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## **Original Research**

### **The analysis of adolescents' behaviors through demographic characteristics and basic health knowledge in Taiwan**

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**Running title:** The analysis of adolescents' behaviors

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**Key words:** adolescents; alcohol; health behaviors; reproductive health; smoking

**Contributions:**

WHS, RAP, F, SN, SNH collaborated in the conceptualization process and manuscript writing. WHS was responsible for the methodology, while RAP and F were accountable for validating the instruments. SNH was responsible for the analysis, and SN and SNH were accountable for the investigation. In addition, RAP provided resources, and F managed data curation

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**Significance for public health:** Adolescents represent the future, and reproductive health and behaviors require great attention because these factors will profoundly impact their lives in the future. They are influenced by various external factors, including parental influence, environmental surroundings, community culture, and lifestyle choices. The development of adolescents aims to foster growth toward adulthood, form identity, and shape personality. The variables significantly influence adolescents' behaviors, particularly in terms of health.

## **Abstract**

Adolescents' unstable personalities are responsible for poor behavioral choices, which adversely affect their quality of life. Therefore, this study aimed to examine health-related behaviors, such as drinking and smoking, alongside demographic characteristics and basic health knowledge.

A total of 100 adolescents aged 11 to 20 were randomly selected as respondents using a cross-sectional observational analytical method. Data collection relied on interviews, which were subjected to univariate analysis using logistic regression and Chi-Square tests.

The results showed that there was a significant correlation (p-value 0.003) between smoking and reproductive health behaviors. However, no significant correlation (p-value 0.410) was found between reproductive health behaviors and alcohol consumption.

In conclusion, the research uncovered a significant correlation between smoking and reproductive health behaviors. It was necessary to instill healthy lifestyle skills in adolescents early on to deter them from engaging in risky health behaviors.

## **Introduction**

Given that adolescents constitute one-fifth of the global population, this demographic group is considered significant, with far-reaching implications for social, economic, and demographic factors. Adolescents are characterized by numerous hormonal, social, and physical changes,<sup>1</sup> necessitating significant attention due to the enrollment in both schools and the workforce, where they are particularly vulnerable to health issues, such as HIV/AIDS, psychotropic drug use, other addictive substances (NAPZA), and premarital sexual behaviors.<sup>2,3</sup> Additionally, adolescents behaviors are prevalent, often arising from unstable personalities, leading to the adoption of unhealthy behaviors that negatively affect their quality of life.<sup>4,5</sup>

The results from the Basic Health Research (Riskesdas) showed that among adolescents aged 15 to 19, 22 out of 100 have reported smoking, with a prevalence rate of 9.1% among those under the age of 18.<sup>6</sup> Many adolescents initiate smoking during their school years or even earlier, raising significant concerns regarding the future health and well-being of the younger generation.<sup>7</sup> Several investigations on adolescents alcohol consumption show that 3.4% of those who began drinking at the age of 10 and above did so with traditional beverages (38.8%).<sup>8</sup> According to Riskesdas (2018), 4% of adolescents in East Java between the ages of 10 and 20 reported consuming alcohol in 2018. Adolescents are prone to engaging in unhealthy behaviors, including low awareness and practice of sexual and reproductive health. A mere 0.4% of girls and 1.9% of boys have engaged in premarital sexual intercourse. The limited awareness among adolescents regarding reproductive health issues shows the urgent need for greater attention to adolescents reproductive health.<sup>9-11</sup>

The aforementioned issues arise from various factors, including adolescents' limited understanding of sexuality (sex, contraception, pregnancy, and others.), compounded by parental neglect, which inadvertently condones their behaviors without considering the consequences. In reality, incomplete and false knowledge often arises from unreliable sources, such as peers, informational media like blue films and pornographic magazines, and socially accepted myths.<sup>12-13</sup> Given that

parental knowledge serves as the primary source of initial reproductive health education, parents should also be knowledgeable about its issues.<sup>14-15</sup> In Taiwan, a developing nation, the adolescents population will undoubtedly influence future social, economic, and demographic developments. Therefore, the health of adolescents in the nation must be comprehensively evaluated from both biopsychosocial and spiritual perspectives.<sup>16,17</sup> This study aims to investigate health-related behaviours, such as alcohol consumption and tobacco use, in conjunction with demographic characteristics and fundamental health knowledge.

## **Materials and Methods**

This study used an observational analytic method with a cross-sectional design. The analysis was conducted at the Jagir Community Health Center, Surabaya, from April to June 2021, and in the PCINU Taiwan Working Area in August. Inclusion criteria included adolescents aged 11-21 years, in good health, and possessing literacy skills. Exclusion criteria pertained to individuals unwilling to participate as respondents. The study population was all immigrant adolescents who were members of PCINU Taiwan, totaling 106 individuals, and the sample consisted of 100 randomly selected respondents. Data collection used a questionnaire aimed at gathering demographic characteristics and health behaviors. The validated questionnaire included sections addressing knowledge and attitudes regarding health behaviors, reproduction, smoking, alcohol consumption, and drug use among respondents, their peers, and family members, as well as individuals and parental characteristics. Statistical analysis comprised the use of Chi-Square and logistic regression tests with a hypothesis significance level set at  $p < 0.05$ .

## **Results and Discussion**

Table 1 shows the majority of respondents were male (62%), aged between 15 and 17 (67%), and came from rural areas (52%). Their fathers had secondary education (72%) and were used in the

private sector (72%). Conversely, 78% of respondents' mothers had only a high school diploma, with 87% being used. Financially, respondents reported that their fathers earned slightly above the minimum wage, with 24% of adolescents initiating smoking, categorized as light smokers (5 cigarettes per day), while 1% reported alcohol consumption. A mere 1% of respondents reported drug use, without specifying the type, and 60% of them had a history of diseases, with headaches being a prevalent complaint.

According to Table 2, the data showed that the majority of respondents correctly answered questions related to basic knowledge of reproductive health, with 65% understanding the impact of unprotected sex, and 53% comprehending the dangers of smoking (53%). Almost half of them were knowledgeable about alcoholic drinks (47%). Table 3 showed a significant correlation (p-value 0.03) between smoking and reproductive health behaviors. Adolescents who smoke (12%) had a higher percentage of good reproductive health compared to non-smokers (5%). However, there was no significant correlation (p-value 0.410) between reproductive health behaviors and alcohol consumption, likely due to the small number of adolescents alcohol users. Adolescents smoking behaviors and alcohol consumption had a significant correlation, with a p-value of 0.001. The percentage of adolescents who smoke (10%) mirrored the percentage of those who did not consume alcohol.

The results of a multivariate analysis of independent variables with health behaviors as the dependent variable were presented in Table 4. Tobacco use, alcohol consumption, and sexual and reproductive health were among the unhealthy behaviors assessed. The statistical analysis showed that gender, knowledge, and attitudes significantly influenced health behaviors, with p-values of 0.006, 0.012, and 0.011, and odds ratios of 0.130, 0.144, and 7.580, respectively. This showed that adolescents boys had 0.130 times greater protection against harmful behaviors. Adolescents with high knowledge levels were 0.142 less likely to engage in risky behaviors and those with positive outlooks were 7,580 times more likely to be shielded from behaviors.

Knowledge was shaped by individuals' experiences, which could be expressed and believed to fuel motivation.<sup>18</sup> It was also influenced by environmental factors, including physical and non-physical settings, as well as socio-cultural contexts. Sight and hearing were identified to be the primary sources of knowledge,<sup>19</sup> and adolescents with high knowledge levels were 0.144 less likely to engage in risky behaviors. According to the analysis results, information from various sources, media exposure, and influence from parents and peers were acknowledged to affect individuals' knowledge. The multivariate analysis showed that adolescents' conduct regarding reproductive health was influenced by attitudes toward abstaining from negative behaviors.<sup>20</sup>

When low parental income was combined with income above the Regency/City Minimum Wage (UMK), the highest level of parental education tended to be medium (equivalent to high school). There was a correlation between parents' educational attainment and adolescents' perspective on reproductive health. Several investigations suggested that parents with higher incomes might contribute to the children's academic performance, thereby influencing their viewpoints. Higher-income parents might also provide their children with more opportunities to access additional sources of information.<sup>21</sup> Several reviews have shown that most adolescents received free information on HIV/AIDS, the dangers of smoking, and alcohol consumption from counselors, schools, and healthcare professionals. This explained why the level of parental income did not affect the quantity of information sources available to adolescents in the study area. According to the analysis results, the majority of respondents (65%) correctly answered questions regarding the impact of unprotected sex on basic reproductive health knowledge. This included recognizing that unprotected sex increased the risk of contracting STDs, particularly hepatitis B, HIV, herpes simplex, genital warts, and gonorrhea. Oral or anal sex was the primary means through which the diseases were transmitted. Additionally, smoking posed a significant public health risk (53%), given its addictive nature and widespread prevalence. Cigarettes contain harmful chemicals, including tar, carbon monoxide, and nicotine, which could lead to various diseases, particularly cancer and heart disease. Approximately half (47%) of respondents correctly identified the



type of alcohol as a strong or mild intoxicant. Alcohol content in the beverage largely determined its intoxicating effects. When the liquor had a low alcohol content and was consumed within safe limits, the likelihood of losing consciousness was low. Conversely, a high alcohol content increased the risk of becoming tipsy (showing that alcohol was beginning to take effect), feeling excited (with vision becoming hazy or drowsy), confused, and even unconscious.

Cigarettes have the potential to cause several diseases, including cancer and heart disease, due to their harmful substances.<sup>22</sup> Approximately half (47%) of respondents correctly identified the type of alcohol as a strong or mild intoxicant. Alcohol content in the beverage largely determined its intoxicating effects. When the liquor had a low alcohol content and was consumed within safe limits, the likelihood of losing consciousness was low. Conversely, a high alcohol content increased the risk of becoming tipsy (showing that alcohol was beginning to take effect), feeling excited (with vision becoming hazy or drowsy), confused, and even unconscious. Adolescents might use alcohol and smoking as symbolic behaviors to project an image of maturity, bravery, strength, and attractiveness to their peers and the opposite sex.<sup>23</sup> There was no significant correlation between alcohol consumption and reproductive health behaviors (p-value 0.410), likely due to the low prevalence of alcohol consumption among adolescents.

## **Conclusions**

In conclusion, adolescents need to be more aware of the numerous risks associated with unhealthy behaviors, particularly regarding reproductive health. It was essential to consider all relevant factors in addressing the issues. Adolescents could greatly benefit from the guidance provided by educators, parents, friends, media, and other sources of information. There were various strategies to prevent risky behaviors, such as avoiding environments that promote them, asserting firm boundaries, refusing immoral requests, practicing self-control, abstaining from drugs and alcohol, and having education about religion.

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**Table 1. Characteristics of Respondents**

<b>Characteristics</b>	<b>f</b>	<b>%</b>
<b>Age</b>		
11-14 years old	29	29
15-17 years old	67	67
18-20 years old	4	4
<b>Gender</b>		
Man	62	62
Woman	38	38
<b>Residence</b>		
Rural	52	52
Urban	48	48
<b>Father's Education</b>		
Elementary (Elementary-Middle School)	16	16
Intermediate (High School)	72	72
Higher (Diploma-Bachelor)	12	12
<b>Father's occupation</b>		
PNS	15	15
Private	72	72
Self-employed	13	13
<b>Father's Income</b>		
UMK	52	52
Below UMK	48	48
<b>Mother's Education</b>		
Elementary (Elementary-Middle School)	78	78
Intermediate (High School)	14	14
Higher (Diploma-Bachelor)	8	8
<b>Mother's Job</b>		
Work	87	87
Doesn't work	13	13
<b>Smoke</b>		
Yes	24	24
No	76	76
<b>Alcohol consumption</b>		
Yes	1	1
No	99	99
<b>Drug consumption</b>		
Yes	1	1
No	99	99
<b>History of illness</b>		

There is	60	60
No	40	40
<b>Mental Health Risks</b>		
There are complaints	27	27
No complaints	73	73

**Table 2. Frequency Distribution of Respondents' Knowledge About Reproductive Health, Smoking Behavior, and Alcohol Consumption**

<b>Basic knowledge</b>	<b>Number of Respondents answered Correct (n=100)</b>	<b>%</b>
<b>Reproduction health</b>		
Characteristics of puberty in teenagers	30	30
Reproductive organs	59	59
Various types of casual sexual behavior	43	43
The impact of free sex	65	65
How to prevent promiscuous sexual behavior	36	36
How to resist sexual desires/desires	47	47
The right way to socialize	53	53
<b>Smoke</b>		
Cigarette content	33	33
Danger of cigarette	53	53
Diseases caused by smoking	41	41
How to prevent smoking	34	34
The process of entering cigarette smoke and its effects on the body	29	29
<b>Alcohol consumption</b>		
Type of liquor	47	47
Ingredients for making alcohol	28	28
Ingredients for making alcohol	22	22
The impact of alcohol on health	37	37
The impact of alcohol on health	35	35
Physical and psychological dangers of alcohol	32	32
A picture of a future destroyed by alcohol	30	30

**Table 3 Relationship between smoking, alcohol consumption and reproductive health in adolescents**

	<b>Reproduction health</b>				<b>P-Value</b>
	<b>Good</b>		<b>Bad</b>		
	<b>f</b>	<b>%</b>	<b>f</b>	<b>%</b>	
<b>Smoke</b>					
Yes	12	12	21	21	0.003
No	5	5	63	65	
<b>Alcohol consumption</b>					
Yes	10	10.4	2	2.1	0.410
No	24	25	60	62.5	
	<b>Reproduction health</b>				<b>P-Value</b>
	<b>Good</b>		<b>Bad</b>		
	<b>f</b>	<b>%</b>	<b>f</b>	<b>%</b>	
<b>Alcohol consumption</b>					
Yes	10	8	6	6	0.001
No	10	8	74	74	



**Table 4. Results of multivariate analysis of demographic, knowledge and attitude variables with health behavior (dating behavior, smoking and alcohol consumption)**

Variable	B	SE	Wald	Sign	Exp (B)	95% CI	
						Lower	Upper
Age (>16 years)	1.390	.910	2.663	0.102	4.442	0.740	26.580
gender (Women)	-2.022	.761	7.127	0.006	0.130	0.026	0.572
Knowledge (Good)	-1.442	.970	2.418	0.012	0.144	0.030	0.642
Attitude (Positive)	-2.026	.796	6.336	0.011	7.580	1.578	36.280