

Cyberbullying and Psychological Complications: Assessing the Effect Sizes of Alcohol Consumption, Depression, and Suicidal Ideation

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ABSTRACT

Background: Cyberbullying increases risks of alcohol consumption, depression, and suicidal ideation, yet data quantifying these exact effect sizes remain notably limited. **Objectives:** This study aimed to determine the prevalence of cyberbullying victimization among Malaysian adults and evaluate its psychological and behavioral correlates. Specifically, to quantify the exact effect sizes associated with clinical depression, suicidal ideation, and alcohol use. **Methods:** A cross-sectional, online survey was conducted among 3,098 Malaysian adults (aged 18 or older) recruited via social media platforms like Facebook, Instagram, and WhatsApp. Data were collected from July 2023 to November 2024 using validated instruments: the Malay-validated Cyberbullying Victimization Scale (CVS), the Patient Health Questionnaire-9 (PHQ-9), and measures of alcohol use frequency. Chi-square tests of independence and one-way analyses of variance (ANOVAs) were performed, with fixed-effect Omega squared (ω^2) calculated to determine the precise magnitude of the associations. **Results:** Descriptive analysis revealed that 74.3% ($n = 2,303$) of participants experienced repeated cyberbullying, with 5.9% reporting chronic victimization. Cyberbullying victimization was significantly associated with socio-demographic factors, including age, ethnicity, religion, socioeconomic status, and marital status, as well as social media usage behaviors. Gender and employment status showed no significant differences. One-way ANOVAs demonstrated that cyberbullying victimization had highly statistically significant associations with all examined outcomes ($p < 0.001$). Most notably, cyberbullying explained approximately 19.8% of the variance in alcohol consumption ($\omega^2 = 0.198$, $F = 30.40$), representing a substantial behavioral association. It also accounted for 2.0% of the variance in depression ($\omega^2 = 0.020$, $F = 3.46$) and 1.5% of the variance in suicidal ideation ($\omega^2 = 0.015$, $F = 2.78$). **Conclusions:** Cyberbullying represents a severe public health concern for Malaysian adults, contributing heavily to maladaptive coping (alcohol use) and psychiatric complications. Addressing this issue requires multidisciplinary interventions, legal reinforcement, and integrating routine psychological screenings to deploy targeted early clinical support.

Keywords: Cyberbullying victimization, Clinical depression, Suicidal ideation, Alcohol use, Malaysian adults.

INTRODUCTION

Cyberbullying has emerged as a global public health concern following the rapid and massive growth of technology and digital communication platforms. A comprehensive synthesis of global literature over a five-year window (2015–2019) indicates an upward trend, revealing average cyberbullying victimization and perpetration rates of 33.08% and 25.03%, respectively (Farkas et al., 2025). In Malaysia, this global crisis is more alarming, as three in ten youth in this country were reported to have experienced cyberbullying (UNICEF, 2020). The country was ranked second in Asia and sixth globally for youth cyberbullying prevalence in 2020 (Saruddin et al., 2025).

Cyberbullying is part of abusive behaviors and is sometimes called cyber abuse, digital abuse, technology-facilitated abuse, or a form of violent behavior through bullying on social media, messaging applications, online games, emails, mobile phones, or other internet-based platforms with the intention of causing harm, humiliation, extortion, impersonation, harassment, or threatening another person who cannot defend themselves (Chan et al., 2021; Kasturiratna et al., 2025). The weapons are in the form of malicious digital content like abusive or threatening text messages, hurtful comments on social media, sharing harmful explicit pictures or videos, spreading rumors, creating fake accounts to impersonate others, doxing, character assassination, and many others (Predescu et al., 2024; Samsudin et al., 2023). Though similar in core aspects to traditional face-to-face bullying, cyberbullying differs in terms of anonymity, wider audience, repeated exposure, permanence of digital footprints, and the absolute boundless connectivity to harm victims at all times, even at home (Dennehy et al., 2020).

Agnew's General Strain Theory (GST) suggests that when people experience severe stress or victimization, they develop strong negative emotions that can drive them toward harmful behaviors. This theory has traditionally been applied to offline settings. For example, Baek et al. (2026) showed that violence at home acts as a severe stressor that leads to bullying because of built-up anger. There is very little research that has applied it to modern digital stress. Perhaps online harassment serves as a powerful, boundaryless modern stressor that may lead to mental health challenges like depression and suicidal thoughts and prompts individuals to use alcohol as a way to cope with their distress.

Evidence from a recent umbrella review of meta-analyses reveals a significant association between cyberbullying victimization and negative psychological outcomes. Because harmful online content can be repeatedly shared and made viral, with continuous engagement, the persistent exposure may create internalization of helplessness, powerlessness, loneliness, and social withdrawal, while repeated negative comments or public embarrassment may reduce self-esteem and reinforce negative self-perception (Kasturiratna et al., 2025). These psychological responses can gradually contribute to severe clinical depression according to learned helplessness (Prihadi et al., 2019) and cognitive appraisal frameworks (Turliuc et al., 2020). Globally, a systematic review reported three times higher odds of depression in cybervictimization compared to non-victims (Tran et al., 2023), while a recent study in Nepal reported that 46.5% of cyberbullying victims showed clear signs of depression resulting from persistent online harassment and digital threats (Sharma & Kaur). In comparison, localized studies in Malaysia mirror this alarming psychiatric burden, where cyber-victimization directly doubles a victim's tendency to develop clinical depression (Lee et al., 2023). Crucially, this dynamic operates in a bidirectional, transactional manner, as pre-existing psychological distress and depression significantly elevate an individual's vulnerability to being targeted and victimized online, while the subsequent victimization simultaneously acts as a primary catalyst that accelerates, triggers, and reinforces long-term psychological deterioration (Cunningham et al., 2021).

While depression is one of the common psychological consequences of cyberbullying, its impact may extend further to suicidal ideation and suicidal behavior when psychological distress remains unresolved (Bai et al., 2021). Victims of cyberbullying are often subjected to persistent humiliation, rejection, and social exclusion in an environment where abusive content can be repeatedly shared, viewed, and revisited, making it difficult to escape victimization because of the anonymity of perpetrators and the permanence of online content (Schonfeld et al., 2023). Cyberbullying may foster both interpersonal states through repeated online rejection, public humiliation, and social exclusion, resulting in progressive feelings of hopelessness, helplessness, and psychological pain that increase vulnerability to suicidal ideation. This theoretical pathway is consistent with findings among Malaysian youth, where cyberbullying victimization contributed to depression and suicidal intention (Kee et al., 2024). Furthermore, the World Health Organization (WHO) estimated in 2025 that each year, suicide is responsible for more than 720,000 deaths worldwide, highlighting the importance of identifying preventable psychosocial risk factors such as cyberbullying before emotional distress progresses to life-threatening outcomes (World Health Organization, 2025).

Although cyberbullying has escalated into a critical public health crisis and anecdotal information claimed that Malaysia ranks second in Asia and sixth globally for prevalence (Rosli, 2018), a profound gap exists in understanding how this digital epidemic is psychologically and behaviorally associated with outcomes in the broader, highly digitized adult population. First, existing Malaysian research remains heavily restricted to

localized adolescent or medical student cohorts, failing to capture how cyber-victimization intersects with diverse socio-demographic backgrounds, including ethnic, religious, and socioeconomic groups (B40, M40, T20), and across a representative national adult sample.

Furthermore, while the psychiatric pathways linking persistent online harassment to clinical depression and suicidal ideation are theoretically recognized, there is a critical neglect of maladaptive behavioral coping mechanisms, specifically alcohol consumption as a neurobiological "self-medication" response to alleviate digital social stress. Finally, a major methodological deficiency persists because current literature relies primarily on basic significance testing without quantifying the relative magnitude of these impacts. Consequently, there is an urgent need to calculate and compare exact effect sizes (specifically fixed-effect Omega squared) across distinct psychiatric symptoms and behavioral maladaptations to enable clinical counselors and cybersecurity policymakers to prioritize risk-screening protocols and deploy targeted early interventions. Hence, the overarching aim of this study is to investigate the prevalence of cyberbullying victimization among Malaysian adults and to evaluate and quantify the psychological and behavioral correlates of this victimization, specifically regarding clinical depression severity, the frequency of suicidal ideation, and alcohol consumption patterns.

METHODOLOGY

Study Setting

This online study was conducted in Malaysia, an upper-middle-income nation in Southeast Asia with a population of 34.4 million. Data from the Department of Statistics Malaysia (DOSM) indicated that the demographic profile is characterized by a large working-age population (70.4% aged 15–64) and an ethnically diverse society comprising Malays (58.3%), Malaysian Chinese (22.1%), indigenous Bumiputera groups (12.3%), and Malaysian Indians (6.5%)(DOSM, 2026). Furthermore, Malaysia is a highly digitized society, with individual internet penetration reaching 98.0% of the population (DOSM, 2026).

Study Design and Selection Criteria

This research was a cross-sectional, online survey to investigate the relationships between cyberbullying and depression, suicidal ideation, and alcohol use. To ensure the data reflected modern digital relationships, participants were recruited based on a set of standardised inclusion criteria. Eligible respondents were adults aged 18 or older who could understand the national language, Bahasa Melayu (Malay). Participants were required to be users of social media or digital devices and to provide consent to participate in the survey.

Measurement Tools

The study utilised validated instruments adapted for the Malaysian population to ensure high psychometric standards. The structured questionnaire was written in Malay, comprising five sections: i) socio-demographic background, ii) cyberbullying measured by the Cyberbullying Victimization Scale (CVS), iii) alcohol use frequency, iv) Depression measured by the PHQ-9, and v) Suicidal ideation, subscale 9 of the PHQ-9.

The initial section of the questionnaire captured participants' socio-demographic information, including age, gender, marital status, religion, ethnicity, highest education level, and employment status. Socioeconomic status is categorised according to the classification by the Department of Statistics Malaysia (DOSM) into three groups: B40 (total household income below RM4,849), M40 (total household income between RM4,850 and RM10,959), and T20 (total household income above RM10,959)(DOSM, 2026)

The digital victimisation was assessed using the Cyberbullying Victimization Scale (CVS)(García et al., 2021). There are nine CVS items rated on a scale from 0 (never) to 3 (many times). It has high internal consistency (Cronbach's alpha of 0.92). The Malay version of the Patient Health Questionnaire-9 (PHQ-9) is a highly valid and reliable tool for screening depression in Malaysia. Validation studies across diverse clinical and community settings demonstrate strong psychometric properties, exhibiting high internal consistency (Cronbach's alpha ranging from 0.67 to 0.84) and excellent test-retest reliability (Sherina et al., 2012). For the Malaysian population, a cut-off score of 10 is recommended for optimally identifying major depressive disorder. Due to its

accuracy and brevity, the PHQ-9 is strongly endorsed for routine mental health screening. Subscale 9 of the PHQ-9 measures the suicidal ideation of the participants.

Study Procedures

A banner promoting the study was disseminated to the public via social media such as Facebook, Instagram, Twitter, and WhatsApp. The potential participants were directed to the survey upon scanning the QR code. On the introductory page, potential participants were introduced to the Participant Information Section, which provided details on study procedures and the study's risks and benefits. The potential participants also had to verify their eligibility for the study by clicking on the selection criteria. Those who fulfilled the selection criteria and agreed to participate were automatically invited to complete the questionnaires. Implied consent was obtained when participants proceeded to the next page of the online survey. Data collection was done from July 2023 to November 2024.

Ethical Consideration

The UiTM Research Ethics Committee approved the study in June 2023; REC/06/2023(PG/FB/12). Total anonymity was maintained, including no names, IP addresses, or contact details. Participation was entirely voluntary, and respondents were informed of their rights, including the right to withdraw at any point. Should the survey have been answered and submitted, the participants may contact the researcher through the email provided in the survey for withdrawal or any inquiry. Recognizing that cyberbullying carries potential risks and negative consequences, the procedure concluded with providing all participants with helpline telephone numbers related to abuse and domestic violence. This is to ensure the research process prioritised participant safety.

Statistical Analysis

To evaluate the magnitude of the differences between groups, effect sizes were calculated. Specifically, the fixed-effect Omega squared (ω^2) was utilized due to the fixed nature of the independent variable conditions (i.e., the presence versus absence of cyberbullying). The interpretation of these values was guided by Cohen's widely adopted benchmark criteria for the behavioral sciences (Cohen, 2013). According to these guidelines, ω^2 of 0.01 indicates a small effect (1% of variance explained), ω^2 of 0.06 represents a medium effect (6% of variance explained), and ω^2 of 0.14 denotes a large effect (14% or more of variance explained).

RESULTS

Prevalence of Cyberbullying Victimization

Descriptive analysis of the sample ($N = 3,098$) revealed that 74.3% ($n = 2,303$) of participants experienced repeated cyberbullying. Specifically, 68.5% ($n = 2,121$) reported repeated victimization (two times), and 5.9% ($n = 182$) reported chronic victimization (three or more times). The remaining 25.7% ($n = 795$) reported experiencing no or only a single instance of cyberbullying.

Background Sociodemography

Table 1 presents the background sociodemographics and the patterns of gadget and social media use. A series of chi-square (X^2) tests of independence was conducted to examine the association between demographic characteristics and cyberbullying victimization. Several socio-demographic factors demonstrated highly significant associations with cyberbullying experiences. Strong cultural variations were observed, with significant differences found across ethnic groups ($X^2(10) = 333.32, p < 0.001$), and religious affiliations, $X^2(8) = 309.00, p < 0.001$). Furthermore, cyberbullying victimization was significantly associated with age ($X^2(10) = 30.92, p < 0.001$), socioeconomic groups (B40, M40, and T20 categories) ($X^2(4) = 71.35, p < 0.001$), as well as marital status ($X^2(8) = 26.69, p < 0.001$). Finally, a weaker but statistically significant association was found between the participants' highest educational attainment and their victimization status ($X^2(6) = 14.81, p = .022$). The analysis revealed that cyberbullying victimization did not significantly differ by gender or employment status (Table 1).



Background Gadget and Social Media Use

The frequency of updating social media accounts demonstrated the most pronounced variance in relation to cyberbullying status ($X^2(4) = 266.97$, $p < 0.001$). This was closely followed by the number of active social media accounts held by participants, which also shared a highly significant association with victimization outcomes ($X^2(4) = 91.85$, $p < 0.001$). Furthermore, significant differences in cyberbullying experiences were observed based on the participants' total number of online followers ($X^2(4) = 70.69$, $p < 0.001$). Finally, the daily duration spent browsing social media platforms was found to be significantly associated with the frequency of cyberbullying victimization ($X^2(4) = 40.68$, $p < 0.001$) (Table 1).

Table 1: Distribution of Participants' Background and Pattern of Social Media Use according to Pattern of Cyberbullying Victimization

	Cyberbullying Victimization						
	No	Repeated ≤ 2 times	Frequent ≥3 times	Subtotal	X ²	df	p-value
Background Sociodemography							
Age							
20 and below	18	35	7	60	30.92	10	<0.001**
21-30	332	925	76	1333			
31-40	182	463	26	671			
41-50	145	457	49	651			
51-60	105	232	23	360			
61 and above	13	9	1	23			
Gender							
Female	456	1257	113	1826	2.74	4	0.603
Male	325	831	68	1224			
Others	14	33	1	48			
Marital Status							
Single	24	78	13	115	26.69	8	<0.001**
Married	719	1803	159	2681			
Widow/er	32	145	5	182			
Separated	12	59	4	75			
Divorce	8	36	1	45			
Religion							



Islam	655	1104	53	1812	309.00	8	<0.001**
Hindu	40	288	35	363			
Christian	31	385	62	478			
Other religions	5	26	3	34			
No religion	64	318	29	411			
Ethnicity							
Malay	654	1094	52	1800	333.32	10	<0.001**
Chinese	62	623	86	771			
Indians	48	315	36	399			
Sabah Bumiputras	2	39	3	44			
Sarawak Bumiputras	7	26	3	36			
Others	22	24	2	48			
Highest education							
Primary	31	119	5	155	14.81	6	0.022*
Secondary	374	1042	76	1492			
Tertiary	374	935	97	1406			
No education	16	25	4	45			
Employment							
Working	666	1762	157	2585	2.35	6	0.885
Unemployed	59	156	12	227			
Retired	35	105	5	145			
Student	35	98	8	141			
Socioeconomic group							
Below 40%(B40)	294	495	29	818	71.35	4	<0.001**
Middle 40% (M40)	445	1468	145	2058			
Top 20% (T20)	56	158	8	222			
Background Gadget and Social Media Use							
Number of social media							

One account	307	1196	119	1622	91.85	4	<0.001**
Two or more accounts	408	806	58	1272			
No account	80	119	5	204			
Duration of browsing social media							
11 hours or more	360	770	40	1170	40.68	4	<0.001**
6 to 10 hours	346	1070	112	1528			
5 hours or less	88	281	30	399			
Number of followers							
More than 500	125	313	27	465	70.69	4	<0.001**
1-500	587	1740	152	2479			
No follower	83	68	3	154			
Frequency of updating the social media account							
Everyday	88	279	16	383	266.97	4	<0.001**
Weekly to Monthly	417	1585	159	2161			
Never	290	257	7	554			

Note. The relationship between factors considered and cyberbullying status is significant at the * $p < 0.05$ and ** $P < 0.001$ significance levels.

The Percentages of Alcohol Consumption, Suicidal Ideation, and Depression

Of the total participants ($N = 3098$), about 76.1% of participants ($n = 2,359$) reported experiencing cyberbullying more than once, while 23.9% ($n = 739$) did not. When evaluating for high-frequency victimization, 8.8% ($n = 273$) reported experiencing cyberbullying "many times," compared to 91.2% ($n = 2,825$) who did not.

Figure 1 shows the percentages of alcohol use frequency, suicidal ideation frequency, and the severity of depression. Regarding alcohol intake frequency, nearly half of the total participants reported "never" consuming alcohol (49.5%, $n = 1,535$). Among those who did report alcohol use, the most frequent consumption rate was once or twice a week (17.3%, $n = 535$), followed by one to two times a year (12.0%, $n = 373$), more than one year ago (9.6%, $n = 297$), and one to three times a month (8.0%, $n = 249$). A small minority reported consuming alcohol almost every day (3.5%, $n = 109$).

Focusing on depression, the highest proportion of participants experienced mild depression (38.2%, $n = 1,184$), followed by no depression (33.8%, $n = 1,046$), moderate (16.0%, $n = 495$), moderately severe (11.7%, $n = 361$), and severe depression (0.4%, $n = 12$). Furthermore, for suicidal ideation (PHQ-9 Item 9), 42.2% ($n = 1,307$) reported "never" experiencing suicidal thoughts. However, 39.9% ($n = 1,235$) reported experiencing them for 1-2 days, 15.0% ($n = 464$) for 3-4 days, and 3.0% ($n = 92$) almost every day.

Effect sizes for the impact of cyberbullying on alcohol use, suicidal ideation, and depression

Table 2 shows a series of one-way analyses of variance (ANOVAs) that were conducted to investigate the association between alcohol use, depression, suicidal ideation, and experiences of cyberbullying, evaluated using the individual items and total score of the Cyberbullying Scale (CVS). Omega squared (ω^2) and 95% confidence intervals (CI) were utilized to determine the magnitude of these effects.

The results indicated that alcohol intake was significantly associated with all ten measured indicators of cyberbullying ($p < 0.001$). Notably, alcohol intake explained the largest amount of variance in the receipt of mean or hurtful comments ($F = 333.48$, $p < 0.001$, $\omega^2 = 0.244$, 95% CI: 0.218, 0.268) and mean or hurtful pictures ($F = 255.19$, $p < 0.001$, $\omega^2 = 0.198$, 95% CI: 0.173, 0.221). Conversely, the smallest effect sizes were observed for the posting of hurtful videos ($F = 15.05$, $p < 0.001$, $\omega^2 = 0.013$, 95% CI: 0.006, 0.022) and online rumors ($F = 17.39$, $p < 0.001$, $\omega^2 = 0.016$, 95% CI: 0.007, 0.025). The total Cyberbullying Victimization Scale (CVS) score demonstrated a strong and significant relationship with alcohol consumption ($F = 30.40$, $p < 0.001$, $\omega^2 = 0.198$, 95% CI: 0.167, 0.216).

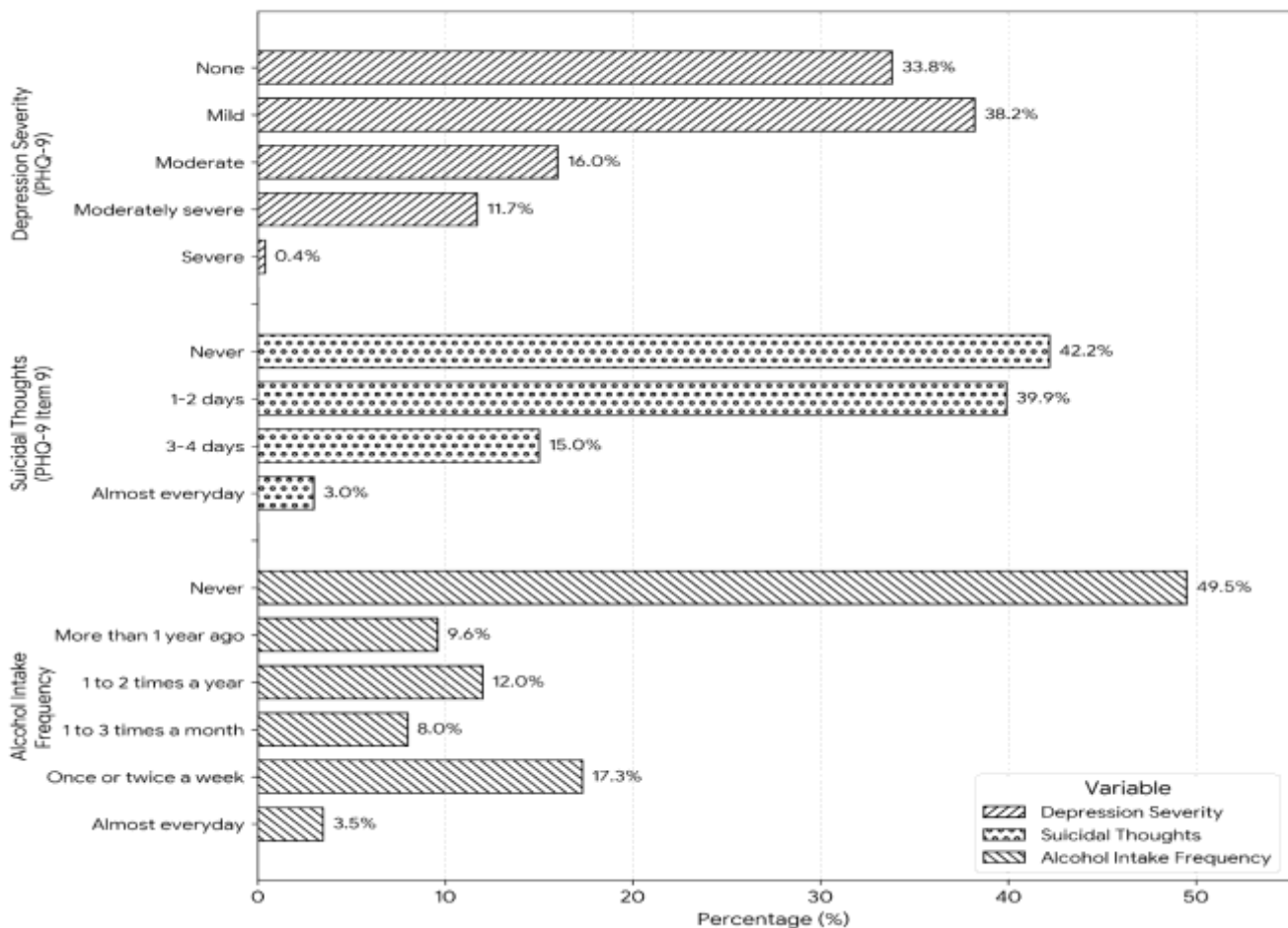


Figure 1. The Percentages of Alcohol Consumption, Suicidal Ideation, and Depression

The overall total score of the CVS demonstrated a highly statistically significant association with depression ($F = 3.46$, $p < 0.001$, $\omega^2 = 0.020$, 95% CI: 0.003, 0.024). This general trend is strongly mirrored by Item 1 ("I have been cyberbullied"), which yielded the highest F-statistic and largest individual effect size in the dataset ($F = 27.64$, $p < 0.001$, $\omega^2 = 0.025$, 95% CI: 0.015, 0.037). This indicates that a global perception of being cyberbullied accounts for approximately 2.5% of the variance in depression scores. Several specific types of cyberbullying behaviors also demonstrated highly significant links to depression. Publicly visible harassment via text or images was strongly related to depressive symptoms, including having mean or hurtful comments posted online (Item 2), ($F = 20.93$, $p < 0.001$, $\omega^2 = 0.019$, 95% CI: 0.010, 0.029) and having mean or hurtful pictures posted online (Item 3) ($F = 19.40$, $p < 0.001$, $\omega^2 = 0.018$, 95% CI: 0.009, 0.027). Additionally, online impersonation (Item 9: "Someone pretended to be me online and acted in a way that was mean or hurtful") showed a highly statistically significant relationship with depression ($F = 5.11$, $p < 0.001$, $\omega^2 = 0.004$, 95% CI: 0.000, 0.009). While the effect

size is small, the lower bound of the confidence interval rests precisely at zero, indicating a significant, non-negative, but minor practical impact.

The trends of the association between cyberbullying and suicidal ideation are almost similar with depression. Similarly, the broad omnibus item, "I have been cyberbullied" (Item 1), yielded the highest F-statistic and a highly significant relationship ($F = 15.00$, $p < 0.001$, $\omega^2 = 0.013$, 95% CI: 0.006, 0.022). Highly significant associations with suicidal ideation were observed for content-specific visual and textual harassment. Specifically, significant effects were found when perpetrators posted mean or hurtful comments online (Item 2), ($F = 9.12$, $p < 0.001$, $\omega^2 = 0.008$, 95% CI: 0.002, 0.015) or posted mean or hurtful pictures online (Item 3), ($F = 9.05$, $p < 0.001$, $\omega^2 = 0.008$, 95% CI: 0.002, 0.015). A statistically significant but weak association was also found for online impersonation (Item 9: "Someone pretended to be me online and acted in a way that was mean or hurtful") ($F = 3.05$, $p < 0.027$, $\omega^2 = 0.002$, 95% CI: -0.001, 0.006). The overall total score of the CVS demonstrated a highly statistically significant association with suicidal ideation ($F = 2.78$, $p < 0.001$, $\omega^2 = 0.015$, 95% CI: -0.002, 0.017).

DISCUSSION

Our findings are aligned with previous studies demonstrating that regularly updating social media accounts, having more than one social media account, the number of social media followers, and social media usage time were highly associated with cyberbullying victimisation. Those behaviours expand the visibility and exposure of one's personal information, engaging a wide audience and increasing the risk of negative attention from known or unknown audiences (Craig et al., 2020; Nasla V.S, 2021).

Beyond the risk of cyberbullying, we explored the association of cyberbullying and alcohol intake, depression, and suicidal ideation among victims of cyberbullying, which showed a significant result, indicating that cyberbullying is associated with psychological and behavioural aspects of an individual. Cyberbullying victimisation accounted for approximately 2.0% of the variance in depression and 1.5% of the variance in suicidal ideation. It was noted that cyberbullying is strongly associated with alcohol intake, showing that approximately 19.8% of the variance in alcohol intake was associated with differences in cyberbullying victimisation

Cyberbullying Victimisation and Alcohol Consumption

Alcohol intake revealed the largest effect size in comparison to depression and suicidal ideation, indicating cyberbullying victimisation explained almost 20% of the population in alcohol use. Each item of CVS indicates a large effect size on alcohol intake, emphasising that the relationship between cyberbullying and alcohol intake is consistent regardless of the different types of online harassment. This finding demonstrates that behavioural associations extend beyond the two clinical presentations among the population in Malaysia who experienced cyberbullying. Studies of cyberbullying among youth in Portugal and the U.S demonstrated that cyberbullying victims consumed more alcohol, and females were more likely to engage in this behaviour compared to males (Carvalho & Cátia, 2021; Nikolaou, 2022). In contrast, alcohol consumption was identified as a risk factor for cyberbullying (Ahmad & Razali, 2025) suggesting a possible bidirectional correlation between alcohol intake and cyberbullying.

An individual may be driven to impulsively resort to alcohol intake when he or she is targeted online by hurtful comments, pictures, videos, and threats to be hurt as a means of self-medication to alleviate the traumatic feelings (Luciano et al., 2022). This finding is also supported by neurobiological evidence, in which social stress activates the intersection of neuronal pathways involved in stress, reward, and executive control. The recurrent exposure to alcohol for reducing stress may induce the reward-related pathway that gradually shifts the use of alcohol from deliberate choice to a maladaptive coping mechanism (Miczek et al., 2022).

Although the prevalence of alcohol consumption is generally low, alcoholic beverages are readily available in Malaysia and can be purchased from neighbourhood convenience stores, thus contributing to the large effect size of alcohol intake among cyberbullying victims (Robert Lourdes et al., 2022). In contrast, a study in the U.S found that the trend of alcohol use decreased among male and female cyberbullied adolescents from 2011 to

2017 (Higgins et al., 2021), reflecting the growth of efforts on awareness and prevention of alcohol drinking among adolescents (Looze et al., 2015).

Cyberbullying Victimization and Depression

Although the variance explained for depression (2.0%) and suicidal ideation (1.5%) is statistically small, these figures are clinically meaningful given the multifactorial etiology of psychiatric conditions. In a large, highly digitized population, even a minor percentage shift represents a substantial public health burden affecting thousands of vulnerable individuals.

Depression demonstrated a robust, statistically significant association with cyberbullying victimisation in this sample, with both the overall CVS score and the global self-identification item ("I have been cyberbullied") emerging among the strongest predictors of depressive symptoms across all variables examined. This positions depression as one of the major psychological correlates of cyberbullying victimisation in this Malaysian adult population, reinforcing cyberbullying's status as a genuine public mental health concern rather than a peripheral adolescent issue.

These findings are broadly consistent with existing Malaysian evidence. A group of local researchers found cybervictimization among Malaysian medical students associated with higher depression, anxiety, and stress, while others reported cyberbullying victimisation as a significant risk factor for suicidal behaviour among Peninsular Malaysian adolescents after adjusting for confounders (Lee et al., 2023; Mohd Fadhli et al., 2022). Internationally, our results align with the largest meta-analytic evidence of 57 studies across 17 countries and over 105,000 participants, which confirmed a significant positive relationship between cyberbullying victimisation and depression (Hu et al., 2021). Similarly, a systematic review of university students found depression significantly associated with cyber-victimisation across most included studies (Arif et al., 2024). Our observed effect sizes were smaller than those reported internationally, possibly reflecting differences in population, measurement tools, or cultural buffering factors.

Several mechanisms explain the relationship between cyberbullying and depression. Chronic psychological stress from sustained online harassment can dysregulate the stress response system, promoting depressive symptomatology. Online anonymity may embolden perpetrators toward repeated, escalating attacks, denying victims the resolution or safety typically available offline. Cyberbullying can also foster social isolation and eroded self-esteem, as public humiliation on shared digital platforms is difficult to escape. Repeated victimisation may further impair emotional regulation, leaving individuals less able to cope with cumulative distress.

These findings support integrating routine depression screening into services addressing digital harassment, given how strongly self-perceived victimisation predicted depressive symptoms. School and university counselling services should proactively identify at-risk students, and early intervention programmes targeting coping skills, digital resilience, and help-seeking behaviour may mitigate the psychological burden of cyberbullying before progressing to severe depression.



Table 2. Effect Sizes for the Associations of Cyberbullying on Depression, Suicidal Ideation, and Alcohol Use

	Cyberbullying (CVS)	Alcohol Intake					Depression					Suicidal Ideation				
		ANOVA (F)	P-Value	Effect Size (ω^2)	Confidence Interval (CI) of ω^2		ANOVA (F)	P-Value	Effect Size (ω^2)	Confidence Interval (CI) of ω^2		ANOVA (F)	P-Value	Effect Size (ω^2)	Confidence Interval (CI) of ω^2	
					Lower	Upper				Lower	Upper				Lower	Upper
1	I have been cyberbullied	234.16	<0.001**	0.184	0.160	0.207	27.64	<0.001**	0.025	0.015	0.037	15.00	<0.001**	0.013	0.006	0.022
2	Someone posted mean or hurtful comments about me online.	333.48	<0.001**	0.244	0.218	0.268	20.93	<0.001**	0.019	0.010	0.029	9.12	<0.001**	0.008	0.002	0.015
3	Someone posted a mean or hurtful picture online of me online.	255.19	<0.001**	0.198	0.173	0.221	19.40	<0.001**	0.018	0.009	0.027	9.05	<0.001**	0.008	0.002	0.015
4	Someone posted a mean or hurtful video online of me online.	15.05	<0.001**	0.013	0.006	0.022	1.00	0.392	0.000	-0.001	0.002	0.48	0.700	-0.001	-0.001	0.001
5	Someone created a mean or hurtful web page about me.	21.88	<0.001**	0.020	0.010	0.030	1.86	0.135	0.001	-0.001	0.004	0.34	0.784	-0.001	-0.001	0.001
6	Someone spread rumors	17.39	<0.001**	0.016	0.007	0.025	1.35	0.258	0.000	-0.001	0.003	0.683	0.562	0.000	-0.001	0.002



	about me online.															
7	Someone threatened to hurt me through a cell phone text message.	24.70	<0.001**	0.022	0.012	0.033	1.33	0.263	0.000	-0.001	0.003	1.74	0.157	0.001	-0.001	0.004
8	Someone threatened to hurt me online.	29.00	<0.001**	0.026	0.016	0.038	1.38	0.247	0.000	-0.001	0.003	0.198	0.898	-0.001	-0.001	0.000
9	Someone pretended to be me online and acted in a way that was mean or hurtful	17.56	<0.001**	0.016	0.007	0.025	5.11	<0.001**	0.004	0.000	0.009	3.05	0.027*	0.002	-0.001	0.006
	Total Score of CVS	30.40	<0.001**	0.198	0.167	0.216	3.46	<0.001**	0.020	0.003	0.024	2.78	<0.001**	0.015	-0.002	0.017

Notes. According to Cohen's guidelines, effect sizes: ω^2 of 0.01 indicates a small effect (1% of variance explained), ω^2 of 0.06 represents a medium effect (6% of variance explained), and ω^2 of 0.14 denotes a large effect (14% or more of variance explained). The relationship between factors considered and cyberbullying items is significant at the * $p < 0.05$ and ** $P < 0.001$ significance levels.

Cyberbullying Victimization and Suicidal Ideation

Cyberbullying victimisation demonstrated a strong, statistically significant association with suicidal ideation, with the total CVS score and the global victimisation item among the more prominent effects observed in the dataset. Given the severity of suicidal ideation as an outcome, this represents arguably the most serious psychological correlates of cyberbullying identified in this study, underscoring the urgency of addressing digital victimisation as a matter of patient safety rather than purely psychosocial wellbeing.

These findings are consistent with international systematic reviews and meta-analyses, which recommended that peer and cyberbullying victimisation significantly increased the odds of suicidal ideation and attempts among children and adolescents (Van Geel et al., 2014). Local researchers similarly found cyberbullying victimisation to be a significant risk factor for suicidal behaviour among Peninsular Malaysian adolescents (Mohd Fadhli et al., 2022), while others reported that Malaysian youth exposed to cyberbullying experienced significantly elevated suicidal ideation (Kee et al., 2024).

Depression has been suggested to significantly mediate the pathway from cyberbullying victimisation to suicidal ideation, suggesting depressive symptoms may be the primary conduit through which victimisation translates into suicidal thinking (Kee et al., 2024). Hopelessness arising from the perceived inescapability of online harassment, social rejection and loneliness following public humiliation, and psychological entrapment, the sense of being trapped with no viable escape from ongoing victimisation may further compound this risk (Kee et al., 2024).

Clinicians should incorporate systematic suicide risk assessment when evaluating cyberbullying victims, particularly those endorsing depressive symptoms. Early referral pathways to mental health services are essential, alongside multidisciplinary intervention involving psychiatry, psychology, and school or university counselling. Family involvement is also critical, as parental awareness and support can facilitate earlier identification and sustained monitoring of at-risk individuals.

CONCLUSION

Although this study provides valuable insights, several methodological limitations must be considered. First, importantly, relationships between the studied variables may be bidirectional, meaning that pre-existing depression and alcohol use could actually increase an individual's vulnerability to being targeted by cyberbullies, rather than simply being outcomes of victimization. Furthermore, because it utilizes a cross-sectional survey design, it is impossible to establish definitive causal pathways or temporal sequence; indeed, the relationship between cyberbullying victimization and psychological or behavioral outcomes (such as depression and alcohol consumption) may operate in a bidirectional or transactional manner. Second, the recruitment was conducted entirely online via social media platforms and restricted to participants who were social media or digital device users fluent in the Malay language. This introduces potential selection bias, which may over-represent highly digitized populations and exclude those without internet access, device ownership, or Malay language proficiency. Additionally, this study did not account for several critical confounding variables, such as pre-existing psychiatric conditions, childhood trauma, or the presence of active social support networks. These unmeasured factors could independently influence both an individual's exposure to cyberbullying and their subsequent psychological and behavioral outcomes, representing an important area for future longitudinal research. Finally, the study relies entirely on self-reported questionnaires (such as the CVS and PHQ-9), which can introduce response or social desirability biases, especially when measuring highly sensitive behaviors like alcohol use frequency, psychiatric distress, and suicidal ideation. Future studies should address these limitations to provide better results on the impact of cyberbullying.

Nevertheless, given the significant associations of cyberbullying with alcohol, depression, and suicidal ideation, multidisciplinary approaches involving relevant stakeholders, government and non-governmental organisations, in managing cyberbullying victims are highly recommended. The integration of an educational prevention and intervention program on cyberbullying into the school or college curriculum can be promoted to mitigate its future impact on the community. Besides, the advocacy for legal action to address cyberbullying should be reinforced, and cybersecurity measures should be implemented by the government authorities to minimize the

psychosocial consequences. Additionally, a psychological screening among cyberbullying victims should be done to provide early, targeted, and effective interventions in lowering the risk of a serious mental health condition.

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