies that take into account gender-specific challenges.

The study also emphasizes the complex role of socio-environmental factors such as socioeconomic status (SES) and adverse life experiences. Surprisingly, individuals from higher SES backgrounds initiated drug use earlier than those from lower SES, challenging the typical association between lower SES and increased drug use risk.[19,20] This may be due to greater access to resources, including illicit substances, suggesting that SES influences drug initiation through exposure to social networks and drugs. Additionally, adverse home environments (AHE) and life events (ALE) were significant predictors of earlier drug use. Those from unstable family backgrounds, marked by parental substance abuse or abuse, were more likely to initiate drug use earlier. Cumulative exposure to various forms of abuse and bullying further reinforced the idea that multiple adverse experiences increase vulnerability to substance use.

Gender and Age of Onset

A key finding of this study was the gender difference in the age of drug use initiation. Males began using illicit drugs significantly earlier than females, with a predicted three-year gap. The correlation between gender and age of onset ($r = 0.192$, $p = 0.001$) suggests that, on average, males are more likely to initiate drug use at a younger age. However, the weak effect size of this correlation indicates that gender is not the sole or most dominant factor in early drug use initiation. This result reflects a complex interplay of biological and sociocultural factors: males may be more predisposed to risk-taking behaviors[49], while females may internalize the societal stigma surrounding drug use[13,50]. These findings underscore the need for gender-sensitive prevention programs, as interventions may need to address the distinct challenges and social pressures faced by each gender.

Socioeconomic Status and Early Drug Use

An unexpected finding in this study was that individuals from more affluent backgrounds engaged in drug use behaviors earlier than those from lower-income families. While many studies suggest that lower socioeconomic status (SES) is a risk factor for drug use[19,20], this study presents a contrasting relationship. Higher SES may facilitate greater access to resources, including illicit drugs, which could account for this phenomenon, despite mixed findings in existing literature.[4] Additionally, individuals from higher SES backgrounds may have more opportunities to socialize in environments where drug use is normalized, thus increasing their exposure to illicit substances. This finding aligns with a national health survey in the U.S., which indicated that individuals with higher annual household incomes were more likely to initiate drug use, such as cocaine and methamphetamine, at an earlier age.[44]

The weak correlation ($r = -0.120$, $p = 0.022$) between perceived SES and the age of onset further suggests that SES alone is not a strong predictor of drug use initiation, highlighting the multifactorial nature of drug use behaviors. These findings emphasize the need for more nuanced research that explores how SES interacts with other risk factors, such as peer influences, family dynamics, and access to drugs, to provide a more comprehensive understanding of how SES impacts drug use onset.

Adverse Home Environment (AHE) and Adverse Life Events (ALE)

This study explored the role of Adverse Home Environment (AHE) and Adverse Life Events (ALE) as predictors of early drug use. Individuals from more challenging home environments and those exposed to a greater number of life events initiated drug use at an earlier age. AHE factors, such as family dysfunction, parental substance abuse, and abuse or parental separation, suggest genetic predispositions to substance abuse and psychological disorders[16,51] and are well-established risk factors for drug use[1,31,25].

A stronger correlation was found between AHE and age of onset ($r = -0.214$, $p = 0.000$) than between ALE and age of onset ($r = -0.141$, $p = 0.009$), indicating that familial factors may have a more significant impact. Both AHE and ALE were significant predictors of drug use, supporting the idea that cumulative exposure to adversity increases early drug initiation.[52,53] These findings highlight the need for interventions that address family dysfunction and trauma to prevent early drug use.

Additionally, the study found that multiple forms of abuse—physical, verbal, sexual abuse, and bullying—were linked to earlier drug use, consistent with existing research showing that early traumatic experiences increase the risk of substance use.[52-54] The correlation between AHE and ALE suggests that individuals from chaotic environments are

more likely to use drugs as a coping mechanism. Notably, females were more likely to experience abuse and chaotic home environments, which may have led to a delayed onset of drug use due to other mitigating factors. This highlights that experiences triggering high emotional stress not only increase an individual's risk of drug use[55] but also accelerate the onset of drug use. This further underscores the importance of targeted interventions that focus on familial instability and provide comprehensive support for at-risk youth.

Psychological Disorders and Early Drug Use

Interestingly, this study did not find a significant relationship between psychological symptoms and the age of drug use initiation ($r = -0.019$, $p = 0.378$), despite the strong association between substance abuse and mental health disorders documented in existing literature.[1,26] This absence of correlation could suggest that participants may not have been fully aware of their psychological struggles or may not have recognized these symptoms as contributing to their drug use. This highlights the importance of mental health awareness and early intervention to prevent self-medication behaviors. Individuals who do not recognize conditions such as anxiety, depression, or stress may turn to drugs as a coping mechanism, potentially leading to substance abuse and dependence over time.

The lack of a clear relationship between psychological disorders and drug use initiation in this study is consistent with broader research indicating that individuals with substance use disorders often fail to identify or acknowledge their psychological issues.[56]

This lack of awareness can impede individuals from seeking appropriate treatment, exacerbating both their mental health struggles and substance abuse. Without recognizing their conditions, individuals may be more likely to resort to drugs to cope, perpetuating a cycle of untreated mental health problems and increasing the risk of addiction.[54,57] Thus, enhancing mental health education and access to treatment is essential in breaking this cycle and preventing self-medication.

The comorbidity between substance use and mood and anxiety disorders is well- documented in existing literature.[1,26] Mental and addictive disorders contribute significantly to the global disease burden, as indicated in the Global Burden of Disease report, with these disorders together accounting for 7% of the global disease burden in terms of disability-adjusted life years (DALYs).58 These disorders affect over 1 billion people worldwide and contribute to 19% of all years lived with disability.[59,60] This highlights the urgent need for improved mental health awareness, better screening, and integrated prevention strategies within drug use programs to address the intersection of mental health and substance abuse.

Model Limitations and Implications

While the findings of this study provide valuable insights into the predictors of early drug use initiation, the weak to moderate correlations between variables such as gender, SES, AHE, ALE, and psychological symptoms suggest that these factors only partially explain the variability in drug use onset. The model accounted for only 13% of the variability, indicating that many other factors—such as genetic predispositions, peer influences, and individual personality traits—likely contribute to the timing of drug use initiation. Nevertheless, this is a significant improvement over using the mean age as a predictive measure. This study highlights that cumulative exposure to adverse home environments and adverse life experiences are substantial risk factors for early drug use. While research on the association between early drug use and later drug dependency is mixed[61], early drug use significantly increases the likelihood of developing more severe drug problems later in life[1]. Research has shown that individuals who begin using drugs at a younger age are more likely to engage in more frequent and intense drug use over time, which can lead to addiction. This heightened risk is due to several factors, including the impact of drugs on the developing brain, increased opportunities for continued drug use, and the potential for early drug use experiences to establish patterns of behavior or habits that are difficult to change.[62,63]

CONCLUSION

This study highlights the complex factors influencing early drug use initiation, with gender, socioeconomic status, and adverse environmental factors playing significant roles. Males tend to begin drug use at a younger age, and individuals from more affluent backgrounds may also initiate use earlier, challenging conventional patterns. Adverse home environments and life events, such as familial instability and trauma, are strongly linked to early initiation, emphasizing the need for targeted prevention efforts.

However, the weak to moderate correlations found suggest that other factors—such as genetics, peer influences, and psychological issues—also contribute to the variability in drug use onset. Although psychological symptoms were not directly correlated with early use, their role in substance use disorders warrants further study.

Effective prevention and intervention strategies should adopt a holistic approach, addressing not only environmental and individual factors but also sociocultural and psychological influences. The study's limitations, including its narrow sample and design, call for future research to explore more diverse populations and consider additional variables to gain a deeper understanding of the drivers behind early drug use. The small proportion of variability in age of onset explained by the factors studied suggests that broader societal, psychological, and environmental influences remain to be explored further.

Policy and Program Recommendations

Based on the findings of this study, the following policy and program recommendations are proposed to improve preventive drug education (PDE) and drug prevention efforts

in the Philippines, with a focus on comprehensive, multi-sectoral strategies. The Universal Prevention Curriculum (UPC), targeting schools, communities, workplaces, and media, provides a framework for these initiatives, and government agencies such as the Department of Education (DepEd), the Department of Health (DOH), the Department of Labor and Employment (DOLE), the Philippine Information Agency (PIA), and the Department of Social Welfare and Development (DSWD) can play key roles in its implementation.

1. *Gender-specific Programs*
   Implement gender-sensitive drug prevention programs targeting male risk-taking behaviors and addressing stigma for females. DepEd, DOH, and DSWD should collaborate to develop these initiatives within schools.

2. *Socioeconomic Focus*
   Expand drug education programs in affluent communities, addressing earlier drug use in wealthier youth. DepEd and PIA should focus on these areas, alongside workplace programs from DOLE.

3. *Family Support*
   Strengthen family support through counseling and stability programs. DepEd, DSWD, and local barangays should collaborate to help families facing domestic issues, with faith-based organizations contributing to community outreach.

4. *Integrated Mental Health Support*
   Integrate mental health screenings into drug prevention programs, focusing on early identification of at-risk individuals. DepEd, DOH, and DSWD should work together to provide mental health support alongside drug prevention.

5. *Abuse Prevention*
   Address trauma and abuse through specialized programs and trauma-informed care. DSWD, DepEd, and community organizations should offer support for children affected by abuse.

6. *Early Intervention*
   Expand early intervention programs within schools to teach coping skills and resilience. DepEd should integrate these into the curriculum to reduce the risk of early drug use.

7. *Collaborative Sector Efforts*
   Ensure a multi-sectoral approach to drug prevention involving DepEd, DOH, DOLE, PIA, DSWD, barangays, faith-based organizations, and the media. This collaboration will strengthen the impact of preventive drug education at all levels of society.

By building on the Universal Prevention Curriculum and engaging multiple sectors, these recommendations aim to create a holistic approach to drug prevention that targets the root causes of drug use while offering support systems for at-risk individuals. Implementing these strategies will help mitigate the early onset of drug use and foster healthier, more resilient communities.

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Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

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