

## **A Comparative Study To Assess Knowledge Regarding Substance Abuse And Its Impact On Health Among Rural And Urban Adolescents In Selected Secondary And Higher Secondary Schools Of West Bengal, With A View To Developing An Information Booklet**

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### **KEYWORDS**

Substance Abuse, Knowledge Regarding Substance Abuse, Impact on Health, Adolescents, Rural Adolescents, Urban Adolescents, Information Booklet.

### **ABSTRACT**

**Introduction:** Adolescent substance abuse represents a major public health concern, especially in developing areas such as West Bengal, India. Adolescents often lack adequate knowledge about the harmful effects of substance use, which increases their vulnerability. The objective of this study is to evaluate and compare the level of awareness about substance abuse and its health consequences among adolescents from rural and urban areas, and to create an informational booklet to enhance their understanding.

**Methods:** A cross-sectional comparative study was conducted among 120 adolescents (60 rural and 60 urban) from selected secondary and higher secondary schools in West Bengal using purposive sampling.

A structured questionnaire was utilized to gather data on participants' knowledge. Descriptive statistics (mean, median, standard deviation) and inferential statistics (independent t-test and chi-square test) were used to analyse the data. Additionally, an information booklet was developed and validated by experts.

**Results:** The majority of participants in both rural (66.67%) and urban (75%) groups demonstrated poor knowledge regarding substance abuse. The mean knowledge score was slightly higher among rural adolescents ( $M = 15.27$ ,  $SD = 4.91$ ) compared to urban adolescents ( $M = 13.88$ ,  $SD = 4.40$ ), but the difference was not statistically significant ( $t = 1.15$ ,  $p > .05$ ). A significant association was found between class level and knowledge ( $\chi^2 = 20.40$ ,  $p = .009$ ), while no significant associations were found with age group or family history of substance use. An information booklet titled “*Understanding Substance Abuse: A Guide for Adolescents*” was developed and validated with a Content Validity Index (CVI) of 0.92.

**Discussion:** The study highlights insufficient knowledge about substance abuse among adolescents in both rural and urban areas. Although rural students had slightly better scores, the overall knowledge was unsatisfactory. Academic class showed a significant influence on knowledge levels, suggesting that curriculum-integrated awareness programs could be effective in bridging this knowledge gap.

**Conclusion:** Both rural and urban adolescents possess inadequate knowledge about the health impacts of substance abuse. Targeted educational interventions, such as the validated information booklet developed in this study, are necessary to enhance awareness and promote healthy behaviours among adolescents.

## **1. Introduction**

### **Background of the Study**

Substance abuse during adolescence is a pressing global and national concern that has far reaching implications for individual health, social functioning, and community well-being. Adolescence, defined by the World Health Organization as the period between 10 and 19 years of age, is marked by rapid biological, emotional, and cognitive development, making adolescents particularly vulnerable to experimenting with psychoactive substances (WHO, 2021). The use of substances such as alcohol, tobacco, cannabis, and inhalants can interfere with brain development, academic achievement, and interpersonal relationships, and it often sets the stage for addiction in adulthood (UNODC, 2018).

In India, the problem of adolescent substance abuse has been steadily growing. According to the national report by the Ministry of Social Justice and Empowerment and the National Drug Dependence Treatment Centre (NDDTC), AIIMS, nearly 14.6% of the population aged 10–75 years uses alcohol, and a significant percentage of users are adolescents (NDDTC & AIIMS, 2019). The report also highlights that substances such as inhalants are predominantly used by children and adolescents, particularly those from disadvantaged backgrounds.

Various socio-demographic and environmental factors contribute to substance use among adolescents. These include peer influence, lack of parental supervision, media portrayal of substance use, low academic performance, and socio-economic stress (Gupta et al., 2019). Importantly, the context of residence—rural or urban—plays a significant role in shaping adolescents' exposure, attitudes, and behaviors regarding substance use. Urban adolescents are often exposed to a fast-paced lifestyle, easy access to substances, and modern peer culture, which may encourage experimental use. In contrast, rural adolescents may face different challenges such as lack of recreational activities, educational barriers, and poor access to mental health services, which can also contribute to substance use (Patel & Mishra, 2020).

West Bengal, as a socio-culturally diverse state, reflects this urban-rural divide in terms of access to education, health information, and social support systems. Research in the state has pointed to significant knowledge gaps and misconceptions about substance use and its effects among school-going adolescents (Chatterjee et al., 2020). Moreover, inadequate health education in schools and the absence of youth-targeted awareness programs exacerbate the situation. While some urban schools may have occasional awareness programs, rural schools often lack such interventions, leading to disparities in knowledge and attitudes (Singh & Verma, 2017).

Given these observations, it becomes essential to conduct a comparative study that assesses the level of knowledge regarding substance abuse and its health impacts among adolescents from rural and urban settings. Understanding these differences can aid in designing culturally and contextually appropriate interventions. Furthermore, developing an informative booklet based on the study findings can serve as a valuable educational tool to enhance awareness, reduce stigma, and promote healthy behaviours among school students.

This study aims to assess and compare the knowledge regarding substance abuse and its impact on health among rural and urban adolescents in selected secondary and higher secondary schools of West Bengal. The findings will help in the development of an evidence-based information booklet tailored to address the specific needs of both groups, ultimately contributing to preventive education and awareness.

### **Need of the Study**

Substance abuse among adolescents has become a major challenge for public health systems globally, and India is no exception. Adolescents are more susceptible to experimenting with tobacco, alcohol, cannabis, and inhalants due to their developmental stage, peer pressure, curiosity, and lack of awareness regarding the harmful consequences of such substances (Kumar & Raut, 2016). Early initiation of substance use is associated with poor academic performance, mental health disorders, increased risk of accidents, and future substance dependence (UNODC, 2018).

According to the Magnitude of Substance Use in India report by NDDTC and AIIMS (2019), a considerable proportion of substance users begin usage in adolescence, making early intervention critical. Adolescents often lack accurate information about the short- and longterm health effects of substance use, which increases their vulnerability to experimentation and addiction. The report also stressed the urgency for educational interventions, especially at the school level, where awareness and knowledge are often insufficient or absent.

In the Indian context, particularly in a diverse state like West Bengal, rural and urban adolescents are exposed to different environmental, cultural, and socio-economic risk factors that influence substance use behaviour. Urban adolescents may be more exposed to media and have easier access to substances, while rural adolescents

may suffer from poor educational resources, lack of supervision, and limited access to healthcare or support systems (Das et al., 2021). Despite these contextual differences, there is a lack of comparative data that highlights the knowledge differences between these two populations. Understanding these differences is essential for planning effective, location-specific awareness and prevention strategies.

Previous studies (Patel & Mishra, 2020; Chatterjee et al., 2020) have shown that awareness programs, if implemented correctly, can significantly influence adolescent knowledge and attitudes toward substance abuse. Moreover, the effectiveness of school-based education in preventing substance use is well-established (Tripathi & Lal, 2017). Unfortunately, such programs are either inconsistently delivered or completely absent in many schools, especially in rural areas. Yet, many schools, especially in rural areas, do not integrate health education related to substance abuse into their curriculum, leaving students unaware of the consequences.

Even in urban schools where awareness programs may exist, they are often sporadic and not tailored to adolescent-specific cognitive and emotional levels.

There is a clear need for the development of a comprehensive, age-appropriate, and evidence based information booklet to educate adolescents about the harmful effects of substance abuse. Such a tool can enhance awareness, correct misconceptions, and encourage healthy decision making among adolescents. It is not only a preventive step but also an empowering one, enabling students to resist peer pressure and act as informed individuals within their communities (Gupta et al., 2019).

Furthermore, aligning with the National Education Policy (2020), which emphasizes health education and life skills in schools, this study can contribute to integrating substance abuse awareness in the formal education system. By identifying the differential needs of rural and urban adolescents, the study can support the creation of more equitable and context-specific health education strategies.

Therefore, a comparative assessment of knowledge regarding substance abuse among rural and urban adolescents is urgently needed. The outcomes will serve as a foundation for developing a structured, evidence-based, and adolescent-friendly information booklet that can be used by educators, counsellors, and health professionals across school settings in West Bengal and potentially beyond.

## **2. Research Methods**

### **Research Approach**

The study adopts a **quantitative research approach** to systematically assess and compare the knowledge regarding substance abuse and its health impact among rural and urban adolescents.

### **Research Design**

A **comparative cross-sectional survey design** is used to assess and compare knowledge levels between rural and urban school-going adolescents at a single point in time.

### **Variables**

**Study Variables:** Knowledge regarding substance abuse and its impact on health

**Demographic Variables:** Gender, age, religion, type of family, habitat, Family history of substance abuse, parent occupation and parent education.

### **Setting of the Study**

The study is conducted in selected secondary and higher secondary schools located in both rural and urban areas of West Bengal, India.

### **Population**

The target population for the study comprises adolescents (13–19 years) studying in selected secondary and higher secondary schools of rural and urban areas in West Bengal.

### **Sample Size**

The sample is consisting of approximately 120 adolescents, with 60 participants each from rural and urban schools respectively.

### Sampling Technique:

A **non-probability convenience sampling** technique was used to select both the schools and the student participants. Two schools were chosen based on accessibility and administrative approval-one each from urban and rural areas. Within each selected school, adolescent students who were available and consented were included in the study.

### Inclusion Criteria

- Adolescents aged between 13 and 19 years.
- Enrolled in selected secondary and higher secondary schools.
- Willing to participate and provide informed consent .

### Exclusion Criteria

- Adolescents who are absent on the day of data collection.

### Tool for Data Collection

A structured, self-administered questionnaire was used to assess:

- Demographic variables
- Knowledge regarding substance abuse and its health impacts

The questionnaire was developed by the researcher with guidance from subject experts and validated through a pilot study.

### Scoring and Interpretation

- **Good Knowledge: >80% i.e. >24**
- **Average Knowledge: 60–80% i.e.  $\geq 18$  to  $\leq 24$**
- **Poor Knowledge: <60% i.e. <18**

### Development of the Information Booklet

Based on the findings of the study, an information booklet on substance abuse and its health impacts will be developed. The content will be age-appropriate, pictorial, and easy to understand for adolescents.

## 3. Results

Data analysis was done on the basis of objectives. Data was analysed using descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics (t-test, chi-square test) to compare knowledge scores between rural and urban groups. Statistical significance was set at  $p < 0.05$ .

**Table 1:** Sociodemographic Characteristics of Rural and Urban Adolescents

n = 120

Sl. No.	Sample Characteristic	Category	Rural (n = 60)		Urban (n = 60)	
			Frequency	%	Frequency	%
1.	Age (in years)	13	—	—	7	11.67
		14	22	36.67	13	21.67
		15	17	28.33	13	21.67
		16	14	23.33	11	18.33
		17	4	6.67	10	16.67
		18	—	—	5	8.33
		19	—	—	1	1.67

2.	Gender	Male	38	63.33	34	56.67
		Female	22	36.67	26	43.33
3.	Religion	Hindu	59	98.33	60	100.00
		Muslim	1	1.67	0	0.00
		Christian	0	0.00	0	0.00
		Others	0	0.00	0	0.00
4.	Class	VIII	28	46.67	11	18.33
		IX	22	36.67	10	16.67
		X	10	16.67	21	35.00
		XI	—	—	5	8.33
		XII	—	—	13	21.67
5.	Type of Family	Nuclear	52	86.67	40	66.67
		Joint	8	13.33	19	31.67
		Extended	—	—	1	1.67
6.	Number of Siblings	1	19	31.67	24	40.00
		2	24	40.00	17	28.33
		3	17	28.33	17	28.33
		4	0	0.00	2	3.33
7.	Living Status of Father	Stay with family	48	80	55	91.66
		Stay far due to job	9	15	3	5
		Not alive	1	1.66	1	1.66
		Separated	2	3.33	1	1.66
8.	Living Status of Mother	Stay with family	56	93.33	57	95
		Stay far due to job	4	6.66	2	3.33
		Not alive	0	—	1	1.66
		Separated	0	—	0	—

Data presented in table-1 shows that Participants ranged in age from 13 to 19 years. In the rural group, the most common age was 14 years (36.67%), followed by 15 years (28.33%), 16 years (23.33%), and 17 years (6.67%). No participants in the rural group were aged 13, 18, or 19 years. In the urban group, participants were more evenly distributed, with 14 and 15 years each accounting for 21.67%, 16 years for 18.33%, and 17 years for 16.67%. Additionally, 11.67% were aged 13, 8.33% were 18 years old, and 1.67% were 19 years old.

On the basis of gender, among rural participants, 63.33% were male and 36.67% were female. In contrast, the urban group comprised 56.67% male and 43.33% female participants.

The majority of participants in both groups were Hindu, with 98.33% in the rural group and 100% in the urban group. Only 1.67% of rural participants identified as Muslim; no participants in either group identified as Christian or other religions.

On the basis of standard of class, in the rural group, 46.67% were in class VIII, 36.67% in class IX, and 16.67% in class X. In the urban group, 35% were in class X, 21.67% in class XII, 18.33% in class VIII, 16.67% in class IX, and 8.33% in class XI. No rural participants were enrolled in classes XI or XII.

A majority of rural participants belonged to nuclear families (86.67%), while 13.33% were from joint families. In the urban group, 66.67% were from nuclear families, 31.67% from joint families, and 1.67% from extended families.

Among rural participants, 40% had two siblings, 31.67% had one sibling, and 28.33% had three siblings. In the urban group, 40% had one sibling, 28.33% had two siblings, 28.33% had three siblings, and 3.33% had four siblings.

Most rural participants reported that their fathers lived with the family (80%), while 15% reported fathers staying far due to employment, 1.66% reported their fathers as deceased, and 3.33% reported separation. In the urban group, 91.66% reported fathers staying with the family, 5% staying away for work, and 1.66% each reporting the father as deceased or separated.

The majority of participants in both groups reported that their mothers stayed with the family 93.33% in the rural group and 95% in the urban group. A small percentage reported mothers staying away due to employment (6.66% rural, 3.33% urban). One urban participant reported their mother as deceased; none reported separation.

Table 2: Distribution of the Adolescents by their parents' education status

n=120

Sl. No.	Sample Characteristics	Urban (n=60)		Rural (n=60)	
1.	Father's Education Status	Frequency	%	Frequency	%
	Illiterate	3	5.0	4	6.7
	Only Signature	11	18.3	7	11.7
	Primary	6	10.0	10	16.7
	Upper Primary	7	11.7	16	26.7
	Secondary	18	30.0	8	13.3
	Higher Secondary	9	15.0	13	21.7
	Graduate and above	6	10.0	2	3.3
2.	Mother's Education Status	Frequency	%	Frequency	%
	Illiterate	1	1.7	6	10.0
	Only Signature	11	18.3	10	16.7
	Primary	8	13.3	7	11.7
	Upper Primary	8	13.3	12	20.0
	Secondary	19	31.7	11	18.3
	Higher Secondary	10	16.7	11	18.3
	Graduate and above	3	5.0	3	5.0

Data presented in table-2 shows that a higher percentage of urban fathers were educated up to the secondary level (30%), while the majority of rural fathers had education up to upper primary (26.7%) and higher secondary (21.7%). Among mothers, urban mothers had a higher rate of secondary education (31.7%), whereas rural mothers were more distributed across upper primary (20%) and secondary (18.3%). Illiteracy among mothers was significantly higher in rural areas (10%) compared to urban areas (1.7%).



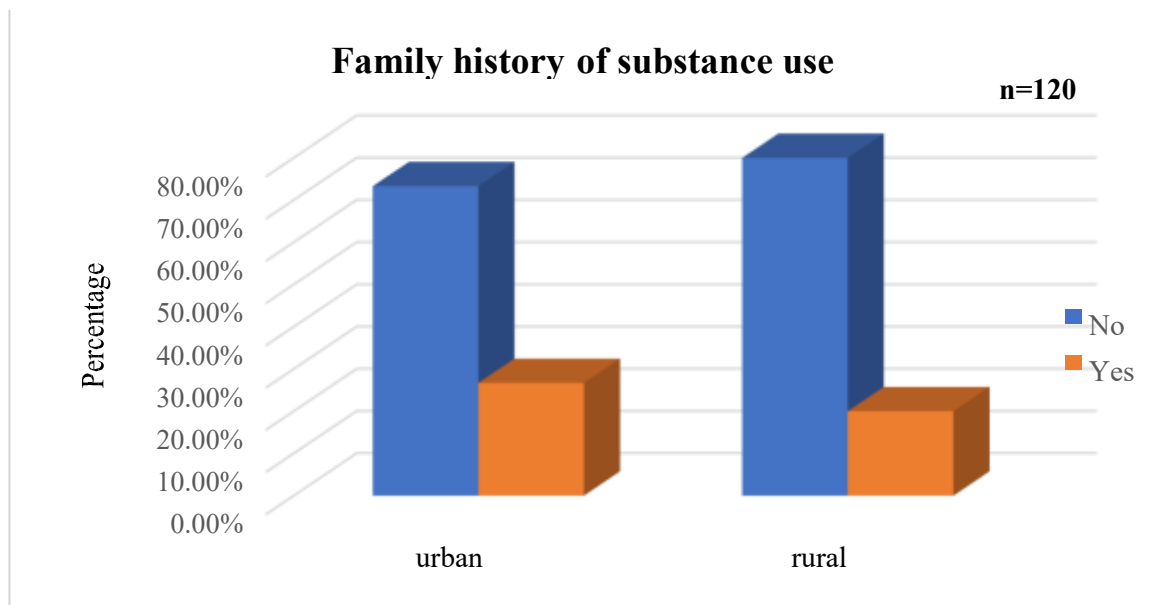


Figure 1: percentage distribution of subjects based on family history of substance use.

Data presented in fig.1 shows that in terms of family history of substance use, urban adolescents reported a slightly higher prevalence (26.7%) compared to their rural counterparts (20%).

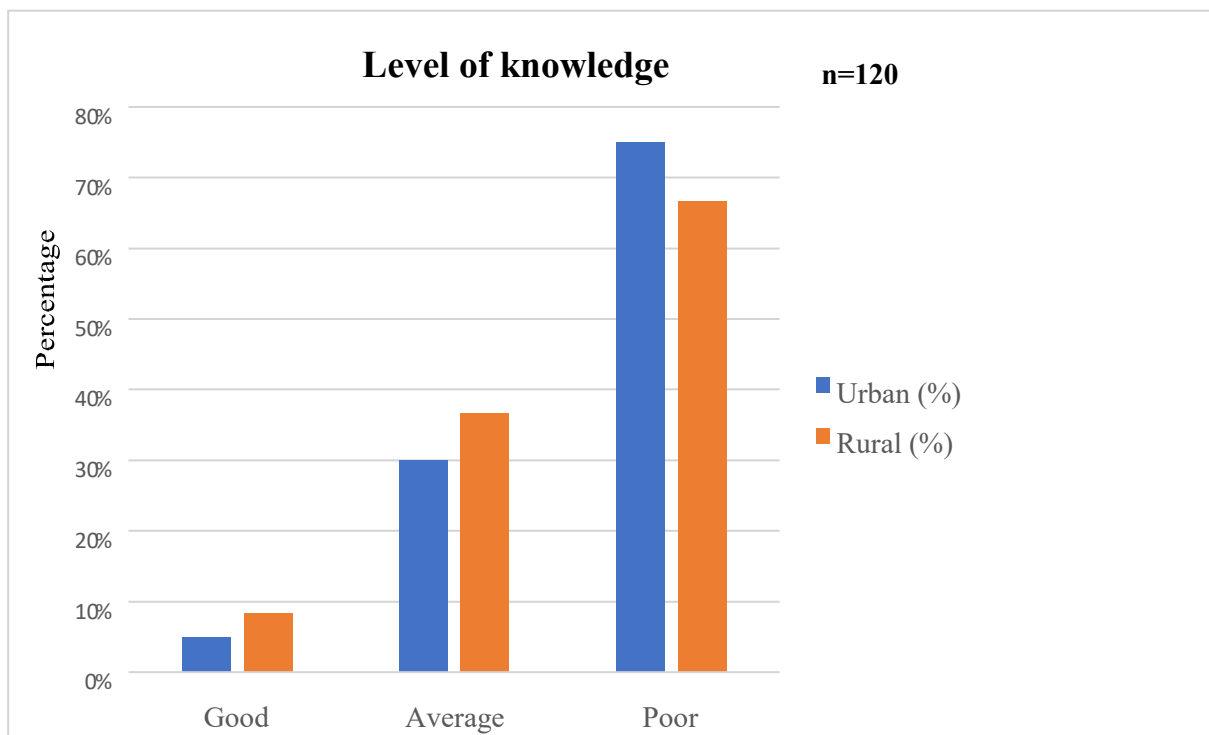


Figure 2: Level of knowledge regarding impact of substance use on health

Data presented in fig.2 illustrates that the percentage distribution of knowledge levels regarding the impact of substance use on health among urban and rural adolescents. The majority of both urban (75%) and rural (66.67%) participants exhibited poor knowledge. A smaller proportion of adolescents demonstrated average knowledge, with 30% in the urban group and 36.67% in the rural group. Only a minimal percentage of participants reported good knowledge: 5% among urban and 8.33% among rural respondents. These findings suggest that knowledge levels are generally low among both groups, with urban adolescents displaying a slightly higher proportion of poor knowledge compared to rural adolescents. Conversely, a slightly greater percentage

of rural adolescents demonstrated average and good knowledge relative to their urban counterparts.

Table 3: Descriptive Statistics of Knowledge Scores among Rural and Urban Adolescents

n=120

Group	Mean ( $\bar{X}$ )	Median	Standard Deviation (SD)	Sample Size (n)
Rural	15.27	14	4.91	60
Urban	13.88	14	4.40	60

Table 3 presents the descriptive statistics of knowledge scores among rural and urban adolescents. The rural group had a slightly higher mean knowledge score ( $M = 15.27$ ,  $SD = 4.91$ ) compared to the urban group ( $M = 13.88$ ,  $SD = 4.40$ ). Both groups shared the same median score ( $Md = 14$ ), suggesting a similar central tendency in knowledge distribution. However, the rural group exhibited a higher standard deviation, indicating greater variability in knowledge scores compared to the urban group. These findings suggest that, on average, rural adolescents demonstrated a marginally higher level of knowledge than their urban counterparts, though the overall distribution of scores appears similar.

Table 4: Independent Samples t-Test Comparing Knowledge Scores Between Rural and Urban Adolescents

n = 120

Group	Mean (M)	Standard Deviation (SD)	n	Mean Difference	t	df	p	95% CI for Mean Difference
Rural	15.27	4.91	60	1.39	1.15	118	> .05	[-0.40, 3.13]
Urban	13.88	4.40	60					

Table 4 presents the results of an independent samples t-test conducted to compare knowledge scores regarding substance abuse between rural and urban adolescents. The rural group ( $M = 15.27$ ,  $SD = 4.91$ ) had a slightly higher mean score compared to the urban group ( $M = 13.88$ ,  $SD = 4.40$ ). However, this difference was not statistically significant,  $t(118) = 1.15$ ,  $p > .05$ . The 95% confidence interval for the mean difference ranged from -0.40 to 3.13, which includes zero, further indicating that the difference is not statistically significant. These findings suggest that, although rural adolescents showed marginally higher knowledge scores, the difference is not large enough to conclude a meaningful or significant disparity between rural and urban groups in this sample.

Table 5: Association between level of knowledge and selected variables

n=120

Variables	Level of knowledge			df	Chisquare	P value
	good	average	poor			
Age group						
13-15	0	20	55	4	4.99	0.289
16-18	2	15	27			
>18	0	0	1			
Class						



VIII	0	4	33	8	20.40	0.0089
IX	0	11	22			
X	2	16	14			
XI	0	1	4			
XII	0	3	10			
family history of substance use						
Yes	0	4	24	2	4.83	0.089
No	2	31	59			

Table 5 shows the chi-square values to examine the relationship between selected demographic variables and the level of knowledge regarding substance abuse among adolescents.

The Chi-square test revealed that there was no statistically significant association between age group and level of knowledge,  $\chi^2(4, N = 120) = 4.99, p = .289$ . Although the majority of participants aged 13–15 years demonstrated poor knowledge ( $n = 55$ ), the overall distribution of knowledge levels across the age categories did not differ significantly.

In contrast, there was a statistically significant association between academic class and level of knowledge,  $\chi^2(8, N = 120) = 20.40, p = .009$ , indicating that students in higher classes, particularly Class X, had comparatively better knowledge. Specifically, Class X students included two participants with good knowledge and 16 with average knowledge, suggesting improved awareness with academic progression.

Regarding family history of substance use, no statistically significant association was observed,  $\chi^2(2, N = 120) = 4.83, p = .089$ . While students without a family history of substance use appeared to have slightly better knowledge, this difference was not significant enough to draw definitive conclusions.

#### 4. Discussion

The present study aimed to assess and compare the knowledge of rural and urban adolescents regarding substance abuse and its impact on health. The findings revealed that the overall level of knowledge in both groups was poor, with 66.67% of rural and 75% of urban adolescents falling into the “poor knowledge” category. Only a small proportion of adolescents in either group demonstrated good knowledge (8.33% rural and 5% urban), suggesting a significant awareness gap among the adolescent population.

Interestingly, while rural adolescents had slightly higher mean knowledge scores ( $M = 15.27, SD = 4.91$ ) compared to urban adolescents ( $M = 13.88, SD = 4.40$ ), the difference was not statistically significant ( $p > 0.05$ ). This finding challenges the common assumption that urban adolescents, due to greater access to information and educational resources, would possess better awareness. It may indicate that both groups are equally vulnerable to misinformation or lack of formal education on substance abuse topics.

A statistically significant association was observed between knowledge level and class ( $p = 0.009$ ), indicating that academic progression may positively influence awareness. However, no significant associations were found between knowledge and age, family type, parental education, or family history of substance use. This suggests that classroom-based interventions, regardless of students’ sociodemographic background, could be a key strategy in addressing this knowledge gap.

The high percentage of adolescents reporting family history of substance use—20% in rural and 26.7% in urban groups—also indicates the pervasive influence of substance abuse in their immediate environment. Despite this, many adolescents remain unaware of the serious health consequences, reflecting a disconnect between exposure and understanding.

In response to these findings, an evidence-based, expert-validated information booklet was developed to provide structured and accessible information on substance abuse. This educational tool is expected to improve awareness and equip adolescents with knowledge to make informed choices and resist peer pressure.

## 5. Conclusion

This study concludes that the knowledge regarding substance abuse and its health impacts among adolescents in both rural and urban areas of West Bengal is generally inadequate. Although rural adolescents had marginally better scores than their urban counterparts, the difference was not statistically significant. Academic class level was found to be significantly associated with knowledge, suggesting that educational interventions targeting specific school levels could be effective.

Given the critical developmental stage of adolescence and their increasing exposure to risky behaviours, there is an urgent need to strengthen substance abuse education within the school curriculum. The validated information booklet developed through this study may serve as a useful resource for school-based awareness programs and can contribute to the prevention of substance abuse among adolescents.

Ongoing efforts should focus on involving families, educators, and healthcare providers to ensure a collaborative approach in addressing this public health challenge. Further research with a broader population and intervention-based studies are recommended to evaluate the long-term effectiveness of such educational initiatives.

## 6. Implication of the Study

The findings of this study have significant implications for public health, education, policymaking, and community-level interventions aimed at preventing substance abuse among adolescents.

### Nursing Practice

- The study highlights the need for school health nurses and community health practitioners to play a proactive role in educating adolescents about the harmful effects of substance abuse.
- Nurses can incorporate preventive counselling sessions and conduct regular health education programs in schools, especially in high-risk areas.

### Nursing Education

- The study underscores the importance of integrating substance abuse education into the curriculum of nursing and allied health programs.
- Educators can use this data to design targeted teaching-learning strategies that equip nursing students with skills to assess and intervene effectively.

### Nursing Administration

- Health administrators can utilize the findings to allocate resources for substance abuse prevention programs in both rural and urban school settings.
- It can inform the development of institutional protocols for early identification, referral, and support for at-risk adolescents.

### Nursing Research

- The study provides a baseline for further research in adolescent substance use, especially region-specific comparative studies.
- Future researchers can explore intervention effectiveness, longitudinal impact of awareness programs, and familial or peer-related predictors of substance use.

### Policy Making

- The results can assist policy makers in framing region-specific adolescent health policies, focusing on substance abuse prevention and mental health.
- It supports the development of structured school-based substance abuse prevention programs, especially in rural settings where awareness is comparatively lower.

### Community Awareness and Engagement

- Community leaders, parents, and educators can be engaged using the study findings to develop culturally sensitive and age-appropriate awareness materials.
- The development and dissemination of the Information Booklet, as a direct outcome of this study, can help bridge knowledge gaps and promote informed choices among adolescents.

**Conflict of Interest:** There is no conflict of interest regarding the publication of this study.

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