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Correlation between Alcohol Consumption Habits, Age, and Gender with Health Quality of Life among Middle and High School Students in Bolaang Mongondow Regency

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ABSTRACT

Alcohol is a dangerous psychoactive substance, one of the factors contributing to many diseases and injuries. A quarter of the world's population, aged 15-19 years old, consumes alcohol. Adolescence's physical, cognitive, and psychological aspects proliferate, making it crucial to forming health foundations. Indonesian adolescents' health-related quality of life is still low (7%). Previous studies have indicated a correlation between alcohol consumption, age, gender, and quality of life. This study aims to analyze the correlation between alcohol consumption, age, and gender with the health-related quality of life of junior high and high school students. Utilizing an analytical observational research design with a cross-sectional approach. A total of 406 secondary school students in Bolaang Mongondow Regency participated as respondents. The study employed a questionnaire and statistical analysis using Spearman's correlation test and logistic regression. The correlation test found a negative relationship between alcohol consumption habits ($r = -0.115$; $p = 0.020$) and age ($r = -0.159$; $p = 0.001$) with the health-related quality of life however, a non-significant positive relationship was found for gender ($r = 0.090$; $p = 0.069$). The OR value was 1.664 ($p = 0.020$) in the age group of 15-17 years compared to the 10-14 years. There was a correlation between alcohol consumption habits and age with the health-related quality of life of junior high and high school students. At the same time, gender was not significant. Age is the most influential variable.

Keywords: Adolescents' Health-related Quality of Life, Alcohol Consumption, Age, Gender.

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INTRODUCTION

Alcohol is a dangerous psychoactive substance, a contributing factor in many diseases and injuries. Relatively young people are at risk of fatal injuries due to alcohol abuse. Every year, there are 3 million or 5.3% of deaths due to alcohol consumption worldwide (WHO, 2023c). More than a quarter of the world's population aged 15-19 years (adolescents) drink alcohol, with males being the most at risk (WHO, 2023a). Based on age, junior high school (SMP, *Sekolah Menengah Pertama*) and senior high school (SMA, *Sekolah Menengah Atas*) students are among adolescents.

In Indonesia, the alcohol consumption behavior of the population aged ten years and above tends to increase from 3.0% in 2007 to 3.3% in 2018. North Sulawesi has the highest percentage of alcohol consumption at 16% based on 2018 research, followed by East Nusa Tenggara at 15.6% and Bali at 14%. Based on characteristics, nationally, the alcohol consumption behavior of the population aged 10-14 years was 0.3%, and the age group 15-19 years was 3.7%, while in North Sulawesi, it was 1.09% and 12.88%, respectively (Riskesdas, 2019a); (Riskesdas, 2019b).

The adolescent period is the stage of life between childhood and adulthood, ranging from 10 to 19 years. Physically, cognitively, and psychosocially, adolescents experience rapid growth, becoming a unique and vital period in human development that provides a good foundation for health (WHO, 2023b).

Based on data from the Central Statistics Agency (BPS, *Badan Pusat Statistik*), in 2021, the number of Indonesians aged between 10 and 19 years was around 45,686,483, or 16.68% of the total

population (Statistics, 2022). North Sulawesi Province is around 407,683 people or 15.45%, and in Bolaang Mongondow Regency in 2020, around 41,278 people or 17.06% of the total population are teenagers (North, 2023); (Mongondow, 2023). The prevalence of quality of life of Indonesian adolescents in 2007 was still low at 7% (Haryono & Kurniasari, 2018). Quality of life can be influenced by various health risk factors, including alcohol consumption behavior (Spilkova et al., 2015)..

Studies conducted by (Buleno et al., 2021)stated that more than 80% of adolescents' quality of life in Kotamobagu City fell into the poor and moderate categories. Research (Rizkillah et al., 2023) showed that students' sociodemographic factors, age, gender, Corona Virus Disease 2019 (Covid-19) pandemic conditions, gratitude, student stress, addiction to gadgets, and parents' relationship with adolescents affect quality of life. Studies conducted by (Senduk et al., 2019) there is a correlation between alcohol consumption and quality of life. Research (Londa et al., 2017) shows a correlation between alcohol consumption and quality of life in the Tomohon area. Research (Runtuwene et al., 2022) showed that alcohol consumption was correlated and became the most influential factor in a decrease in adolescent health quality of life in South Minahasa Regency.

This study aims to analyze the correlation between alcohol consumption, age, and gender with the health quality of life of junior and senior high school students. The benefits of this research include providing valuable insights for policymakers and educators to develop targeted interventions to reduce alcohol consumption among adolescents. Additionally, it will help in creating awareness programs that address the specific needs of different age groups and genders, ultimately contributing to the improvement of the quality of life for adolescents in Indonesia.

METHOD

This type of research is analytical observational with a cross-sectional approach on 406 junior and senior high school students in Bolaang Mongondow Regency, conducted from August 2023 to January 2024. Samples were taken using the multistage random sampling method. Respondents were selected based on inclusion and exclusion criteria. The variables studied were alcohol consumption habits, age, and gender. Data were obtained through questionnaires, then data processing was carried out. The instruments used in this study were WHOQoL-BREF and GSHS 2015 questionnaires. The results of the study data were tested for normality. Shapiro-Wilk found that the data were not normally distributed. Spearman correlation and logistic regression tests were carried out and presented as tables and graphs.

RESULTS AND DISCUSSION

Table 1 shows the general characteristics of the study sample. The lowest value of health quality of life was 33.00, and the highest was 94.0, with a mean of 63.7 and a standard deviation of 10.70. Health quality of life is divided into four domains, namely, physical domain (domain 1), psychological domain (domain 2), social relationship domain (domain 3), and environmental domain (domain 4). Domain 1 obtained the lowest value of 31.00 and the highest of 100.0, with a mean of 68.6 and a standard deviation of 12.32. Domain 2 obtained the lowest value of 19.00 and the highest of 100.0, with an average of 63.9 and a standard deviation of 16.17. Domain 3 obtained the lowest value of 6.00 and the highest of 100.0, with an average of 57.4 and a standard deviation 14.67. Domain 4 obtained the lowest value of 25.00 and the highest of 100.0, with an average of 64.8 and a standard deviation of 13.45. The lowest age was 11 years, and the highest was 19 years, with an average of 15.0 years and a standard deviation of 2.06.

Table 1. General Characteristics of the Research Sample

	N	Minimum	Maximum	Mean	Standard Deviation
Quality of life	406	33,00	94,0	63,7	10,70
Domain 1	406	31,00	100,0	68,6	12,32
Domain 2	406	19,00	100,0	63,9	16,17
Domain 3	406	6,00	100,0	57,4	14,67
Domain 4	406	25,00	100,0	64,8	13,45
Age (years)	406	11	19	15,0	2,06

Table 2 shows the distribution of research variable categories. The quality of health life of 239 people (58.9%) was found to be moderate, and 167 people (41.1%) were categorized as good. A total of 65 people (16%) have consumed alcohol, and 341 people (84%) have never consumed alcohol. Based on age, 139 people (34.2%) were 10-14 years old, 234 people (57.6%) were 15-17 years old, and 33 people (8.1%) were 18-19 years old. One hundred eighty-eight people (46.3%) were male and 218 (53.7%) were female.

Table 2. Category Distribution of Research Variables

Variable Categories		N	Percentage (%)
Quality of Life	Bad	0	0
	Medium	239	58,9
	Good	167	41,1
	Total	406	100
Alcohol Consumption	Yes	65	16
	No	341	84
	Total	406	100
Age	10-14 years	139	34,2
	15-17 years old	234	57,6
	18-19 years old	33	8,1
	Total	406	100
Gender	Male	188	46,3
	Female	218	53,7
	Total	406	100

Table 3 shows the distribution of quality of life categories. Most respondents were in excellent and moderate health and quality of life categories. The highest distribution in the good category was 237 people (58.4%) in the physical domain, 206 people (50.7%) in the psychological domain, and 204 people (50.2%) in the environmental domain. The highest distribution of moderate categories was in the social relationship domain, with 234 people (57.6%).

Table 3. Category Distribution of Quality of Life

Quality of Life Category		N	Percentage (%)
Domain 1 (Physical)	Bad	1	0,2
	Medium	168	41,4
	Good	237	58,4
	Total	406	100
Domain 2 (Psychological)	Bad	21	5,2
	Medium	179	44,1
	Good	206	50,7
	Total	406	100
Domain 3 (Social Relationships)	Bad	33	8,1
	Medium	234	57,6
	Good	139	34,2
	Total	406	100
Domain 4 (Environment)	Bad	8	2,0
	Medium	194	47,8

Quality of Life Category		N	Percentage (%)
	Good	204	50,2
	Total	406	100

Table 4 shows that respondents who had consumed alcohol for the first time were mainly in the age range of 12-13 years, with as many as 19 people (4.7%) respondents. Based on the number of alcohol consumption during 1-2 days in a month (30 days), as many as 49 people (12.1%) were respondents. The highest amount of alcohol consumption was <1 glass in a month by as many as 24 people (5.9%) respondents. The most common way to get alcohol was by other means; as many as 24 people (5.9%) responded. Based on who consumed the most alcohol, 34 people (8.4%) were respondents. The number of times they consumed alcohol until they got drunk was 1-2 times; 25 (6.2%) respondents and 10 (2.5%) respondents were involved in problems due to alcohol consumption 1-2 times.

Table 4. Distribution of Alcohol Consumption Habits

Alcohol Consumption Habits			N	Percentage (%)
Yes	Age at first alcohol consumption (years)	<7 years	6	1,5
		8-9 years	4	1,0
		10-11 years old	11	2,7
		12-13 years old	19	4,7
		14-15 years	13	3,2
		16-17 years old	12	3,0
		>18 years old	0	0
		Total	65	16,0
No			341	84,0
		Total	406	100
Yes	Number of alcohol consumption in a month (days)	1-2 days	49	12,1
		3-5 days	6	1,5
		6-9 days	3	0,7
		10-19 days	3	0,7
		20-29 days	1	0,2
		30 days	3	0,7
		Total	65	16,0
No			341	84,0
		Total	406	100
Yes	Total alcohol consumption in a month (glasses)	<1 glass	24	5,9
		1 glass	22	5,4
		2 cups	4	1,0
		3 glasses	5	1,2
		4 glasses	0	0
		>5 glasses	10	2,5
		Total	65	16,0
No			341	84,0
		Total	406	100
Yes	How to get alcoholic beverages	Buy at the store	13	3,2
		Get someone to buy it for you	4	1,0
		From friends	23	5,7
		From the family	0	0
		Stealing	1	0,2
		Another way	24	5,9
		Total	65	16,0
No			341	84,0
		Total	406	100
Yes	Who to consume alcohol with	With friends	34	8,4
		With family	2	0,5
		With strangers	1	0,2

Alcohol Consumption Habits			N	Percentage (%)
		On your own	28	6,9
		Total	65	16,0
No			341	84,0
		Total	406	100
Yes	Amount of alcohol consumption to the point of intoxication	No	26	6,4
		1-2 times	25	6,2
		3-9 times	9	2,2
		>10 times	5	1,2
		Total	65	16,0
No			341	84,0
		Total	406	100
Yes	The number involved in problems due to alcohol consumption	No	48	11,8
		1-2 times	10	2,5
		3-9 times	2	0,5
		>10 times	5	1,2
		Total	65	16,0
No			341	84,0
		Total	406	100

In health quality of life, physical domain, psychological domain, social relationship domain, environmental domain, alcohol consumption habits, age, and gender based on the data normality test using Shapiro-Wilk, the p-value = <0.001 (<0.05), which means that the data distribution is not normal (Table 5).

Table 5. Shapiro-Wilk Data Normality Test Results

	Shapiro-Wilk
Variables	**P-value**
Quality of Life	<0,001
Domain 1 (Physical)	<0,001
Domain 2 (Psychological)	<0,001
Domain 3 (Social Relationships)	<0,001
Domain 4 (Environment)	<0,001
Alcohol Consumption	<0,001
Age	<0,001
Gender	<0,001

Spearman correlation test between alcohol consumption habits and health quality of life of junior and senior high school students obtained a weak, unidirectional correlation (r = -0.115) with significant statistical analysis (p = 0.020). The results of the correlation test in each domain were respectively in the physical domain (r = -0.074; p = 0.136), psychological domain (r = -0.101; p = 0.042), social relationship domain (r = -0.065; p = 0.194), and environmental domain (r = -0.159; p = 0.001). There is a tendency for alcohol consumption habits to reduce the health and quality of life of junior and senior high school students in the psychological domain and environmental domains (Table 6, Figure 1).

Table 6: Correlation of Alcohol Consumption with Quality of Life

	Correlation Coefficient ®	P-value
Alcohol Consumption-Quality of Life	-0,115	0,020
Alcohol Consumption-Domain 1 (Physical)	-0,074	0,136
Alcohol Consumption-Domain 2 (Psychological)	-0,101	0,042
Alcohol Consumption-Domain 3 (Social Relationships)	-0,065	0,194
Alcohol Consumption-Domain 4 (Environment)	-0,159	0,001

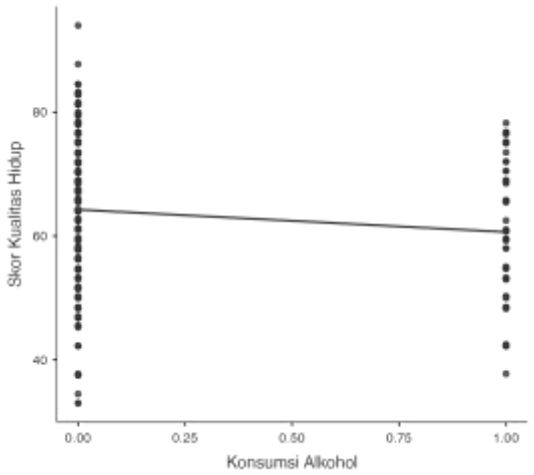

Figure 1. Correlation of alcohol consumption habits with the health quality of life of junior and senior high school students

The correlation between age and health quality of life of junior and senior high school students based on the Spearman correlation test obtained a weak, unidirectional correlation (r = -0.159), which was significant (p = 0.001). The results of the correlation test in each domain are successively in the physical domain (r = 0.019; p = 0.695), psychological domain (r = -0.148; p = 0.003), social relationship domain (r = -0.171; p = <0.001), and environmental domain (r = -0.153; p = 0.002). There was a decreasing trend in the perceived quality of health life of junior and senior high school students with age in the psychological, social relationship, and environmental domains (Table 7, Figure 2).

Table 7. Correlation of Age with Quality of Life

	Correlation Coefficient ®	P-value
Age-Life Quality	-0,159	0,001
Age-Domain 1 (Physical)	0,019	0,695
Age-Domain 2 (Psychological)	-0,148	0,003
Age-Domain 3 (Social Relationships)	-0,171	<0,001
Age-Domain 4 (Environment)	-0,153	0,002

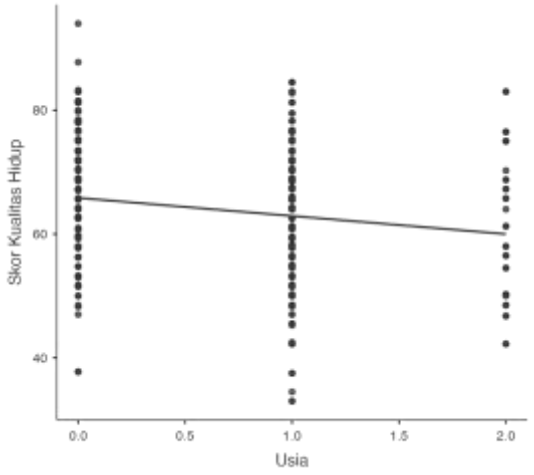

Figure 2. Correlation of age with health quality of life of junior and senior high school students

Spearman's correlation test between gender and the quality of health life of junior and senior high school students showed a correlation coefficient value (r = 0.090) with a statistical analysis that was not meaningful (p = 0.069). The results of the correlation test in each domain are successively in the

physical domain (r = 0.054; p = 0.277), psychological domain (r = 0.136; p = 0.006), social relationship domain (r = 0.043; p = 0.386), and environmental domain (r = 0.022; p = 0.656). There is a tendency for gender to affect junior and senior high school students' health and quality of life in the psychological domain (Table 8, Figure 3).

Table 8. Correlation of Gender with Quality of Life

	Correlation Coefficient (r)	P-value
Gender-Quality of Life	0,090	0,069
Gender-Domain 1 (Physical)	0,054	0,277
Gender-Domain 2 (Psychological)	0,136	0,006
Gender-Domain 3 (Social Relationships)	0,043	0,386
Gender-Domain 4 (Environment)	0,022	0,656

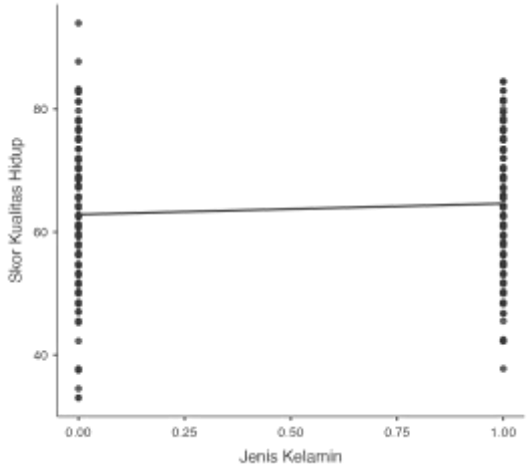

Figure 3. Correlation between gender and health quality of life of junior and senior high school students

In Table 9, the correlated independent variables based on bivariate analysis were subjected to logistic regression calculation. Age was the most influential independent variable (p = 0.020). Students aged 15-17 had a chance of 1.664 times lower health quality of life than students aged 10-14. The independent variables jointly influenced the dependent variable (R2N = 0.0295), meaning that alcohol consumption and age together had a 2.95% effect on the health quality of life of junior and senior high school students.

Table 9. Logistic Regression of Variables Correlated with Quality of Life

	OR	P-value	R^2_N
Alcohol Consumption (Yes - No)	1,588	0,115	
Age (15-17 years - 10-14 years)	1,664	0,020	0,0295
Age (18-19 years - 10-14 years)	1,466	0,335	

Quality of Life = Moderate vs Quality of Life = Good

Alcohol Consumption Habits

The results of this study show that the quality of health of junior and senior high school students in Bolaang Mongondow Regency is mainly in the moderate category. A weak unidirectional correlation (r = -0.115) was significant (p = 0.020) between alcohol consumption habits and the health quality of life of junior and senior high school students. There were significant correlations in the psychological domain (p = 0.042) and environmental domain (p = 0.001) with unidirectional correlation direction (r = -0.101) and (r = -0.159). Habitual alcohol consumption will reduce health and quality of life as well as in the psychological domain and environmental domains.

Research conducted by Senduk et al, there is an association between alcohol consumption and quality of life (Senduk et al., 2019). A variety of health risk factors can threaten quality of life, one of the most serious of which is behavior such as alcohol consumption, especially in adolescence (Spilkova et al., 2015). Alcohol addiction is categorized as a mental health disorder that causes permanent changes in brain function. These changes will cause cognitive and concentration impairment in adolescents, reducing their intelligence and learning achievement (Family, 2022).

Alcohol dependence can cause a person to be less productive due to limitations in performing daily activities; there will be problems at work and poor work performance (Runtuwene et al., 2022). According to Lito et al., there is a curiosity factor in consuming alcohol, and there is also influence from the surrounding environment, such as friendship groups. (MB, 2021). The family environment and place of residence also affect adolescents' alcohol consumption habits if there are family members who consume alcohol or have a permissive attitude toward the habit (Aprellia et al., 2024). Another study conducted by Hung et al. stated that adolescents who experience alcohol dependence will experience a decrease in the quality of life in the psychological domain (related to mental health) and the environmental domain (related to a sense of dissatisfaction with the surrounding environment). (Hung et al., 2015).

Age

The results of this study indicate that age has a weak unidirectional correlation (r = -0.159), which is significant (p = 0.001) in the quality of health of junior and senior high school students in Bolaang Mongondow Regency. There was a significant correlation in the psychological domain (p = 0.003), social relationship domain (p = <0.001), and environmental domain (p = 0.002) with a weak unidirectional correlation respectively (r = -0.148), (r = -0.171) and (r = -0.153). There is a tendency to decrease the perception of health and quality of life with age in the psychological, social relationship, and environmental domains.

There is a correlation between sociodemographic factors and quality of life. Age affects quality of life; there is a decrease over time (Sari et al., 2021). Significant general and quality of life differences were also found in different age groups and can be observed since adolescence (Purba et al., 2018). Research in Maranhão (Brazil) in 2018 showed that age variables were significantly associated with adolescent health and quality of life (p = 0.021). The age group in the study was divided into two groups, namely, groups aged £15 years and >15 years. From the observation, it was found that the group aged >15 had a healthy quality of life with moderate (68.2%) and poor (81.4%) categories. Based on the calculation, the odds of 0.515 times the quality of health life of adolescents in the group aged >15 years is lower than those aged □15 years (OR 0.515) (Alencar et al., 2022)..

A longitudinal study conducted over four years in Hong Kong suggests two theories that explain the decline in health and quality of life as people age. First, as people age, their demands and responsibilities increase. Second, it is assessed by the maturation of cognitive function and a more realistic way of looking at the world. (Shek & Li, 2016).

Gender

This study showed that gender did not correlate with the quality of health life of junior and senior high school students in Bolaang Mongondow Regency (r = 0.090; p = 0.069). In addition, a significant correlation test result was obtained in the psychological domain (p = 0.006) with a weak correlation in the same direction (r = 0.136). There is a tendency for male students to have a better perception of health and quality of life compared to female students in the psychological domain.

Pinaria et al.'s study found no significant relationship between gender and quality of life (Pinaria et al., 2024). Kumayas et al. in South Minahasa Regency stated that gender was not associated with adolescent quality of life. In general, from the four domains, it was found that adolescent girls' quality

of life was better than adolescent boys (M, 2022). In contrast to the research results obtained by Alencar et al. in Brazil, there is a significant relationship between gender and adolescent health quality of life (p = 0.002). In the study, it was also observed that the quality of life of female adolescents was lower than that of male adolescents (Alencar et al., 2022). This difference was also found in a study conducted on 415 adolescents in Manado City, where there was a small relationship between female adolescents' health quality (Porajow et al., 2021).

Differences in adolescents' health and quality of life by gender may be related to the different pubertal transition periods of males and females. This affects their emotions, thoughts, decisions, and interactions with the outside world. (WHO, 2023b). Today's instantaneous life leads to earlier menarche in adolescent girls. This can cause (psychological) feelings not by their ideal conditions. In addition, women tend to pay more attention to their bodies' appearance than men.

CONCLUSION

Based on the results of this research, it can be concluded that there is a correlation between alcohol consumption habits and age with the quality of health life of junior and senior high school students in Bolaang Mongondow Regency, while gender is not significant. Age was the most influential independent variable on health and quality of life in this study. The implications of these findings suggest that targeted interventions focusing on younger age groups could be more effective in improving the overall health and quality of life of adolescents. It is recommended that future research explore the underlying reasons for the lack of gender significance and investigate additional factors that might influence adolescent health and quality of life, such as socioeconomic status, educational environment, and family dynamics. Moreover, longitudinal studies could provide deeper insights into how these variables interact over time, offering a more comprehensive understanding of the factors affecting adolescent well-being.

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