

Intention to Consume Alcohol among Dayak Adolescents in Sarawak: An Application of Theory of Planned Behavior

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Abstract

Objectives: To explore the application of a model that integrates various factors that influence Dayak adolescents' intentions to consume alcohol in Sarawak, Malaysia.

Methods: A cross-sectional quantitative study was conducted from September 2019 to February 2022. Through multistage stratified cluster sampling, 12 districts were selected from 12 divisions. Respondents were selected randomly and were interviewed using a questionnaire.

Results: Structural equation modeling was used to test the Theory of Planned Behavior (TPB) and explore the relationship between various variables and respondents' intention to consume alcohol. The findings suggest that attitude ($\beta = .22, p < .001$), subjective norm ($\beta = .33, p < .001$), and perceived behavior control ($\beta = -.41, p < .001$) influenced the intention to consume alcohol. In contrast, alcohol consumption was associated with intention ($\beta = .15, p < .001$), attitude ($\beta = .20, p < .001$), and perceived behavior control ($\beta = -.32, p < .001$).

Conclusion: The findings demonstrated that the TPB model can be used to explore various variables that influence the intention to consume alcohol among Dayak adolescents, with attitude, subjective norm, and perceived behavior control as the variable influencing the intention. This highlights the need for paying attention to those variables when developing age-appropriate strategies that address various social levels to curb alcohol consumption. Given the concerning rates of risky drinking and dependency, school-based health initiatives and focused screening for Dayak adolescents are crucial.

Keywords: Adolescents, alcohol, dayak, theory of planned behavior

Introduction

The psychoactive component of alcohol is ethanol, a molecule containing carbon atoms and the hydroxyl (-OH) group. It is commonly referred to as ethanol or ethyl alcohol and is known to have stimulant effects. Ethanol is produced through fermentation and distillation and is a key ingredient in various beverages, including wine, beer, and hard liquor.¹ Early alcohol use was believed to be detrimental to the adolescent brain's development, particularly in those who began drinking before or by age 15.² Such individuals may experience alcohol-related problems later

in life, including dependency and a consistent pattern of high alcohol use.³ These problems can lead to physical or mental disorders, as described in the Diagnostic and Statistical Manual of Mental Disorders.⁴ Alcohol use disorder, previously known as alcoholism or alcohol dependence, is characterized by excessive alcohol consumption that causes personal or professional problems, an inability to regulate drinking, and the need for increasing amounts of alcohol to achieve the same effects.⁵ Alcohol consumption in Malaysia has steadily risen, increasing from 0.8 liters in 2005 to 1.7 liters in 2015 per person.⁶ However, the prevalence of alcohol usage in

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Malaysia is lower than in other Western Pacific nations, with only 8.0% of Malaysian adults regularly consuming alcohol. The proportion of older persons who drink has declined from 7.8% in 2006 to 4.0% in 2015.⁷ It is worth noting that the “Bumiputras” population in Malaysia has the highest percentage of alcohol consumption, with 21.6% of them consuming alcohol in 2015. Furthermore, 75% of “Bumiputras” engaged in binge drinking. Although the prevalence of binge drinking has decreased since the previous survey in 2011, there has been an increase among current drinkers and adolescents.⁶ Sarawak is one of the states in Malaysia with the highest percentage of current drinkers, with more than one-fifth of the population, or 500,000 individuals, currently consuming alcohol. Interestingly, urban areas had a larger proportion of current drinkers than rural areas, men, and those with higher levels of education.⁸ Predicting alcohol consumption, the Theory of Planned Behavior (TPB) is a popular model, particularly for adolescents.^{9,10} This model assumes behavioral intentions are the precursors to behavior rather than attitudes. Attitude, subjective norms, and perceived behavioral control influence the intention. Each of these factors has its own set of influencing factors. The attitude variable represents the perceived likely qualities of the behavior. In contrast, the subjective norm represents perceptions of others’ specific preferences on whether or not one should engage in the conduct. Perceived behavioral control is similar to the idea of self-efficacy and is the belief that a person’s behavior is under their control. Implicit attitudes toward alcohol, in addition to readiness and intention to drink, which develop over time with regular exposure to alcohol, may influence risky drinking in young individuals, according to Davies *et al.*¹¹ Binge drinking was more likely to be reported by those with a positive attitude toward it and considered it socially acceptable and manageable behavior.¹⁰ Anti-alcohol and pro-abstinence social systems comprising friends, family, and community were linked to greater anti-alcohol subjective norms and attitudes among teenagers, according to Zhao *et al.*¹² Adolescent alcohol consumption is rising worldwide,¹³ particularly in Malaysia.¹⁴ Even though adolescents rarely drink, they consume more alcohol on each occasion than adults.¹⁵ Identifying the high-risk group is critical to developing a more effective and viable intervention, as these people are more likely to become high-risk alcohol drinkers.¹⁶

This study examined a model incorporating

several factors on the intention to consume alcohol among Dayak adolescents in Sarawak, Malaysia.

Methods

This cross-sectional study aimed to explore alcohol consumption among Dayak adolescents in Sarawak. The emphasis on the Dayak communities stems from their distinct cultural distinctions. While numerous native groups reside in Sarawak, each with its language, traditions, and cultural practices, they share certain recognizable characteristics. The sample population size was estimated using the precision-based approach single proportion formula, which accounted for a 19% base population proportion of current drinkers in Sarawak¹⁷ and a 5% absolute precision. Respondents were randomly chosen from male and female respondent houses, with only male or female adolescents approached accordingly. The sample size was inflated to reach 1510 Dayak adolescents, and multistage stratified cluster sampling was used to choose 12 districts from each of the 12 divisions. Face-to-face interviews using an interviewer-administered questionnaire were conducted in Malay, and the questionnaire was pilot-tested to ensure its quality before data collection. Ethics approval from the ethics committee of the Faculty of Medicine and Health Sciences was obtained before data collection. (Ref: UNIMAS/NC-21.02/03-02 JId.4 (55), 20 April 2020).

The study was conducted over 30 months, from September 2019 to February 2022, with a breakdown of different activities, including proposal approval, pretesting and validation and data collection and analysis. The questionnaire consisted of five components: respondent characteristics (age, education, occupation, marital status, education status, ethnicity, and religion), parental characteristics (age, gender, monthly household income, spouse and child relationships, and family characteristics), the Theory of Planned Behavior, alcohol consumption characteristics (frequency of drinking and alcohol misuse), and the type of alcoholic beverages consumed (assessed using the AUDIT questionnaire). The Theory of Planned Behavior measured attitude, social norms, perceived behavior control, and intention to consume alcohol among Dayak adolescents. Ten questions were asked to identify the alcohol use disorder among the Dayak adolescents, commonly known as AUDIT: The Alcohol Use Disorders

Identification Test.¹⁸ The AUDIT was developed as a simple method of screening for excessive drinking and to assist in brief assessment. It has three domains of assessing the hazardous alcohol use, dependence symptoms and harmful alcohol use. The Theory of Planned Behavior (TPB), 68 statement has been used to predict risky drinking. It measured attitudes, subjective norms, and perceived behavioral control that predict intention to engage in risky drinking, which in turn predicts future heavy episodic drinking.¹⁹ Back-to-back translation was validated by two language experts, who are expert in both Malay and English languages. All the questionnaire were pre-tested in local setting consistency. The Cronbach's alpha reliability coefficient varies from .876 to .946. A measurement model was developed to determine the convergent and discriminant validity of the constructs.²⁰ Informed written consent was obtained from guardians and adolescents before data collection. Structural equation modeling (SEM) was used to establish the causal relationship between attitude, subjective norm, perceived behavior control, intention to use, and alcohol intake among Dayak adolescents. SEM analysis used a measurement model (convergent and discriminant validity) and structural model analysis (path analysis). The variance accounted for (VAF) was used to analyze different parameters' indirect and total effects on the variables.²¹ Partial least squares were used to analyze the relationship between constructs, with p-values of regression coefficients (F-test) and variance explained (R-squared) as indicators of the model's explanatory power.²² Bootstrapping was used to assess the statistical significance of each path.²¹

Results

The Table 1 illustrates the socio-demographic characteristics of the participants. The survey of 1,510 respondents found that the average age was 17.3 years, with a slight majority of females (56.6%). The Iban community was the most represented ethnic group (68%), followed by the Bidayuh (14.6%) and the Orang Ulu (5.9%). Christianity was the most widely held religion (91.7%), followed by Islam (5.8%) and Buddhism (2.1%). Most respondents were single (91%), with students making up the majority of the workforce (77.7%). Secondary schooling was the most common level of education (64.5%), followed by pre-university (25.6%; Table 1).

The results show that 50.0% of Dayak adolescents used alcohol at a low risk, while 31.0% consumed alcohol at a hazardous

Table 1 Respondents Characteristics (n=1510)

Characteristics	N	%/Mean
Age in years, min, max	1510	17.30 (1.44), 11, 19
Gender		
Male	656	43.4
Female	854	56.6
Ethnicity		
Iban	1026	67.9
Bidayuh	220	14.6
Orang Ulu	89	5.9
§Others	175	11.6
Religion		
Christian	1385	91.7
Islam	87	5.8
Buddhist	31	2.1
¥Others	7	0.5
Marital status		
Single	1374	91.0
Married	91	6.0
€Others	45	3.0
Occupation		
Student	1174	77.7
Unemployed	42	2.8
Housewife	5	0.3
§Others	289	19.1
Education level		
No formal education	10	0.7
Kindergarten	3	0.2
Primary school	47	3.1
Secondary school	974	64.5
Pre-university	386	25.6
Vocational school	6	0.4
ψOthers	84	5.6

§others include Kayan, Punan, Ngaju, etc; ¥others include Bahai, Animism, etc; €others include separated, divorced etc; §others includes employed, self-employed, etc; ψothers include Diploma, Certificate, etc

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Table 2 Alcohol use disorder (n=1510)

Alcohol use disorder	n	%
No risk (0)	174	11
Low-risk (1-7)	752	50
Hazardous (8-15)	465	31
Harmful (16-19)	70	5
Dependence (≥ 20)	49	3

ξ others include whiskey, sake, tequila, etc.

risk. Abstainers comprised only 11.0% of the participants, while a small number (5.0%) exhibited harmful or dependent alcohol use, with 3.0% falling under this category (Table 2).

A non-linear algorithm and bootstrapping resampling method were used to conduct a robust path analysis. Five constructs were evaluated to test for validity, including physical activity, dietary behavior, perceived behavior control, subjective norm, attitude, intention, and alcohol consumption. The average variance extracted was used to assess convergent validity, with a value greater than 0.50 indicating that the latent construct accounts for most of the variation in the indicators. The AVE extracted ranged from .58 to 1.00, indicating good reliability. Discriminant validity was assessed using three measures: the Fornell-Larcker criteria, item

cross-loading, and the Heterotrait-Monotrait (HTMT) criterion ratio. The standardized root mean squared residual (SRMR) was .09, which is acceptable, and the normed fit index (NFI) was .58, indicating a well-fitted model.

Fig. 1 presents the results of the analysis and the hypothesis decision. Attitude, subjective norm, and perceived behavior control were associated with intention. Attitude ($\beta = .22, p < .001$) and subjective norm ($\beta = .33, p < .001$) were positively associated with intention, while perceived behavior control ($\beta = -.41, p < .001$) was negatively associated with intention. Intention, attitude, and perceived behavior control were also associated with alcohol consumption among Dayak adolescents. Intention ($\beta = .15, p < .001$) and attitude ($\beta = .20, p < .001$) had a direct positive effect on alcohol consumption, while perceived behavior control ($\beta = -.32, p < .001$) had a strong negative effect on alcohol consumption. However, no significant association was found between subjective norms and alcohol consumption. Therefore, subjective norms had no association with alcohol consumption among Dayak adolescents (Fig. 1).

Discussion

The analysis revealed that alcohol consumption and problematic drinking were more likely to be engaged in by older Dayak adolescents,

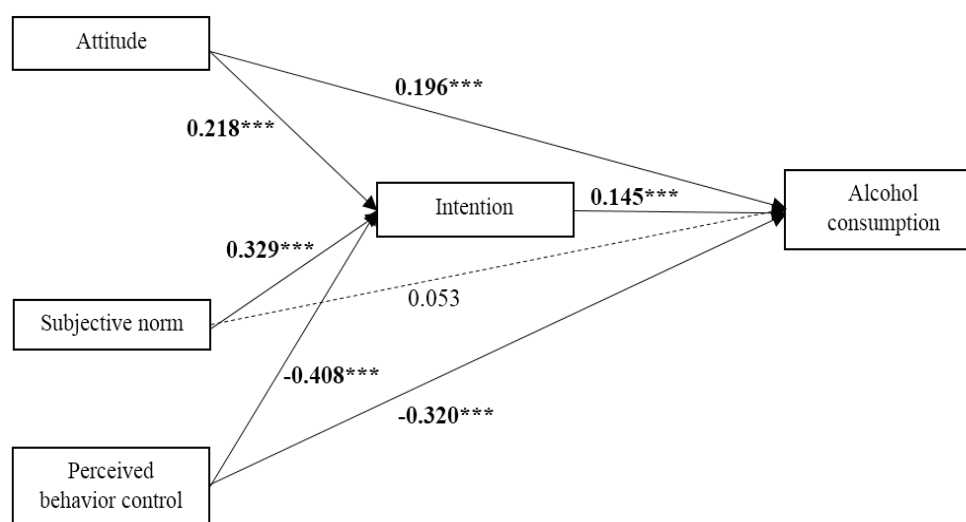


Fig. 1 Structural Path Analysis of the Alcohol Consumption, Intention, Attitude, Subjective Norm, and Perceived Behavior Control

consistent with a study conducted in Australia.¹² This might be due to the greater availability of alcohol in Sarawak, particularly during social events and festivals, compared to other areas in Malaysia. However, the study also suggests that the role of direct or indirect availability, such as through parents or family members, should be further investigated.²³ The findings of this study indicated that stronger intentions to drink and higher alcohol consumption were associated with a higher attitude score among Dayak adolescents, contradicting the findings of another study by Sudhinaraset *et al.*²⁴ The latter found that lower involvement in social networks that use alcohol, less peer persuasion to use, and stronger negotiation skills to resist alcohol use was linked to parental or societal disapproval or negative attitudes towards alcohol use. In this study, subjective norms were associated with drinking, which aligns with the findings of Pedersen,²⁵ who found that specific drinking outcomes were linked with perceived descriptive norms or the peer's perception of alcohol use. However, further research is needed to assess the perceived injunctive norms, or individuals' perceptions of peers' attitudes towards the acceptability of certain behaviors, associated with all drinking outcomes, including consequences. The perceived behavior control had a negative association with intention and alcohol consumption. While exposure to information about the harmful effects of alcohol is crucial for preventing alcohol consumption, other control factors, such as the legal and economic ways of obtaining alcohol among adolescents, were significantly more beneficial.¹¹ This TPB model suggests that intention is the strongest predictor of alcohol use. This means that the more someone intends to drink alcohol, the more likely they are to actually do so. Intention is influenced by a number of factors, including attitudes, subjective norms, and perceived behavioral control.²⁶ However, it is important to note that the relationship between intention and behavior could be a complex and might be influenced by other factors such as past drinking behavior and the social environment. Overall, in this study highlights the complex interplay between intentions, social environment, and contextual factors in predicting drinking alcohol among Dayak adolescents. Several limitations should be considered when interpreting the findings of this study. Firstly, caution should be exercised when generalizing the results to

other ethnic groups or regions since the study focused exclusively on the Dayak adolescents of Sarawak. Additionally, relying on self-reported data, which may be susceptible to biases in perception, may have influenced the accuracy of the findings.

Furthermore, the study's cross-sectional design limits its ability to establish a causal relationship between the independent and dependent variables. Therefore, the conclusions drawn from this study should be interpreted with caution, and future research should address these limitations to provide more robust and reliable evidence.

In conclusion, this study sheds light on the alcohol consumption patterns and associated factors among Dayak adolescents in Sarawak. The findings suggest that a significant proportion of Dayak adolescents are engaging in alcohol consumption at either low or hazardous levels, with a small percentage exhibiting harmful or dependent alcohol use. Attitude, subjective norm, and perceived behavior control were associated with intention, while intention, attitude, and perceived behavior control were associated with alcohol consumption among Dayak adolescents. However, subjective norms did not have a significant association with alcohol consumption. These findings highlight the importance of developing interventions such as school-based health promotion, and targeted screening among adolescent population that focus on changing attitudes, strengthening perceived behavior control, and improving parental and societal disapproval of alcohol consumption. Future research should consider addressing the limitations of this study and exploring the underlying factors that contribute to alcohol consumption among Dayak adolescents in Sarawak.

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