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Medicine

Analyzing the Relationship Between Smoking Habit, Age, Gender, and Alcohol Consumption Regarding to the Health-Related Quality of Life in Junior and High School Students in the East of Bolaang Mongondow Regency

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| Abstract | | Original Research Article |

Adolescence is often characterized by high-risk factors that threaten their health. Risky behaviors such as smoking, alcohol consumption, and unprotected sexual relationships pose significant challenges to their quality of life, including adolescents in East Bolaang Mongondow Regency. Data and research indicate that these behaviors not only affect physical health but also deteriorate overall quality of life, emphasizing the importance of a deeper understanding and effective policy planning to enhance the health conditions and overall well-being of adolescents. The research aims to analyze the relationship between smoking habits, age, gender, and alcohol consumption concerning the health-related quality of life of junior high school and high school students in East Bolaang Mongondow Regency. The research type is quantitative, employing an observational analytical method with a cross-sectional approach. The sample comprises 435 respondents. Primary data is collected through interviews using questionnaires, while secondary data is obtained from schools in the East Bolaang Mongondow Regency. Data analysis for the research includes descriptive analysis, bivariate analysis (Chi-square), and multivariate analysis (logistic regression). The research findings indicate that there is a relationship between smoking behavior and the health-related quality of life of adolescents in East Bolaang Mongondow Regency in all domains (physical domain $p=0.015$, psychological domain $p=0.004$, social domain $p=0.002$, and environmental domain $p=0.000$). There is a relationship between alcohol consumption and the health-related quality of life of adolescents in East Bolaang Mongondow Regency in all domains (physical domain $p=0.000$, psychological domain $p=0.000$, social domain $p=0.000$, and environmental domain $p=0.000$). There is a relationship between age and the health-related quality of life of adolescents in East Bolaang Mongondow Regency in the domains (physical domain $p=0.000$, psychological domain $p=0.000$, and environmental domain $p=0.000$). Additionally, there is a relationship between gender and the health-related quality of life in the psychological domain ($p=0.010$). The conclusion is that smoking habits and alcohol consumption are associated with the health-related quality of life across all domains for students. Meanwhile, age is associated with the physical, psychological, and environmental domains, while gender is associated with the psychological domain. The variable most related to the health-related quality of life of students in East Bolaang Mongondow Regency is alcohol consumption. The recommendation includes communication, information, education, and policies focusing on adolescent health.
Keyword: Smoking Habit, Alcohol Consumption, Life Quality, Students.

INTRODUCTION

The World Health Organization (WHO) states that adolescence is a life stage between childhood and adulthood, ranging from the ages of 10 to 19 years. Adolescence is a unique phase of human development and a crucial time to establish a solid foundation for good health. During adolescence, individuals undergo rapid

physical, cognitive, and psychosocial growth, influencing how they feel, think, make decisions, and interact with the world around them. Despite being considered a healthy stage of life, there are also significant risks of death, illness, and injury that can occur during adolescence (WHO, 2021).

According to the World Health Organization (WHO), health is a state of complete physical, mental, and social well-being and not only merely the absence of disease or infirmity. It is found that the higher an individual's level of health, the higher their quality of life. Therefore, health-related quality of life (HRQOL) becomes a crucial indicator determining well-being, including among adolescents in orphanages (Wijayanti *et al.,* 2020).

In addition, many serious diseases are also a result of behaviors that begin in adolescence, such as smoking, sexually transmitted diseases, drug abuse, alcohol, psychotropic substances, and other addictive substances (NAPZA), Human Immunodeficiency Virus-Acquired Immunodeficiency Syndrome (HIV-AIDS), malnutrition, and lack of exercise. All of these can lead to illness or death at a young age (Anonymous, 2013). In Indonesia, tobacco consumption is not limited to adults; many teenagers also smoke. Data from the Basic Health Research indicates that the trend of smoking among young adults increased from 7.2% in 2013 to 9.1% in 2018 (Najibah, 2020).

Active smokers experience a decline in overall health, as evidenced by a decrease in mental health and vitality. Smokers may face a compromised quality of life in performing physical activities related to self-care, social interactions, and pain. Smokers also experience disruptions in mental health compared to non-smokers. Additionally, the decline in quality of life can be assessed based on the number of cigarettes consumed daily. Light smokers (1-10 cigarettes per day) may experience a decrease in social function and mental health. On the other hand, heavy smokers (>20 cigarettes per day) may encounter a decline in general health, vitality, pain, emotional well-being, and mental health compared to moderate smokers (11-20 cigarettes per day). Heavy smokers exhibit a greater decline in quality of life due to disruptions in overall health, with the emergence of diseases at a rate of 41.6%. Over a 5-year period, there is a 28.37% correlation between smoking and quality of life in active smokers (Islami, 2019). Globally, approximately 30% of adult women and 40% of children are exposed to secondhand smoke (SHS) from active smokers (Suzuki *et al.,* 2019).

In North Sulawesi, the daily smoking behavior among individuals aged 10-14 years is 0.85%, and occasional smoking is 2.09%. In the age group of 15-19 years, 12.11% smoke daily, while 7.11% smoke occasionally. The proportion of smokers aged over 10 years in East Bolaang Mongondow Regency ranks third highest among the 15 regencies and cities in North Sulawesi, with 31.02% smoking daily, 4.56% smoking occasionally, and 2.27% being former smokers (Anonymous, 2019). The information on alcohol consumption has increased from 3% to 3.3%. These findings will impact health risks and lead to an increase in non-communicable diseases during puberty (Najibah and Wahjuni, 2020).

The results of a study conducted by Suartini (2022) indicate a relationship between smoking behavior and alcohol consumption with the health-related quality of life of junior high school and high school students in Bitung City. Adolescents who smoke and consume alcohol are likely to have a poorer quality of life compared to those who do not engage in these behaviors. Similarly, findings from research by Pinaria (2023) reveal that teenage smoking habits are associated with the quality of life of adolescents in North Minahasa Regency, where the prevalence of smoking among teenagers is 28.9%. However, the habit of alcohol consumption among adolescents is not related to the quality of life of adolescents in North Minahasa Regency, as the quality of life indicates that the highest quality of life is most commonly found among respondents who do not consume alcohol.

The measurement of adolescent quality of life is important because it can predict the health of adolescents in the next 10-20 years. Research on the quality of life in East Bolaang Mongondow Regency has not been conducted, so there is no data regarding alcohol and smoking behaviors, as well as the quality of life of adolescents in East Bolaang Mongondow Regency. Based on initial observations in East Bolaang Mongondow Regency conducted by the researcher, it was found that some students frequently consume cigarettes in public places. They are aged 13-19 years and mostly students of junior high school (SMP) and senior high school/vocational school (SMA/SMK). According to data from the provincial health office of North Sulawesi in 2021, in East Bolaang Mongondow Regency, there were 265 students (15.3%) aged 10-18 years who smoked, and in 2022, the number increased to 300 students (17.3%). Literature reviews found that 66-82% of high school students smoke (Ransun *et al.,* 2015; Adam *et al.,* 2019). Besides smoking, one of the issues among students is alcohol consumption.

The high prevalence of students consuming alcohol is due to the widespread availability of illegal alcoholic beverages. Sellers or shops in the East Bolaang Mongondow Regency freely sell these alcoholic beverages, including the ones that are unauthorized or "cap tikus" (unregulated). Therefore, students or consumers have easy access to these drinks. Considering the data and observations above, the author suspects there is an issue with the quality of life of adolescents caused by the high number of students who smoke and consume alcohol in East Bolaang Mongondow Regency.

This is what has sparked the author's interest in conducting this research.

EXPERIMENTAL SECTION/MATERIAL AND METHODS

The data collection method in this study is divided based on the types of data obtained, namely primary and secondary data. Primary data includes research variables collected through interviews using questionnaire sheets. Additionally, secondary data is obtained from schools, such as student data, geographical and demographic descriptions. The research data processing is carried out after all the data from the questionnaires are collected. It involves several stages, namely Editing (data inspection), Coding (assigning codes), Entry (data entry), Cleaning (data cleaning), and Tabulating (data arrangement).

After the data grouping is completed, this research analyzes it using three analysis models: univariate, bivariate, and multivariate. There are five variables: smoking, alcohol consumption, age, gender, and quality of life. Bivariate analysis is conducted to examine the relationship between one independent variable and the dependent variable. Bivariate analysis uses the Chi-square test, as all data are measured on a categorical scale. This test employs a 2x2 table where all variables are dichotomized as follows: in the smoking habit variable, there are options for Smoking and Non-smoking; in the alcohol consumption habit variable, there are options for Alcohol Consumption and Non-consumption; the age variable has options for Early Adolescence (aged 11-14 years) and Late Adolescence (15-18 years); the gender variable has options for Male and Female; and finally, the quality of life variable has options for Moderate and High. In multivariate analysis, logistic regression is used to measure which variables influence the quality of life of adolescents, identify which variables have the most significant impact on adolescent quality of life, and measure the magnitude of the influence of independent variables on the quality of life of adolescents.

RESULTS

Characteristics of Univariate Variables

Table 4: **Respondent Characteristics**

Sociodemography		N	%
Age	< 15 Y.O	179	41,1
	15 - 18 Y.O	256	58,9
Total		435	100
Sex	Male	138	31,7
	Female	297	68,3
Total		435	100,0

Based on Table 4, the distribution of respondents according to sociodemographic characteristics shows that the majority of respondents are aged 15-18, with a total of 256 respondents (58.9%), while those aged less than 15 are 179 respondents (41.1%). In terms of gender, the largest category is female respondents, totaling 297 respondents (68.3%), while males are 138 respondents (31.7%).

Table 5: Gambaran Kualitas Hidup

Quality of Life		N (Respondents)	%
Physique	Very Good	38	8,7
	Good	227	52,2
	Average	128	29,4
	Bad	38	8,7
	Very Bad	4	0,9
	Total	435	100
Psychology	Very Good	89	20,5
	Good	200	46,0
	Average	133	30,6
	Bad	10	2,3
	Very Bad	3	0,7
	Total	435	100
Social Relations	Very Good	62	14,3
	Good	180	41,4
	Average	136	31,3
	Bad	15	3,4
	Very Bad	42	9,7

Quality of Life		N (Respondents)	%
	Total	435	100
Environment	Very Good	66	15,2
	Good	232	53,3
	Average	93	21,4
	Bad	40	9,2
	Very Bad	4	0,9
	Total	435	100,0

Based on Table 5, the quality of life in the physical health domain is mostly good, with 227 respondents (52.2%). In the psychological domain, the majority is good with 200 respondents (46%). In the social relationship's domain, the majority is good with 180 respondents (41.4%), and in the environmental domain, the majority is good with 232 respondents (53.3%).

Table 6: Smoking Habit and Alcohol Consumption

Variables		N (Respondents)	%
Smoking Habit	No	339	77,9
	Yes	96	22,1
	Total	435	100
Alcohol Consumption	No	377	86,7
	Yes	58	13,3
	Total	435	100,0

From Table 6 above, it can be seen that the respondents who smoke in this study are 96 respondents (22.1%), while those who do not smoke are 339 respondents (77.9%). Furthermore, respondents who consume alcohol are 58 respondents (13.3%), while those who do not consume alcohol are 377 respondents (86.7%).

Bivariate Test Results

Table 7: Relationship Between Smoking Habit and Adolescent Health Quality of Life

Health Quality of Life									
Physical Health			Very Good	Good	Average	Bad	Very Bad	Total	P
Smoking Habit	No	Total (n)	32	184	97	25	1	339	0,015
		Presentation (%)	7,4%	42,3%	22,3%	5,7%	0,2%	77,9%	
	Yes	Total (n)	6	43	31	13	3	96	
		Presentation (%)	1,4%	9,9%	7,1%	3,0%	0,7%	22,1%	
	Total	Total (n)	38	227	128	38	4	435	
		Presentation (%)	8,7%	52,2%	29,4%	8,7%	0,9%	100,0%	
Psychological Health									
Smoking Habit	No	Total (n)	75	160	99	4	1	339	0,004
		Presentation (%)	17,2%	36,8%	22,8%	0,9%	0,2%	77,9%	
	Yes	Total (n)	14	40	34	6	2	96	
		Presentation (%)	3,2%	9,2%	7,8%	1,4%	0,5%	22,1%	
	Total	Total (n)	89	200	133	10	3	435	
		Presentation (%)	20,5%	46,0%	30,6%	2,3%	0,7%	100,0%	
Social									
Smoking Habit	No	Total (n)	46	147	110	13	23	339	0,002
		Presentation (%)	10,6%	33,8%	25,3%	3,0%	5,3%	77,9%	
	Yes	Total (n)	16	33	26	2	19	96	
		Presentation (%)	3,7%	7,6%	6,0%	0,5%	4,4%	22,1%	
	Total	Total (n)	62	180	136	15	42	435	
		Presentation (%)	14,3%	41,4%	31,3%	3,4%	9,7%	100,0%	
Environment									
Smoking Habit	No	Total (n)	51	188	75	25	0	339	0,000
		Presentation (%)	11,7%	43,2%	17,2%	5,7%	0,0%	77,9%	
	Yes	Total (n)	15	44	18	15	4	96	
		Presentation (%)	3,4%	10,1%	4,1%	3,4%	0,9%	22,1%	
	Total	Total (n)	66	232	93	40	4		

| | | Presentation (%) | 15,2% | 53,3% | 21,4% | 9,2% | 0,9% | 100,0% | |

Based on the data presentation in Table 7, the chi-square test results show that for Physical Health, the p-value is 0.015 (<0.05), indicating a relationship between smoking and the quality of health life in the physical domain. Furthermore, the chi-square test results yield a p-value of 0.004 (<0.05), indicating a relationship between smoking and the quality of health life in the psychological domain. Additionally, with a chi-square p-value of 0.002 (<0.05), it signifies a relationship between smoking and the quality of health life in the social domain. Lastly, the chi-square test with a p-value of 0.000 (<0.05) for the environmental variable indicates a relationship between smoking and the quality of health life in the environmental domain.

Table 8: Relationship Between Alcohol Consumption and Adolescent Health Quality of Life

Quality of Life Health										
Physical Health			**Very Good**	**Good**	**Average**	**Bad**	**Very Bad**	**Total**		**P**
Alcohol Consumption	Yes	Total (n)		37	211	104	25	0	377	0,000
		Presentation (%)		8,5%	48,5%	23,9%	5,7%	0,0%	86,7%	
	No	Total (n)	1	16	24	13	4	58		
		Presentation (%)	0,2%	3,7%	5,5%	3,0%	0,9%	13,3%		
	Total	Total (n)	38	227	128	38	4	435		
		Presentation (%)	8,7%	52,2%	29,4%	8,7%	0,9%	100,0%		
Psychological Health										
Alcohol Consumption	Yes	Total (n)	84	174	114	4	1	377		0,000
		Presentation (%)	19,3%	40,0%	26,2%	0,9%	0,2%	86,7%		
	No	Total (n)	5	26	19	6	2	58		
		Presentation (%)	1,1%	6,0%	4,4%	1,4%	0,5%	13,3%		
	Total	Total (n)	89	200	133	10	3	435		
		Presentation (%)	20,5%	46,0%	30,6%	2,3%	0,7%	100,0%		
Social										
Alcohol Consumption	Yes	Total (n)	58	158	123	12	26	377		0,000
		Presentation (%)	13,3%	36,3%	28,3%	2,8%	6,0%	86,7%		
	No	Total (n)	4	22	13	3	16	58		
		Presentation (%)	0,9%	5,1%	3,0%	0,7%	3,7%	13,3%		
	Total	Total (n)	62	180	136	15	42	435		
		Presentation (%)	14,3%	41,4%	31,3%	3,4%	9,7%	100,0%		
Environment										
Alcohol Consumption	Yes	Total (n)	65	204	82	25	1	377		0,000
		Presentation (%)	14,9%	46,9%	18,9%	5,7%	0,2%	86,7%		
	No	Total (n)	1	28	11	15	3	58		
		Presentation (%)	0,2%	6,4%	2,5%	3,4%	0,7%	13,3%		
	Total	Total (n)	66	232	93	40	4	435		
		Presentation (%)	15,2%	53,3%	21,4%	9,2%	0,9%	100,0%		

Based on the presentation of the results in Table 8, the chi-square test yields a p-value of 0.000 (<0.05) for the overall domains. This indicates a relationship between alcohol consumption and the quality of healthy life in the physical, psychological, social, and environmental domains. Similarly, the relationship between age and the quality of healthy life in adolescents who were respondents in this study shows chi-square test results with a p-value of 0.000 (<0.05) in the physical, psychological, and environmental domains. However, the social domain does not exhibit a correlation, as the obtained p-value is 0.536 (>0.05). On the contrary, the results are different for the gender aspect, which has varying p-values; p=0.513 in the physical domain, p=0.904 in the social domain, and p=0.963 in the environmental domain, indicating no relationship between gender and the quality of health life in these domains.

Table 11: Variables that have the Most Influence on Quality of Life

Model		Sig.
Physical Domain	(Constant)	0,000
	Age	0,001
	Smoking habit	0,247
	Alcohol Consumption	0,000

Psychology Domain	(Constant)	0,000
	Age	0,648
	Gender	0,020
	Smoking habit	0,077
	Alcohol Consumption	0,740
Social Domain	(Constant)	0,000
	Smoking habit	0,951
	Alcohol Consumption	0,239
Environmental Domain	(Constant)	0,000
	Age	0,739
	Smoking habit	1,000
	Alcohol Consumption	0,250

Based on the multivariate analysis in Table 11 above, the variables of age and alcohol consumption in the physical domain significantly affect the quality of health life (Sig.= 0.001) and (Sig.= 0.000), respectively. The gender variable in the psychological domain influences the quality of life (Sig.= 0.020). Several variables, including gender in the physical domain, age and gender in the social domain, and gender in the environmental domain, could not proceed to multivariate analysis because the bivariate selection results indicated that these variables did not have a relationship.

DISCUSSION

The results of this study indicate that adolescents who smoke generally experience physical disturbances such as disrupted sleep and rest, psychological issues such as an inability to concentrate, dissatisfaction with body appearance, and a lack of self-satisfaction, as well as a feeling of not enjoying life. Socially, they may lack support from family and close associates, and environmentally, they are influenced by social interactions and unhealthy lifestyles in their surroundings and local communities. The research establishes a connection between smoking habits and quality of life, revealing that the quality of life tends to be better for adolescents who do not smoke. The prevalence of smoking among adolescents in East Bolaang Mongondow Regency is still higher compared to research results in North Minahasa Regency, where the prevalence is 6% (Pinaria, 2023), and Owu (2022) shows a smoking prevalence among adolescents in Southeast Minahasa Regency of 14.3%. Additionally, a relationship is found between smoking habits and quality of life, indicating that the quality of life tends to be better for non-smoking adolescents. Buleno (2022) reports a smoking prevalence of 20.9% among adolescents in the city of Kotamobagu.

Based on the relationship between age and the quality of life of adolescents in East Bolaang Mongondow Regency, it is evident that most adolescents in this study fall within the age range of 15-18 years. The research results indicate a correlation between age and the quality of life of adolescents. The study reveals that the health-related quality of life for adolescents under 15 years old is better than that of adolescents aged 15-18 years. Younger adolescents in East Bolaang Mongondow Regency tend to have better quality of life scores compared to those approaching adulthood. This finding aligns with similar observations in Europe, where younger adolescents tend to have higher quality of life, and as they get older, the scores decrease (Bisegger *et al.,* 2005; Michel *et al.,* 2009). The health-related quality of life for adolescents in Kuwait and Japan has also been reported to decline with age, whereas adolescents in China do not show the same trend (Al-Fayez & Ohaeri, 2011; Wang *et al.,* 2000). This is supported by research in South Minahasa Regency conducted by Porajow (2021) in Manado City, stating that age factors influence differences in the quality of life among adolescents. However, this contrasts with the findings of Kumayas *et al.,* (2022), who state that the age of adolescents is not related to the quality of life, especially in the psychological, social, and environmental domains.

Adolescents in this study are mostly female. The results of statistical tests indicate that there is a relationship between gender and the health-related quality of life of adolescents in East Bolaang Mongondow Regency, specifically in the psychological domain, as evidenced by the Chi-square test result with a p-value of 0.010. This research identifies differences in the health-related quality of life between male and female adolescents, with female adolescents having a better quality of life compared to their male counterparts.

This perspective contrasts with other studies, such as those conducted in China and Japan, which found that male adolescents have a better health-related quality of life than female adolescents (Wang *et al.,* 2000). Another study in Europe discovered that although initially the health-related quality of life did not differ between female and male adolescents, the quality of life for female adolescents experienced a greater decline than that of male adolescents as they aged (Michel *et al.,* 2009). The variance in these results could be due to the dominant number of female respondents (68%) or simply a larger number compared to male adolescents. This discrepancy also differs from the findings of the study conducted by Kumayas *et al.,* (2022) in South Minahasa

Regency, stating that gender is not related to the quality of life of adolescents.

The results of this study indicate that adolescents who consume alcohol generally experience physical disturbances such as fatigue, lack of energy in daily activities, psychological issues such as inability to concentrate on learning, social relationships characterized by insufficient support from family and close friends, and environmental influences from peer groups and the local community promoting unhealthy lifestyles. The findings of this study align with theoretical considerations and several previous studies. Theoretically, alcohol consumption has an impact on health, especially in excessive amounts. Recommendations from the Department of Agriculture and Department of Health and Human Services United States (2020), CDC (2022), and Healthline (2022) suggest that adults of legal drinking age may choose not to drink or drink moderately by limiting intake to 2 glasses or less per day for men or 1 glass or less per day for women. These guidelines also do not recommend that individuals who do not drink alcohol start drinking for any reason. Sawicki *et al.,* (2018) found that 90% of students had consumed alcohol, with 20.6% initiating and misusing alcohol at the age of 17 or younger. The impact of alcohol consumption on quality of life is evident in the decline of emotional aspects and very low mental health in students who habitually drink. The results of this study are consistent with Pinaria's research (2023) that alcohol consumption and gender are significant variables affecting quality of life. Parajow's study (2022) found that adolescents who consume alcohol, especially males, tend to experience a decline in health-related quality of life. Adolescent alcoholics are prone to experiencing mental health deterioration and feelings of discomfort in their environment, tending to be pessimistic about their future, and dissatisfied with their surroundings.

CONCLUSION

Alcohol consumption is the variable that has the most significant impact on the health-related quality of life of adolescents in East Bolaang Mongondow Regency. This is because there is a relationship between adolescents who consume alcohol and the health-related quality of life of adolescents in East Bolaang Mongondow Regency. In all domains—physical, psychological, social, and environmental—adolescents who consume alcohol tend to have a poorer quality of life compared to those who do not. Additionally, there is a connection between smoking habits and the health-related quality of life of adolescents. Regarding age and gender, there is an association with the health-related quality of life of adolescents only in some domains such as physical, psychological, and environmental. Gender, on the other hand, is associated with only one domain, which is psychological. Therefore, schools and parents must collaborate to monitor adolescent behavior,

especially in preventing smoking and alcohol consumption habits. Schools should establish rules for smoke-free areas on school premises and impose serious sanctions on all parties, especially students, caught smoking or consuming alcohol on school grounds. Additionally, local governments need to provide a Health Education and Information (KIE) system for adolescents, including the communication of the effects of smoking, the dangers of alcohol consumption, and the importance of a clean and healthy lifestyle. Furthermore, for further consideration, there is a need for additional research on other factors that have not been investigated but have a significant impact on the quality of life of adolescents, such as risky behaviors (sexual relationships, fighting, bullying, and others), stress, sleep quality, and other factors.

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