

Meta Analysis: Factors Affecting Alcohol Consumption in Adolescents

Ihsan Hanif, Ardiana Mardiah, Rachmawaddah Yolanda,
Bhisma Murti, Siti Mar'atul Munawaroh

Master's Program in Public Health, Universitas Sebelas Maret, Indonesia

Received: 05 August 2024; Accepted: 22 August 2024; Available online: 16 October 2024

ABSTRACT

Background: Since alcohol is obtained easily, so it tends to be widely abused. The factors that cause a teenager to consume alcohol are individual factors/individual personality, and environmental factors. This study aims to estimate the factors that affect alcohol consumption in adolescents.

Subjects and Method: This study used systematic review and meta-analysis using PICO. Population: adolescents. Interventions: drinking parents, drinking friends, smoking. Comparison: non-drinking parents, non-drinking friends, non-smoking. Result: alcohol consumption. The articles used in this study were derived from 2 databases, namely Google Scholar and Science Direct. The article's keywords were "teenager" AND "drinking parents" AND "drinking friends" AND "smoke" AND "alcohol consumption". The articles included in this study were full paper articles, cross-sectional study design, publication year ranged from 2019-2023 and the measure of association used was Adjusted Odds Ratio. The articles were analyzed using the Review Manager 5.4 application.

Results: Seven cross-sectional studies showed that drinking friends increased alcohol consumption by 5.09 times compared to non-drinking friends, and the result was statistically significant (aOR=5.09; CI 95%= 2.64 to 9.81; p= 0.001). Seven cross-sectional studies showed that drinking parents increased alcohol consumption by 1.99 times compared to non-drinking parents, and the result was statistically significant (aOR=1.99; CI 95%= 1.50 to 2.64; p= 0.001). Seven cross-sectional studies showed that smoking can increase alcohol consumption by 2.09 times compared to nonsmoking, and the result was statistically significant (aOR=2.09; CI 95%= 1.32 to 3.30; p= 0.001).

Conclusion: Smoking-adolescents, drinking parents, and drinking friends increase their likelihood of consuming alcohol.

Keywords: smoking, drinking friends, alcohol consumption.

Correspondence:

Ihsan Hanif. Master's Program in Public Health, Universitas Sebelas Maret, Jl. Ir, Sutami 36A, Surakarta 51726, Central Java, Indonesia. e-mail: Ihsanhnf77@student.uns.ac.id Mobile: +6282135720799.

Cite this as:

Hanif I, Mardiah A, Yolanda R, Murti B, Munawaroh SM (2024). Meta Analysis: Factors Affecting Alcohol Consumption in Adolescents. J Health Promot Behav. 09(04): 315-328. <https://doi.org/10.26911/thejhp.-2024.09.04.04>.



© Ihsan Hanif. Published by Master's Program of Public Health, Universitas Sebelas Maret, Surakarta. This open-access article is distributed under the terms of the [Creative Commons Attribution 4.0 International \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/). Re-use is permitted for any purpose, provided attribution is given to the author and the source is cited.

BACKGROUND

Adolescents have high curiosity and always want to try new things, they often try negative things such as smoking, alcohol consumption and falling into drugs and free sex (Getachew et al., 2019). In addition, alcohol use is associated with other direct and indirect long-term effects such as liver disease and obesity especially among men (Pachankis et al., 2014).

Factors causing an adolescent to consume alcohol are individual factors/ individual personality (lack of confidence, disillusionment, curiosity and experiment, escape from a problem) and environmental factors (family environment, school, peers, community) (Chekole & Mekonnen Abate, 2020). Environmental factors can be found in observational learning. Learning through observation means learning to face practical problems, real social problems, and solve them. The perceived benefit is the belief in the advantages of suggested methods to reduce the risk of disease (Htet et al., 2020).

Since alcohol is easily obtained so it tends to be widely abused (Stautz & Cooper, 2013). Continuous consumption of alcohol can lead to alcohol dependence. In 2020, 3 million deaths annually resulted from alcohol use, which is 5.3% of all deaths globally, and 13.5% of deaths among people aged 20–39 years are due to alcohol (Pachankis et al., 2014).

Adolescents who smoked within 30 days prior to the study were seven times more likely to consume alcohol than students who did not smoke (Htet et al., 2020). Smoking in adolescence is strongly associated with alcohol use and abuse. Adolescents who directly observe their peer consuming alcohol had a 4.21 times risk of drinking alcohol compared to adolescents who do not directly observe their peers consuming alcohol (Getachew et al., 2019).

A study shows that teenagers tend to imitate the behavior of their peers when it comes to alcohol consumption, especially if they perceive their group as "popular" or want to be accepted within that group. Therefore, adolescents are influenced both directly by friends who offer alcohol and change their perceptions so that underage drinking behavior seems acceptable (Luecha et al., 2022).

The behavior of people who live in the same house especially the parents to provide encouragement or advice about behavior. This is because adolescents tend to imitate their parents' behavior, including alcohol consumption behavior (Lemma et al., 2021). If parents frequently consume alcohol in front of adolescents, consequently the adolescents may perceive it as an accepted behavior and become more likely to imitate it. Family is the closest social environment, so it is expected to help control and shape behavior to carry out health behaviors (Dorji et al., 2020). This study aimed to determine the effect of smoking factors, drinking friends, and drinking parents on alcohol consumption.

SUBJECTS AND METHOD

1. Study Design

This study used articles published during the period of 2019 to 2023. The selection of articles was conducted using a flow chart, that is the PRISMA Flowchart. The keywords used in article searches were "teenager" AND "drinking parents" AND "drinking friends" AND "smoke" AND "Alcohol consumption".

2. Step of Meta-Analysis

The meta-analysis was carried out in five steps as follows:

- 1) Formulate research questions in the PICO, including: P= adolescents, I= drinking parents, drinking friends, smoking, C= non-drinking parents, non-

drinking friends, non-smoking, 0= Alcohol consumption.

- 2) Search for primary study articles from various electronic and non-electronic databases.
- 3) Conduct screening and critical assessment of primary research articles.
- 4) Perform data extraction and synthesize effect estimates into RevMan 5.3.
- 5) Interpret and conclude the results.

3. Inclusion Criteria

This study used inclusion criteria, namely full text articles with a cross-sectional study design, articles were published in English during the period of 2019 to 2023, analyze and estimate alcohol consumption, drinking parents, drinking friends, smoking until the end of the study, reported using adjusted odds ratio (aOR).

4. Exclusion Criteria

The study used exclusion criteria, namely articles that have been meta-analyzed, do not use a cross-sectional design, the final results of the study are not reported using adjusted odds ratio (aOR) and the sample is <100 participants.

5. Operational Definition of Variables

Article search was conducted by taking into account the eligibility criteria determined using the PICO model.

Alcohol consumption is an easily obtained drink so it tends to be abused a lot.

Drinking friends' adolescents are influenced both directly by friends who offer alcohol and change their perceptions to make underage drinking behavior seem acceptable.

Drinking parents often consume alcohol in front of adolescents; therefore, adoles-

scent may perceive it as an accepted behavior and become more likely to imitate it.

Smoking in adolescence is strongly associated with alcohol use and abuse.

6. Instruments

The instrument in this study was the PRISMA Flow Diagram using primary study quality assessment for a cross-sectional meta-analysis research design.

7. Data analysis

Articles were collected and data processing was carried out using the Review Manager application (RevMan 5.3) to determine the influence between knowledge, self-efficacy and social support and the use of HIV testing among homosexuals. Data processing was presented in the form of forest plots and funnel plots.

RESULTS

The process of searching for articles to be synthesized and the process of reviewing and selecting articles using the PRISMA Flow Diagram are presented in Figure 1. The initial search process resulted in 1,040 articles. After removing articles duplication, 830 articles were generated, subsequently, after the process of eliminating article duplication, the next step was to check the relevance of the title and the study design used to generate 190 articles. After checking articles according to inclusion criteria and exclusion criteria, 100 articles were obtained.

Figure 2 showed the observed 13 study articles that come from the Africa, namely Ethiopia, Ghana, Uganda, Africa, Zambia, from Asia namely Thailand, Myanmar, from Australia, from America, namely United States.

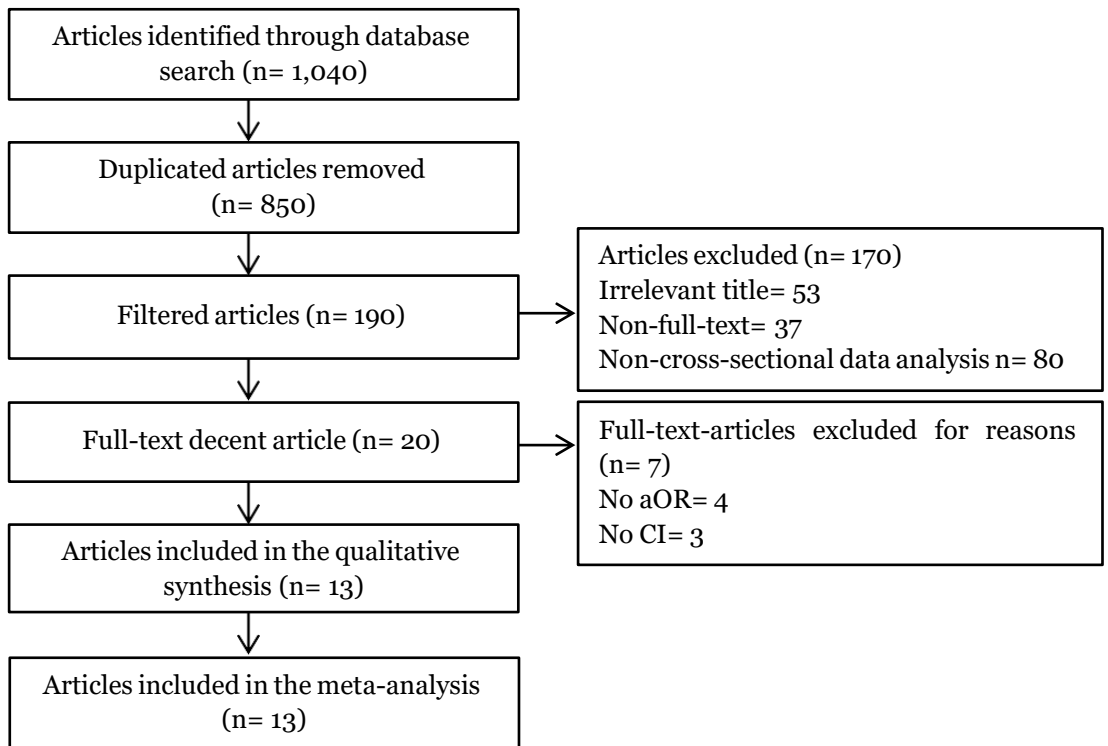


Figure 1. PRISMA Flow diagrams of factors affecting alcohol consumption in adolescents



Figure 2. Research distribution map of factors affecting alcohol consumption in adolescents

Table 1. The quality assessment result of correlations between knowledge, self-efficacy, and social support on HIV testing with a cross-sectional study.

Primary Study	Criteria												Total
	1				2		3		4	5	6		7
	a	b	c	d	a	b	a	b			a	b	
Enstad et al. (2019)	2	2	2	2	2	2	2	2	2	2	2	2	26
Chekole et al. (2020)	2	1	2	2	2	2	2	2	2	2	2	2	25
Getachew et al. (2019)	2	2	2	2	2	2	2	2	2	2	2	2	26
Boltana et al. (2023)	2	2	2	2	2	2	2	2	2	2	2	2	26
Dorji et al. (2020)	2	2	2	2	2	2	2	2	2	2	2	2	26
Htet et al. (2020)	2	2	2	2	2	2	2	2	2	2	2	2	26
Lemma et al. (2021)	2	2	2	2	2	2	2	2	2	2	2	2	26
Chen et al. (2023)	2	2	2	2	2	2	2	2	2	2	2	2	26
Kabwama et al. (2021)	2	2	2	2	2	2	2	2	2	2	2	2	26
Siwale et al. (2019)	2	2	2	2	2	2	2	2	2	2	2	2	26
Luecha et al. (2020)	2	1	2	2	2	2	2	2	1	2	2	2	24
Aboagye et al. (2021)	2	2	2	2	2	2	2	2	2	2	2	2	26
Schuler et al. (2019)	2	2	2	2	2	2	2	2	2	2	2	2	26
Enstad et al. (2019)	2	2	2	2	2	2	2	2	2	2	2	2	26

Table 1 showed quality assessment result of articles with a cross-sectional study included in meta-analysis.

Description of the question criteria:

1. Formulation of research questions in PICO acronym:
 - a. What is the population in the study primary is the same as the population in PICO meta-analysis?
 - b. What is the operational definition of intervention (intervention), namely the status of exposure (exposed) in primary studies is the same as that definition intended in meta-analysis?
 - c. What is the comparison (comparison), namely status not exposed (unexposed) is used Primary studies are the same as that definition intended in meta-analysis?
 - d. What is the outcome variable being studied? in primary studies is the same as that definition intended in meta-analysis?
2. method for selecting research subjects:
 - a. Descriptive cross-sectional study (prevalence): Is the sample randomly selected?
 - b. Analytical cross-sectional study: Are samples randomly or purposively selected?
3. Methods for measuring comparisons (intervention) and outcome variables:
 - a. Are both exposure or intervention and outcome variables measured with the same instruments in all primary studies?
 - b. If variables are measured on a categorical scale, are the cut-offs used the same across primary studies?
4. Bias of the design:
 - a. How much is the response rate?
 - b. Is non-response related to outcomes?
5. Methods to control confounding:
 - a. Is there any confusion in the results or conclusions of the primary study?
 - b. Have primary study researchers used appropriate methods to control the effects of confusion?
6. Method of statistical analysis:
 - a. In the cross-sectional study, is multivariate analysis performed?
 - b. Multivariate analysis includes multiple linear regression analysis, multiple

logistic regression analysis, Cox regression analysis.

7. Is there a conflict of interest with the research sponsor?

Description of scoring:

0= No; 1= Hesitate; 2= Yes.

Table 2 describes a summary of primary research of the effect of drinking friends on alcohol consumption with a cross-sectional

design, a meta-analysis was carried out on 7 articles originating from the country of Ghana, Ethiopia, Thailand, Myanmar, Australia, United States. The largest research population was found in a study conducted by Schuler et al. (2019) namely 12,038 university students, and the study with the smallest population, namely the study conducted by Aboagye et al. (2021) as many as 418 university students.

Table 2. Description of the primary studies of the effect of drinking friends on alcohol consumption (cross-sectional study).

Author (years)	Country	Sample	P	I	C	O
Aboagye et al. (2021)	Ghana	418	University Students	Drinking friends	Non-Drinking friends	Alcohol Consumption
Boltana et al. (2023)	Ethiopia	748	University Students	Drinking friends	Non-Drinking friends	Alcohol Consumption
Dorji et al. (2020)	Thailand	432	University Students	Drinking friends	Non-Drinking friends	Alcohol Consumption
Htet et al. (2020)	Myanmar	3,456	University Students aged 15-24 years	Drinking friends	Non-Drinking friends	Alcohol Consumption
Lueacha et al. (2020)	Thailand	9,509	Adolescents aged 10-14 years	Drinking friends	Non-Drinking friends	Alcohol Consumption
Enstad et al. (2019)	Australia	786	University Students	Drinking friends	Non-Drinking friends	Alcohol Consumption
Schuler et al. (2019)	Amerika Serikat	12,038	University Students	Drinking friends	Non-Drinking friends	Alcohol Consumption

Table 3. aOR and 95% CI data the effect of drinking friends on alcohol consumption.

(Author, year)	aOR	95% CI	
		Lower Limit	Upper Limit
Aboagye et al. (2021)	3.7	2.31	5.82
Boltana et al. (2023)	33.3	16.6	50
Dorji et al. (2020)	2.26	1.05	4.87
Htet et al. (2020)	7.5	4.8	11.7
Lueacha et al. (2020)	4.21	3.32	5.33
Enstad et al. (2019)	1.24	0.89	1.72
Schuler et al. (2019)	8.9	6.9	11.6

Table 3 showed the effect sizes of the primary studies used in the meta-analysis about the effect of drinking friends on alcohol consumption, with largest adjusted

odd ratio (aOR) conducted by Boltana et al. (2023) is 33.3, and the lowest aOR conducted by Enstad et al. (2019) is 1.24.

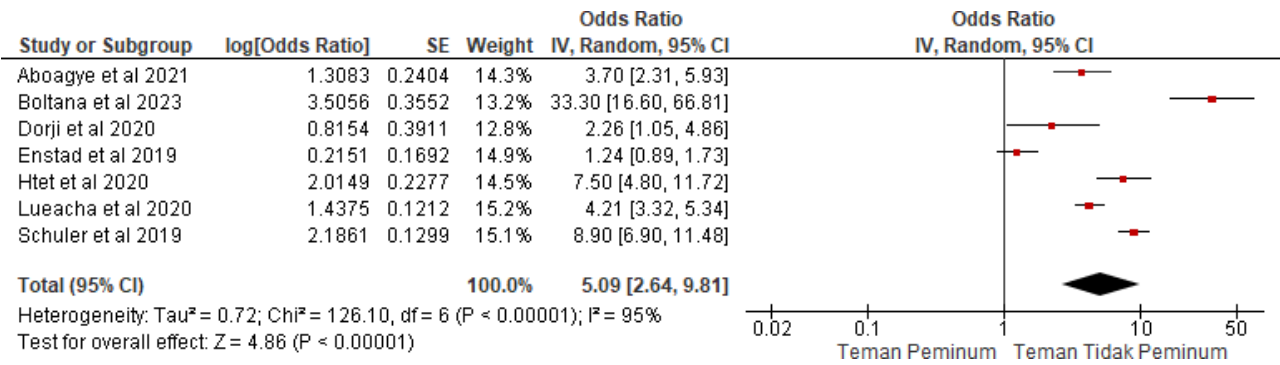


Figure 3. Forest plot on the effect of drinking friends on alcohol consumption

The forest plot in figure 3 shows that drinking friends could increase alcohol consumption by 5.09 times compared to non-drinking friends, and this result was statistically significant (aOR= 5.09; 95% CI = 2.64 to 9.81; $p < 0.001$). The forest also

showed high heterogeneity of effect estimates across primary studies ($I^2 = 95\%$; $p < 0.001$). The calculation of the average effect estimates was carried out with a random effect model approach.

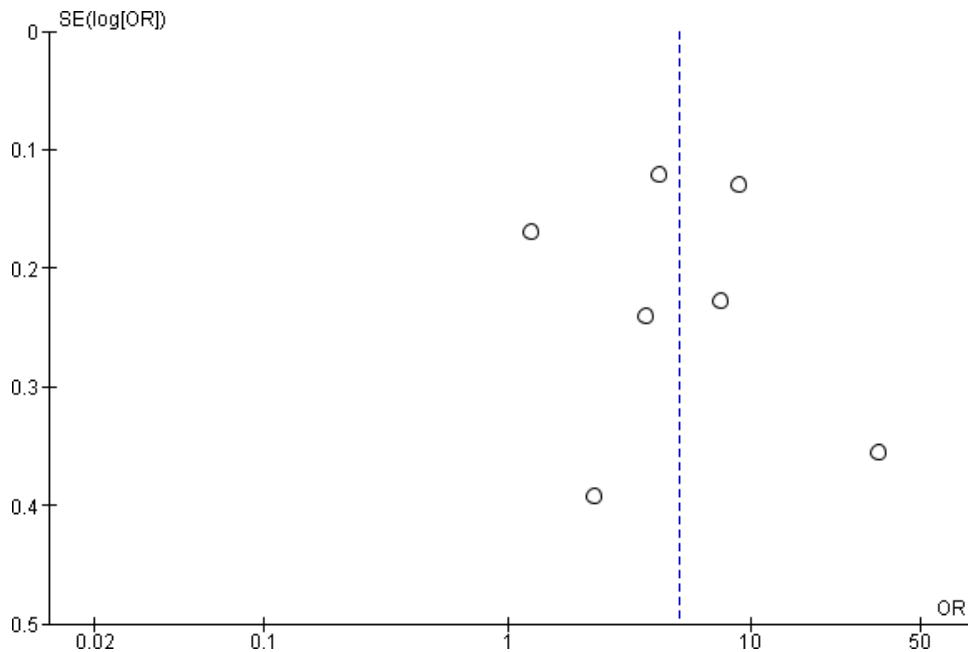


Figure 4. Funnel plot on the effect of drinking friends on alcohol consumption.

Figure 4 shows that the distribution of effect estimates is uneven. The distribution of effect estimates shows that the distribution of effect estimates tends to be more to the left of the average vertical line of effect estimates than to the right. Thus, this funnel plot image shows the presence of

publication bias. Because the distribution of effect estimates is located to the left of the average vertical line in the same direction as the diamond in the forest plot, publication bias tends to reduce the actual effect (underestimate).

Table 4. Description of the primary studies of drinking parents' effect on alcohol consumption (cross-sectional study).

Author (years)	Country	Sample	P	I	C	O
Boltana et al. (2023)	Ethiopia	748	University Students	Drinking parents	Non-Drinking parents	Alcohol Consumption
Chen et al. (2023)	South Africa	537	University Students	Drinking parents	Non-Drinking parents	Alcohol Consumption
Dorji et al. (2020)	Thailand	432	University Students	Drinking parents	Non-Drinking parents	Alcohol Consumption
Htet et al. (2020)	Myanmar	3,456	University Students aged 15-24 years	Drinking parents	Non-Drinking parents	Alcohol Consumption
Kabwama et al. (2021)	Uganda	2,500	Adolescents aged 10-24 years	Drinking parents	Non-Drinking parents	Alcohol Consumption
Lueacha et al. (2020)	Thailand	9,509	Adolescents aged 10-14 years	Drinking parents	Non-Drinking parents	Alcohol Consumption
Siwale et al. (2019)	Zambia	357	Students aged 8-14 years	Drinking parents	Non-Drinking parents	Alcohol Consumption

Table 5. aOR and 95% CI data of drinking parents' effect on alcohol consumption.

(Author, year)	aOR	95% CI	
		Lower Limit	Upper Limit
Boltana et al. (2023)	4.83	2.68	8.70
Chen et al. (2023)	4.56	2.06	10.09
Dorji et al. (2020)	1.75	1.02	3.01
Htet et al. (2020)	1.4	1.2	1.8
Kabwama et al. (2021)	2.24	1.38	3.64
Lueacha et al. (2020)	1.31	0.98	1.75
Siwale et al. (2019)	1.76	1.39	2.23

Table 4 describes a summary of primary research of the effect of drinking parents on alcohol consumption with a cross-sectional design, a meta-analysis was carried out on 7 articles, the largest research population was found in a study conducted by Lueacha et

al. (2020) namely 9,509 adolescents aged 10-14 years, and the the smallest population, namely the study conducted by Siwale et al. (2019) as many as 357 students aged 8-14 years.

Table 5 showed the effect sizes of the primary studies used in the meta-analysis, with largest adjusted odd ratio conducted

by Boltana et al. (2023) is 4.83, and the lowest aOR conducted by Luecha et al. (2020) is 1.31.

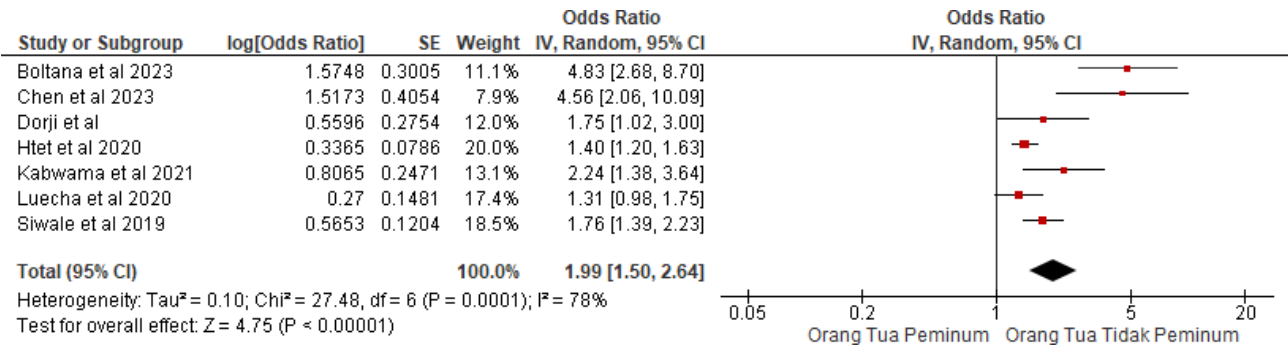


Figure 5. Forest plot the influence of drinking parents' effect on alcohol consumption

Figure 5 shows that drinking parents increased alcohol consumption by 1.99 times compared to non-drinking parents, and this result was statistically significant (aOR=1.99; CI 95%= 1.50 to 2.64; $p < 0.001$). The

forest plot also shows high heterogeneity of effect estimates across primary studies ($I^2 = 78\%$; $p < 0.001$). The calculation of the average effect estimation was carried out with a random effect model approach.

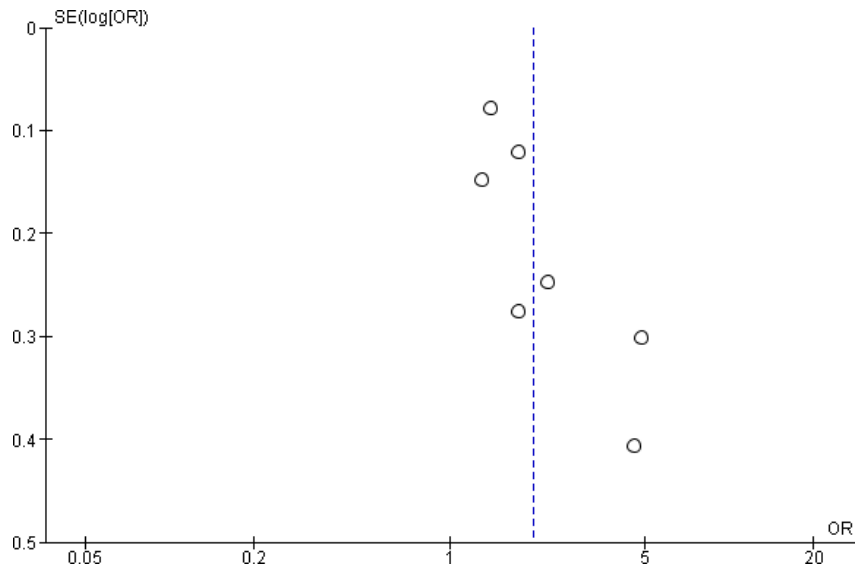


Figure 6. Funnel plot the influence of drinking parents' effect on alcohol consumption

Figure 6 showed the distribution of effect estimates tends to be more to the left of the average vertical line than to the right. Thus, this funnel plot image shows the publication bias. Because the distribution of effect

estimates is located to the left of the average vertical line in the same direction as the diamonds in the forest plot, publication bias tends to reduce the actual effect (underestimate).

Table 6. Description of the primary studies the effect of smoking on alcohol consumption (cross-sectional study).

Author (years)	Country	Sample	P	I	C	O
Boltana et al. (2023)	Ethiopia	748	University Students	Smoking	Non-Smoking	Alcohol Consumption
Chekole et al. (2020)	Ethiopia	803	University Students	Smoking	Non-Smoking	Alcohol Consumption
Dorji et al. (2020)	Thailand	432	University Students	Smoking	Non-Smoking	Alcohol Consumption
Htet et al. (2020)	Myanmar	3.456	University Students aged 15-24 years	Smoking	Non-Smoking	Alcohol Consumption
Lemma et al. (2021)	Ethiopia	424	University Students	Smoking	Non-Smoking	Alcohol Consumption
Enstad et al. (2019)	Australia	786	University Students	Smoking	Non-Smoking	Alcohol Consumption
Getachew et al. (2019)	Ethiopia	3.967	University Students	Smoking	Non-Smoking	Alcohol Consumption

Table 7. aOR and 95% CI data the effect of smoking on alcohol consumption.

Author (year)	aOR	95% CI	
		Lower Limit	Upper Limit
Boltana et al. (2023)	2.04	1.13	3.44
Chekole et al. (2020)	1.76	1.09	2.84
Dorji et al. (2020)	2.28	1.35	3.87
Htet et al. (2020)	7.0	5.1	9.7
Lemma et al. (2021)	1.55	0.74	3.24
Enstad et al. (2019)	1.31	1.06	1.61
Getachew et al. (2019)	1.44	1.29	1.61

Table 6 describes a summary of primary research the effect of smoking on alcohol consumption with a cross-sectional design, a meta-analysis was carried out on 7 articles, the largest research population was found in a study conducted by Htet et al. (2020) namely 93,456 University Students aged 15-24 years, and the the smallest population, namely the study conducted by Dorji et al. (2020) as many as 432 university students.

Table 7 showed the effect sizes of the primary studies used in the meta-analysis the effect of smoking on alcohol consumption,

with largest adjusted odd ratio conducted by Htet et al. (2020) is 7.00, and the lowest aOR conducted by Enstad et al. (2019) is 1.31.

Figure 7 shows that smoking could increase alcohol consumption by 2.09 times compared to nonsmoking, and these result was statistically significant (aOR=2.09; CI 95%= 1.32 to 3.30; p= 0.002). The forest plot also show high heterogeneity of effect estimates across primary studies ($I^2 = 94\%$; $p < 0.001$). The calculation of the average effect estimates was carried out with a random effect model approach.

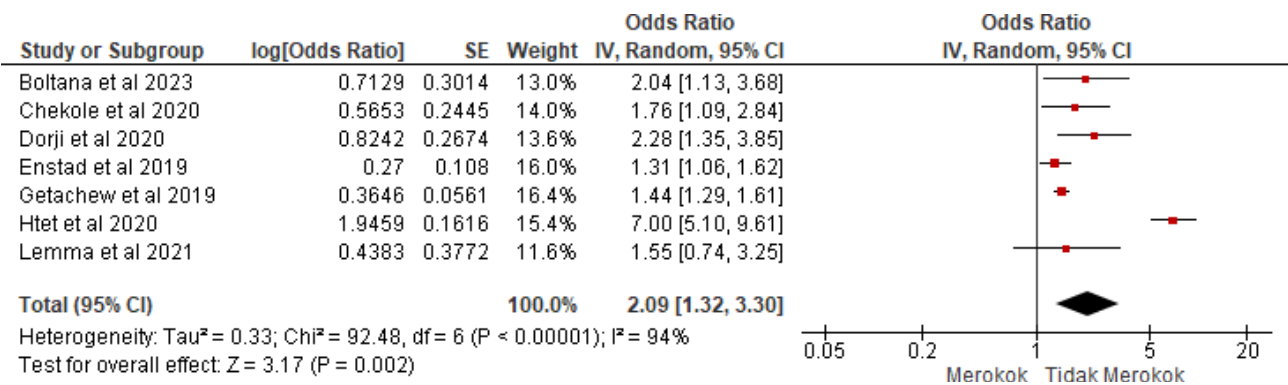


Figure 7. Forest plot of smoking effect on alcohol consumption.

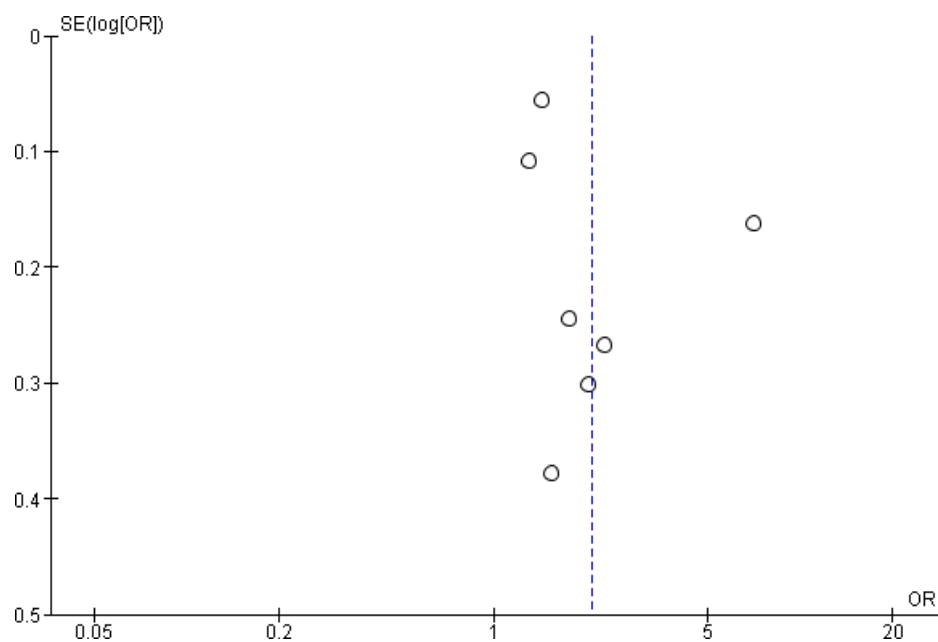


Figure 8. Funnel plot of smoking effect on alcohol consumption.

Figure 8 shows that the distribution of effect estimates is uneven. The distribution of effect estimates shows that the distribution of effect estimates tends to be located more on the left of the average vertical line of the effect estimate than on the right and some are on the vertical line. Thus, this funnel plot image shows the occurrence of publication bias. Because the distribution of effect estimates is located to the left of the average vertical line in the same direction as the diamonds in the forest plot, publication bias tends to reduce the actual effect (underestimate).

DISCUSSION

This meta-analysis study analyzed factors that affect alcohol consumption in adolescents. This study used aOR statistics of multivariate analysis results which aims to get the same final results for the studies to be analyzed.

1. The effect of drinking friends on alcohol consumption

This study showed that drinking friends increased alcohol consumption by 5.09 times compared to non-drinking friends, and this result was statistically significant

(aOR= 5.09; CI 95%= 2.64 to 9.81; $p<0.001$).

A study conducted by Aboagye et al. (2021) reveals that college students with peer influence have a higher chance of alcohol consumption than those without peer influence (aOR = 3.7, 95% CI = 2.31). This association can be explained based on social learning principle that emphasizes that individuals can learn bad behavior from observing their peers. Peers are an important source of social support and therefore, peer pressure can be both good and bad instigators of a behavior.

A study conducted Chekole & Abate, 2020) shows that having close friends can provide protection against excessive alcohol use at this time. A caring close friend can provide support, remind about the risks of excessive alcohol use, or even prevent teens from dangerous situations involving alcohol. Nevertheless, close friends alone may not be enough to fully protect teens from alcohol-related problems.

2. The effect of drinking parents on alcohol consumption

This study showed that drinking parents increased alcohol consumption by 1.99 times compared to non-drinking parents, and the result was statistically significant (aOR= 1.99; CI 95%= 1.50 to 2.64; $p<0.001$).

The results of another study by (Luecha et al., 2022) shows that alcohol drinking parents have risk of 1.18 times in alcohol consumption behavior in adolescents in Thailand. One possible explanation is that alcohol is stored in an easily accessible place inside the house, making it easily consumed by teenagers.

This is in line with a study conducted by (Siwale & Siziya, 2019) that the involvement of parents who consume alcohol significantly affects attitudes towards alcohol consumption so that school adolescents

with drinking parents have a positive tendency to alcohol consumption

A strong association between parental alcohol use and alcohol use among adolescents, which clearly suggests that children living in families whose parents consume alcohol are more likely to consume alcohol than those whose parents do not consume alcohol significantly (Dorji et al., 2020).

3. The effect of smoking on alcohol consumption

This study showed that smoking could increase alcohol consumption by 2.09 times compared to non-smoking, and the result was statistically significant (aOR=2.09; CI 95%= 1.32 to 3.30; $p<0.001$). Smoking has a significant association with alcohol use. In Ethiopia, being a university student seems to increase alcohol use (Chekole & Mekonnen Abate, 2020). People who are smoking were 2.28 times more likely to consume alcohol than those of non-smoking (95% CI = 1.35–3.87) (Dorji et al., 2020).

Alcohol consumption, smoking habits and excessive stress levels will have an impact on health in the long term, one of which is an increase in blood pressure. Alcohol has the same effect as carbon monoxide which causes blood acidity to increase blood pressure (Schuler et al., 2019).

AUTHOR CONTRIBUTION

Ihsan Hanif as the main researcher designed the study, conducted article searches and analyzed data. Adriana Mardiah collected data articles and analyzed the data. Rachmawaddah Yolanda reviewed article documents.

FUNDING AND SPONSORSHIP

This study is self-funded.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

ACKNOWLEDGMENT

The author would like to address the gratitude to database providers Google Scholar dan Science Direct.

REFERENCES

- Aboagye RG, Kugbey N, Ahinkorah BO, Seidu AA, Cadri A, Akonor PY (2021). Alcohol consumption among tertiary students in the Hohoe municipality, Ghana: analysis of prevalence, effects, and associated factors from a cross-sectional study. *BMC Psychiatry*, 21(1): 1–10. Doi: 10.1186/s12888-021-03447-0
- Boltana G, Kacharo MM, Abebe A, Baza D (2023). Alcohol consumption and associated factors among undergraduate regular students in Wolaita Sodo University, Southern Ethiopia, 2021: a cross-sectional study. *African Med*, 45. Doi: 10.11604/pamj.2023.-45.179.35980
- Chekole YA, Abate SM (2020). Prevalence of Alcohol Use and Associated Factors Among Dilla University Students, Dilla Town, Southern Ethiopia: A Cross-Sectional Study. *SSRN Electron. J.* 2020. Doi: 10.2139/ssrn.-3578802
- Chen C, Mpinganjira MG, Motilal A, Matukane S, Letsoalo R, McKee T, Ntombela Z, et al. (2023). Prevalence and correlates of alcohol use and risky drinking among undergraduate students in Johannesburg, South Africa: a cross-sectional study. *BMC Psychiatry*, 23(1): 1–10. Doi: 10.1186/s12888-023-05043-w
- Dorji T, Srichan P, Apidechkul T, Sunsern R, Suttana W (2020). Factors associated with different forms of alcohol use behaviors among college students in Bhutan: a cross-sectional study. *Substance Abuse*, 15(1): 4–11. Doi: 10.1186/s13011-020-00315-0
- Enstad F, Evans-Whipp T, Kjeldsen A, Toumbourou JW, Soest VT (2019). Predicting hazardous drinking in late adolescence/young adulthood from early and excessive adolescent drinking - A longitudinal cross-national study of Norwegian and Australian adolescents. *BMC Public Health*, 19(1): 1–12. Doi: 10.1186/s12889-019-7099-0
- Getachew S, Lewis S, Britton J, Deressa W, Fogarty AW (2019). Prevalence and risk factors for initiating tobacco and alcohol consumption in adolescents living in urban and rural Ethiopia. *Public Health*, 174: 118–126. Doi: 10.1016/j.puhe.2019.05.029
- Htet H, Saw YM, Saw TN, Htun NMM, Mon KL, Cho SM, Thike T, et al. (2020). Prevalence of alcohol consumption and its risk factors among university students: A cross-sectional study across six universities in Myanmar. *PLoS ONE*, 15(2): 1–14. Doi: 10.1371/journal.pone.0229329
- Kabwama SN, Matovu JKB, Ssenkusu JM, Ssekamatte T, Wanyenze RK (2021). Alcohol use and associated factors among adolescent boys and young men in Kampala, Uganda. *Substance Abuse: Treatment, Prevention, and Policy*, 16(1): 1–9. Doi: 10.1186/s13011-021-00385-8
- Lemma A, Salelew E, Demilew D, Tasfaye W, Shumet S, Kerebih H (2021). Alcohol use disorder and associated factors among University of Gondar undergraduate students: A cross-sectional study. *Subs Abuse Treat* 129(3). Doi: 10.1016/j.jsat.2021.108-373.

- Luecha T, Peremans L, Junprsert S, Van Rompaey B (2022). Factors associated with alcohol consumption among early adolescents in a province in Eastern region of Thailand: a cross-sectional analysis. *Subs Abuse*, 21(1): 325–343. Doi: 10.1080/-15332640.-2020.1766624
- Pachankis JE, Hatzenbuehler ML, Starks TJ (2014). The influence of structural stigma and rejection sensitivity on young sexual minority men's daily tobacco and alcohol use. *Soc Science and Medicine*, 103: 67–75. Doi: 10.-1016/j.socscimed.2013.10.005.
- Schuler MS, Tucker JS, Pedersen ER, D'Amico EJ (2019). Relative influence of perceived peer and family substance use on adolescent alcohol, cigarette, and marijuana use across middle and high school. *Addic Behaviors*, 88(6): 99–105. Doi: 10.1016/j.add-beh.2018.08.025
- Siwale CC, Siziya S (2019). Factors Associated with Alcohol Consumption Among Students in High Cost Schools in Lusaka, Zambia. *Research and Pub Health*, 3(1): 21–30. Doi: 10.21106/-ijtmrph.69
- Stautz K, Cooper A (2013). Impulsivity-related personality traits and adolescent alcohol use: A meta-analytic review. *Clinical Psy*, 33(4): 574–592. Doi: 10.1016/j.cpr.2013.03.003.