

**ASSOCIATION BETWEEN CYBERBULLYING
AND SUICIDAL BEHAVIOUR AMONG
ADOLESCENTS IN PENINSULAR MALAYSIA**

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by

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LIST OF SYMBOLS

%	Percentage
n/N	Sample size
\leq	Less than or equal
<	Less than
>	More than
=	Equal to
α	alpha
p	p-value
b	Crude regression coefficient

LIST OF ABBREVIATIONS

AOR	Adjusted odds ratio
B40	Bottom 40% of income earners
CBVEQ	Cyber-Bullying and Victimization Experiences Questionnaire
CBS	The Cyberbullying Scale
CBS-M	The Malay version of Cyberbullying Scale
CI	Confidence Interval
COVID-19	Coronavirus Disease 2019
CR	Construct reliability
DSM-IV	The Diagnostic and Statistical Manual of Mental Disorder, Fourth Edition
ECIPQ	European Cyberbullying Intervention Project Questionnaire
IQR	Interquartile range
LR	Likelihood ratio
M40	Middle 40% of income earners
MARA	The Majlis Amanah Rakyat
MCO	Movement Control Order
MOH	Ministry of Health
MRSM	MARA Science Junior College
MS	Microsoft Software
NHMS	National Health and Morbidity Survey
OR	Odds ratio
PHQ-9	The Patient Health Questionnaire-9

ROC	Receiver operative characteristic
SABK	Government Aid Religious School
SBP	Full Boarding Schools
SBPI	Sekolah Berasrama Penuh Integrasi
SD	Standard deviation
SM	Sekolah Menengah
SMA	Sekolah Menengah Agama
SMK	Sekolah Menengah Kebangsaan
SMS	Sekolah Menengah Sains
SMU	Sekolah Menengah Ugama
SMKA	Religious secondary school
SPSS	Statistical Package for the Social Science
T20	Top 20% of income earners
USM	Universiti Sains Malaysia
VIF	Variance inflation factor
WHO	World Health Organization

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**PERKAITAN ANTARA GEJALA BULI SIBER DAN TINGKAH LAKU
BUNUH DIRI DALAM KALANGAN REMAJA DI SEMENANJUNG
MALAYSIA**

ABSTRAK

Latar Belakang: Gejala bunuh diri dalam kalangan remaja semakin meningkat dan menjadi kebimbangan kesihatan awam di seluruh dunia. Di samping itu, perkembangan dalam teknologi dan penglibatan media sosial telah menyumbang kepada peningkatan gejala buli siber. Gejala buli siber semakin berleluasa dan kebelakangan ini telah mencetuskan kes-kes bunuh diri yang tragisdi mana kajian terdahulu melaporkan perkaitan yang signifikan antara tingkah laku buli siber dan gejala bunuh diri. Kajian mengenai perkaitan antara buli siber dan tingkah laku bunuh diri dalam kalangan remaja adalah terhad dan hal ini yang menjadi kunci utama kajian ini. Objektif: Untuk menentukan perkaitan antara tingkah laku bunuh diri dan gejala buli siber dalam kalangan remaja di Semenanjung Malaysia. Metodologi: Kajian keratan rentas sekolah telah dijalankan dalam kalangan 1290 remaja sekolah menengah yang berumur 13 hingga 17 tahun di Semenanjung Malaysia menggunakan kaedah persampelan kluster berbilang peringkat. Skala buli siber versi Bahasa Melayu, proforma kajian dan Soal Selidik Kesihatan Pesakit-9 versi Bahasa Melayu digunakan untuk menilai gejala bunuh diri (pembolehkan bersandar), tingkah laku buli siber (pembolehkan bebas), dan pengacau lain tingkah laku bunuh diri (pembolehkan bebas) dalam kalangan remaja. Regresi logistik mudah dan berganda digunakan untuk menentukan perkaitan antara gejala buli siber dan tingkah laku bunuh diri dengan menggunakan SPSS versi 26. Keputusan: Kadar tindak balas kajian ini ialah 89.6%. Kelaziman manga buli siber dalam kalangan remaja ialah 13.7% dan pelaku buli siber ialah 3.8%. Prevalens gejala bunuh diri dalam kalangan remaja ialah 17.1% di mana

11.9% mempunyai pemikiran untuk membunuh diri, 10.2% mempunyai rancangan untuk membunuh diri dan 8.4% mempunyai percubaan untuk membunuh diri. Regresi logistik berganda mendedahkan bahawa mereka yang menjadi mangsa buli siber mempunyai kemungkinan 2.35 kali ganda untuk melakukan gejala bunuh diri berbanding mereka yang tidak menjadi mangsa buli siber (AOR:2.35,95% CI: 1.50, 3.69; $p < 0.001$), apabila diselaraskan untuk pengacau lain. Pelaku buli siber dan kekerapan menjadi mangsa buli siber adalah factor yang tidak signifikan ($p=0.984$, $p=0.264$ masing-masing). Faktor-faktor penting lain ialah umur (95% CI: 0.69, 0.94; $p=0.005$), jantina (95% CI: 2.11, 6.25; $p < 0.001$), tanggapan sokongan sosial daripada ahli keluarga (95% CI: 1.52, 4.09; $p < 0.001$), tanggapan sokongan sosial daripada rakan (95% CI: 1.21, 3.19; $p=0.006$), sejarah penderaan (95% CI: 1.47, 3.54; $p < 0.001$), ibu bapa terlibat dalam pergaduhan di hadapan kanak-kanak (95% CI: 1.38, 3.49; $p=0.001$) dan kemurungan (95% CI: 5.04, 11.28; $p < 0.001$). Rumusan: Bilangan kes remaja yang membimbangkan di Semenanjung Malaysia yang terlibat dalam gejala buli siber dan perkaitannya yang ketara dengan gejala bunuh diri menunjukkan keperluan yang tinggi untuk mengukuhkan program semasa untuk membendung isu tersebut.

Kata kunci: gejala buli siber, gejala bunuh diri, remaja, semenanjung Malaysia

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ABSTRACT

Background: Suicidal behaviour among adolescents' incidence is on the rise and becoming a worldwide public health concern. In addition, the growth in technology and social media engagement has contributed to the rise of cyberbullying. Cyberbullying habits are becoming more pervasive and have recently triggered tragic suicides where previous studies reported significant association between cyberbullying and suicidal behaviour. There are limited studies on association between cyberbullying and suicidal behaviour among adolescents which the main key of this study. Objective: To determine the association between suicidal behaviour and cyberbullying amongst adolescents in Peninsular Malaysia. Methodology: A cross-sectional school study was conducted among 1290 secondary school adolescents aged 13 to 17 years old in Peninsular Malaysia via multistage cluster sampling. Malay version of cyberbullying scale, study proforma and Malay version of Patient Health Questionnaire-9 were used to assess suicidal behaviour (dependent variables), cyberbullying (independent variable), and other confounders of suicidal behaviour (independent variables) among adolescents. Simple and multiple logistic regression were used to determine the association between cyberbullying and suicidal behaviour using SPSS version 26. Results: The response rate of this study was 89.6%. The prevalence of cyberbullying victimization among adolescents was 13.7% and cyberbullying perpetrator was 3.8%. The prevalence of suicidal behaviour among adolescents was 17.1% where 11.9% had suicidal thought, 10.2% had suicidal plan and 8.4% had suicidal attempt. Multiple logistic regression revealed that those who were cyberbullying victimization had 2.35 times odds of suicidal behaviour as

compared to those who were not cyberbullying victimization (AOR:2.35,95% CI: 1.50, 3.69; $p < 0.001$), when adjusted for other confounders. Frequency of cyberbullying victimization and cyberbullying perpetrator were not significant factors ($p=0.264$, $p= 0.984$ respectively). Other significant factors were age (95% CI: 0.69, 0.94; $p=0.005$), gender (95% CI: 2.11, 6.25; $p < 0.001$), perceived social support from family members (95% CI: 1.52, 4.09; $p < 0.001$), perceived social support from friends (95% CI: 1.21, 3.19; $p=0.006$), history of abuse (95% CI: 1.47, 3.54; $p < 0.001$), parents engage in fight in front of children (95% CI: 1.38, 3.49; $p=0.001$) and depression status (95% CI: 5.04, 11.28; $p < 0.001$). Conclusions: An alarming number of adolescents in Peninsular Malaysia who were involved in cyberbullying and its significant association with suicidal behaviour warrant the need to strengthen the present program to curb the issues.

Keywords: Cyberbullying, suicidal behaviour, adolescents, Peninsular Malaysia

CHAPTER 1

INTRODUCTION

1.1 Introduction

Definition of adolescents according to WHO (2021) is “as individuals in the 10-19 years age group.”. Adolescents categories are divided into “early adolescence (10-14 years), middle adolescence (15-17 years) and late adolescence (18-19 years).”(Institute for Public Health, 2017).

Risk behaviours such as bullying, suicide, alcohol use and smoking follows a predictable pattern where it starts out low in childhood, rises around puberty, peaks in late adolescent to early adulthood, and then drops in adulthood (National Academies of Sciences, Engineering, Medicine, 2020; Romer et al., 2017) which demonstrates that adolescents are more inclined to engage in these behaviours as opposed to children and adults.

Suicide can strike anyone at any age and it ranked third among the highest cause of death in 2016 among fifteen to nineteen years old teenagers worldwide (World Health Organization (WHO), 2019). According to Nock et al. (2008), suicidal behaviour was described as anyone who engaged in either these three categories: “*suicide ideation*, which refers to thoughts of engaging in behavior intended to end one's life; *suicide plan*, which refers to the formulation of a specific method through which one intends to die; and *suicide attempt*, which refers to engagement in potentially self-injurious behavior in which there is at least some intent to die.”

Bullying is one of the factors associated with suicidal behaviour among adolescents(Zaborskis et al., 2019). Bullying either traditional or cyber-bullying leads to many negative impacts towards mental and physical health issues among

adolescents. Several studies have established links between cyberbullying and mental health concerns, such as depression and suicidal behaviour among victims of cyberbullying (Bottino et al., 2015; Elgar et al., 2014; Hamm et al., 2015; Kowalski & Limber, 2013a; Litwiler & Brausch, 2013; Patchin & Hinduja, 2015; Sampasa-Kanyinga et al., 2014; Schneider et al., 2012; Simon, 2017; Van Geel et al., 2014). Cyberbullying victims are two times more prone to engage in suicidal behaviour than those who did not involve in bully, and the same trend in cyberbullying offenders is at higher risk of suicidal behaviour (John et al., 2018).

Definition of bullying according to Olweus (1993) refer "A person is bullied when he or she is exposed, repeatedly and over time, to negative actions on the part of one or more other persons, and he or she has difficulty defending himself or herself." With the evolving technologies in communication and less restriction access to internet, it created a new form of bullying among youth which is cyberbullying. Definition of cyberbullying according to Coric & Kastelan (2020) is "wilful and repeated harm inflicted through computer, cell phones and other electronic device".

The incidence of cyberbullying victimization was ranged as low as 5% to as high as 59% globally (M. S. A. Park et al., 2021; Zhu et al., 2021). There were significantly increased of internet usage on social media sites, gaming, streaming services and shopping sites during the COVID-19 pandemic lockdown (Fernandes et al., 2020) which enhance the risk for cyberbullying.

The nature of cyberbullying is the anonymity provided by cyberspace which give the perpetrators courage to fiercely conduct the bad deed without disclosing their identity, hence triggering less empathy towards their victims and continues spreading online where hypothetically anyone with internet access may be able to view the

incidents (Stanbrook, 2014). Hence, this will give impact on the behaviours of both perpetrators and victims toward higher risks of depression and diminished self-worth, which then become precursors to suicidal thoughts and behaviours (Stanbrook, 2014). Cyberbullying is far more suicidal than conventional bullying in many countries (Van Geel et al., 2014).

In Malaysia, three out of ten young people are subjected to cyberbullying, and online abuse happens most often on social networks (UNICEF, 2019). Similarly, the risk may be increased during the COVID-19 pandemic because it was reported that there was increment of internet users among 5-17 years old from 28.5% in 2018 to 47.0% in 2020 due to the pandemic lockdown. Half of internet users spent 7-12 hours per day on the internet, up to 13% from the previous year's figure of 37% in 2018 (Malaysian Communications and Multimedia Commission, 2020). This illustrates just how urgent action needs to be taken by the relevant authorities to curb this problem.

There is no specific law for cyberbullying in Malaysia. Depending on the situation, there are laws regulated in regards of solving cyberbullying in Malaysia. Such laws are the Computer Crimes Act 1997, the Communication and Multimedia Act 1998, the Penal Code and the Child Act 2001 (Manshor & Hussin, 2014). Malaysia has a general cyberbullying statute, which is known as Malaysian Law Act 588 of the Communications and Multimedia Act 1998 that criminalised any individual's use of internet facilities such as any form of communication no matter what shape it manifested that compromise another individual's sense of safety (Communications and Multimedia Act 1998, 2006). However, it does not address students' cyberbullying encounters (Niña M. Ruiz, 2019) and keeps quiet about the safety of cyberbullying victims (Manshor & Hussin, 2014). Nevertheless, a new cyberbullying legislation is

already being drafted as they research analogous laws in other countries to find the best fit for the needs of the region (TheStar, 2017).

1.2 Problem statement & Study rationale

The growth in technology and social media engagement has contributed to the rise of cyberbullying, a form of bullying that has taken shape using virtual means. Cyberbullying habits are becoming more pervasive and have recently triggered tragic suicides (Chern, 2020) including making cruel or offensive remarks, harmful teasing, telling lies with full disregard of the receiving end's dignity nor circumstance hence leading to the many unfortunate events (Balakrishnan, 2015; Simon, 2017).

According to latest statistic reported by World Health Organization, (2021), more than 700 000 people passed away due to suicide per year and suicide was the fourth causes of death among adolescents. The number of suicidal behaviours among adolescents were increasing in trend over the globe and also in Malaysia (Institute for Public Health (IPH), 2018; World Health Organization, 2021). In addition, the 2013 National CyberSAFE Schools Survey found that a quarter of school children have frequently encountered online bullying through Facebook, blogs and instant messaging (Katarzyna Pawelczyk, Kuldip Kaur Karam Singh, 2014). Latest statistics in Malaysia have shown that 25% of adolescents in Malaysia have been scarred as victims by moderate to serious online bullying, whereas as many as 54% have expressed a propensity to be a cyberbully (Yuen et al., 2018). Such statistics show that cyberbullying and suicidal behaviour has becoming a significant threat to the well-being of adolescents in Malaysia, and appropriate measures are needed to avoid further harm from online violence.

Currently, we are living in a new normal era where most activities such as learning, teaching, tutorial, exam, transaction, working, school activities are conducted via online to reduce the transmission of the Coronavirus disease 2019 (COVID-19). This may increase the risk of cyberbullying among adolescent as they might spend more time online (Bottino et al., 2015) which may increase risk of suicidal behaviour.

Many youths, being digital natives, are active users of social media. While social media provides adolescents an ability to share their emotions and seek solace, when misused, it can also be a double-edge sword effect. Several studies in other countries showed the mental health impact of cyberbullying such as depression (Bottino et al., 2015; Hamm et al., 2015; Olenik-Shemesh et al., 2012; Reed et al., 2016) which then become precursors to suicidal behaviour for both aggressors and victims (Hinduja & Patchin, 2010).

Despite the area of cyberbullying research is still green, a number of studies on cyberbullying have been conducted in the United States and Europe (Kowalski & Limber, 2007; Tsitsika et al., 2015). The present studies focus on the effects of cyberbullying (Reed et al., 2016), its prevalence (Hamm et al., 2015; Paton, 2013), relationship between cyberbullying and schools (Cantone et al., 2015), the influence of school policy (Bottino et al., 2015) and its method of assessment (Berne et al., 2013). However, these studies did not highlight the association between cyberbullying and suicidal behaviour among adolescents where they discuss more on roles and impacts of cyberbullying on other mental health illness such as anxiety disorder and depression.

In addition, these findings reported in other countries were not applicable with Malaysia setting as they used different questionnaires that was not validated in Malay

language to assess cyberbullying, findings were more applicable with their respective target sample in their countries in terms of sociodemographic and factors that were commonly reported to be associated with cyberbullying and their findings were not up to date with the current situations especially during the COVID-19 pandemic period.

In addition, depending on the goals of the researchers, majority of the studies created unique questions and assessed the frequency of cyberbullying in diverse manners. The estimations of the prevalence of cyberbullying and the effects it has on mental health may be affected by differences in definitions and, subsequently, in the methods of measurement. In Malaysia, to our knowledge, there was only one study that studied on association between cyberbullying and suicidal behaviour among Malaysia which was conducted among eight cyberbullied victims using a semi-structured query technique by Simon, (2017). This proved that there were limited studies conducted on cyberbullying and suicidal behaviour among adolescents especially in Malaysia and during the COVID-19 pandemic, which solidify our reasons on conducting this study.

Much is still unknown in Asian countries including Malaysia, about the forms and consequences of cyberbullying (Balakrishnan, 2015) including its mental health effects particularly suicidal behaviour. Thus, the proposed study focused on cyberbullying and suicidal behaviour among adolescents in Malaysia.

1.3 Research Questions

- 1) What is the prevalence of suicide and cyberbullying among adolescents in Peninsular Malaysia?
- 2) Is there any association between suicide and cyberbullying among adolescents in Peninsular Malaysia?

1.4 Objectives

1.4.1 General Objective

To determine the prevalence of cyberbullying and suicidal behaviour and their association among adolescents in Peninsular Malaysia.

1.4.2 Specific Objectives

- a) To determine the prevalence of cyberbullying among adolescents in Peninsular Malaysia.
- b) To determine the prevalence of suicidal behaviour among adolescents in Peninsular Malaysia.
- c) To determine the association between cyberbullying and suicidal behaviour among adolescents in Peninsular Malaysia.
- d) To determine the predictors of suicidal behaviour among adolescents in Peninsular Malaysia.

1.5 Research Hypothesis

1. There are significant association between cyberbullying and suicidal behaviour among adolescents in Peninsular Malaysia.

CHAPTER 2

LITERATURE REVIEW

The literature utilized in this study contains information on global and local findings on cyberbullying and suicidal behaviour among adolescents as well as other factors associated with suicidal behaviour.

2.1 Cyberbullying

2.1.1 Definition of Cyberbullying

There are various phrases used to describe online bullying such as online aggression, cyberbullying, internet harassment, and electronic violence (Dooley et al., 2009; Kowalski et al., 2008; P.K. Smith & Brain, 2000).

There was various definition of cyberbullying noted which differs by author and research tool used. For example, cyberbullying is defined as "an hostile act done via any electronic forms of communication in repeated instances where the victim finds it impossible to defend himself or herself," with electronic means of contact including cell phones and other internet dependent technology (Olweus, 1993). Another definition of cyberbullying where cyberbullying is an aggressive, intentional act committed by a group or an individual against a victim who cannot easily defend himself or herself, using electronic means of interaction consistently and over time (Hinduja & Patchin, 2009). Next, cyberbullying is also defined as any behaviour in which people or groups use electronic or digital media to regularly transmit hostile or aggressive messages with the intent of causing injury or discomfort to others (Aboujaoude et al., 2015).

According to Coric & Kastelan, (2020), the definition of cyberbullying must fulfil "these four criteria: 1) the sender must intend to harm the receiver; 2) there is a

power imbalance between the sender and receiver (e.g., age, social status, anonymity, physical strength); 3) acts of aggression are usually repeated; 4) a personal computer, mobile phone, or other electronic device is used to communicate (Garett et al., 2016).”

Hence, Coric & Kastelan (2020) defined cyberbullying as “willful and repeated harm inflicted through computer, cell phones and other electronic device”. The definition of cyberbullying derived by Coric & Kastelan (2020) was used in this study as it included all major forms and mediums used in cyberbullying where some studies did not include social media as one of the medium used in cyberbullying in which social media is one of the common medium used in cyberbullying (UNICEF, 2019).

There are various platforms, ranging from credit based messaging to social media which can be used for cyberbullying (Peter K. Smith et al., 2008). These media are used by the perpetrators of online bullying to conduct their deeds (Raskauskas & Stoltz, 2007).

2.1.2 Prevalence of cyberbullying among adolescents

The prevalence of cyberbullying varies by a multivariate factors including age, methodologies used to assess cyberbullying behaviour, target group, sample size, duration of incidence reported, and various definition of cyberbullying used by researchers.

For example, 7.5% of college students in the United States were classified as pure cyberbullies by Schenk et al. (2013) and less than three percent were classified as both cyberbullying victim and offenders throughout their college life. C. Lee & Shin (2017) reported more than one third of adolescents in South Korea were engaged in cyberbullying activities within the past three months where victims had the highest incidence. Coric & Kastelan (2020) concluded that cyberbullying tends to occur at

early adolescence (14 years old) where they are more invested in mobile phones and social media usage.

Bilić et al. (2014) conducted research about the association between school children with classic or cyberbullying and their impacts in life satisfaction and school performances. They conducted a survey among 562 children in Croatia. They reported that approximately 30 percent of students were cyberbullying victimization. They reach to a conclusion where humiliation through the use of large online social gatherings like forums or blogs have shown to be the most popular type of cyberbullying and electronic mails were the least. They found that cyberbullying victims had lower satisfaction with family and friends than non-cyberbullying victims. However, cyberbullying victims showed no differences in school achievement.

Due to the lockdown of COVID-19 pandemic, the new norm where most activities are conducted online including online class had cause fluctuate increased of internet usage and social networking, hence these may raise the cases of cyberbullying reported among adolescent worldwide (R. Armitage, 2021). This is shown where in the US, 32.6% of adolescents reported that cyberbullying had increased during the pandemic (Lessard & Puhl, 2021) and in Murcia, Spain, they reported 49.3% of adolescents involved cyberbullying victimization and 23.3% were cyberbullying perpetrators (González-Calatayud & Prendes Espinosa, 2021). (Thai et al., 2022) reported that 36.5% of adolescents in Vietnam were involved in cyberbullying victimization during the COVID-19 pandemic where almost 40% of their adolescents spend more than four hours per day surfing the internet.

In Malaysia, a study by the Global Youth Online Behaviour Survey (Microsoft Survey) in 2012 on 7,600 children between the ages of 8 and 17 has shown that

cyberbullying has affected one in three children. The research also found that parents in Malaysia had poor awareness on the incident of cyberbullying amongst their children, only 38 percent of parents were concerned about the matter, while slightly over a quarter spoke about the risks of online communication to their children (Microsoft, 2012). A study on cyberbullying by Balakrishnan (2015) using a sample size of 393 from the age group of late adolescent to adult in Malaysia. She reported that within 6 months, one third were cyberbullies, two fifth were victims, and nearly three fifth were bystanders. She concluded that the frequency of internet use could trigger cyberbullying among young people, while cyberbullying among Malaysian youth might be instigated by the web and current social networking sites. These studies have repeatedly shown that cyberbully victims themselves appear to become victims of cyberbullying or vice versa.

Sivabalan et al. (2020) conducted a cross-sectional study among young 882 adolescents who aged between thirteen and fourteen years old in Penang, Malaysia. They reported that the prevalence of cyber-victimization and cyber-perpetration within the past one month are one third and one fifth of the sample respectively. The prevalence however had double the frequency for both cyber-perpetration and victimization within three months. Marret & Choo (2017) conducted a cross-sectional study on factors linked to online victimization by 1487 Form 4 secondary school students using social networking sites in Negeri Sembilan, Malaysia. It was concluded that more than half of boys were more affected by cyberbullying compared to their female counterpart. They reported that the prevalence of cyberbullying victimization was 52.2%. To our knowledge, there is no study published on cyberbullying among adolescents in Malaysia during the COVID-19 pandemic.

Table 2.1 shows the description of studies on cyberbullying in terms of definition and prevalence reported in Malaysia and other countries, while Table 2.2 shows description of instruments used to measure cyberbullying behaviour among adolescents.

Table 2. 1 Description of studies on cyberbullying in terms of definition and prevalence reported in Malaysia and other countries

Author of Articles	Study population	Year of study	Definition of cyberbullying	Instrument	Timeframe	Results
Malaysia						
1 (Sabramani et al., 2021)	Malaysian National secondary school students (aged 13-16 years old)	2017	<p>Cyberbullying victimization:-</p> <ul style="list-style-type: none"> - ‘Yes’ response for the question ‘I was disturbed or humiliated by other students via messages, sending images or by other means by using mobile phones or other devices with internet access’. - ‘Yes’ response for the question ‘I was disturbed or humiliated by other students via messages, sending images or by other means by using social media platform’. 	Malaysian Bullying Questionnaire (Sabramani et al., 2019)	Not stated.	<p>-Prevalence of cyberbullying perpetrator was 5.3%.</p> <p>-Prevalence of cyberbullying victimization was 13.1%.</p>

Table 2.1 Continued

Author of Articles	Study population	Year of study	Definition of cyberbullying	Instrument	Timeframe	Results
1			<p>Cyberbullying perpetrator:-</p> <ul style="list-style-type: none"> - 'Yes response' for the question of 'I humiliated other students by messaging and circulating images via social media platform'. - 'Yes' response for the question of 'I humiliated other students by messaging and circulating images via mobile phones or other devices which had internet access'. 			
2 (Sivabalan et al., 2020)	Secondary school adolescents aged 13-14 years old in Penang, Malaysia.	2018	Cyberbullying is defined as "an hostile act done via any electronic forms of communication in repeated instances where the victim finds it impossible to defend himself or herself," with electronic means of contact including cell phones	European Cyberbullying Intervention Project Questionnaire (ECIP-Q)	Within past one month	-The prevalence of cyberbullying victimization was 31.6% while the cyberbullying perpetrator was 20.9%.

Table 2.1 Continued

Author of Articles	Study population	Year of study	Definition of cyberbullying	Instrument	Timeframe	Results
2			and other internet dependent technology (Olweus, 1993). To identify the respondents as cyberbullying victimization or perpetrator, cyberbullying was operationally defined as score of 2 or more in any of the items either as cybervictimization or cyberaggression.			
3 (Duarte et al., 2018)	United States 13 to 17 years old adolescents presenting for any reason to an urban paediatric emergency	2015.	Cyberbullying is defined as any behaviour in which people or groups use electronic or digital media to regularly transmit hostile or aggressive messages with the intent of causing injury or discomfort to others (Aboujaoude et al., 2015). Cyberbullying was evaluated using 2 questions from Student School Survey (Williams & Guerra, 2007).	Student School Survey (Williams & Guerra, 2007)	Prevalence reported within the past one year.	-5.6% of adolescents reported involved in cyberbullying perpetration. - 11.1 % of adolescents reported involved as cyberbullying victimization.

Table 2.1 Continued

Author of Articles	Study population	Year of study	Definition of cyberbullying	Instrument	Timeframe	Results
3	department (ED) in the Northeast United States.		<p>Cyberbullying victimization was assessed by the question of “Another teen or group of teens told lies or made fun of me using the Internet (email, instant messaging, cell phone text messaging, or websites)”.</p> <p>Cyberbullying perpetrator was assessed by the question of “I told lies or made fun of other teens using the Internet (Email, instant messaging, cell phone text messaging, or websites)”.</p>			
4 (C. Lee & Shin, 2017)	Adolescents in South Korea	2014	Cyberbullying has been defined as disparaging or harassing others through the use of digital networks such as Kakaotalk and Facebook (C. Lee & Shin, 2017) .	Adopted and improvise from (Patchin & Hinduja, 2011; Thomas Paine, 2009) they developed a cyberbullying	Prevalence noted within the past three months.	-34% of the respondent students were involved in cyberbullying perpetrator bullies (6.3%), victims (14.6%), or both bullies and victims (13.1%).

Table 2.1 Continued

Author of Articles	Study population	Year of study	Definition of cyberbullying	Instrument	Timeframe	Results
4			<p>Cyberbullying victimization was assessed by any ‘yes’ response for the following items:-</p> <ul style="list-style-type: none"> - I was cyberbullied through a chat service or an SNS service or online gaming or photograph/video or text. - I was denied Kakaotalk friendship or excluded from a chatroom. - My personal information was leaked online. - I was forced to run errands through a smartphone. <p>Cyberbullying perpetrator was assessed by any ‘yes’ response for the following items:-</p>	<p>scale with eight items measuring both cyberbullying perpetration and victimization experiences.</p>		

Table 2.1 Continued

Author of Articles	Study population	Year of study	Definition of cyberbullying	Instrument	Timeframe	Results
4			<ul style="list-style-type: none"> - I cyberbullied someone through a chat service or an SNS service or online - gaming or photograph/video or text. - I declined to make Kakaotalk friends with someone or left him or her out of a chatroom. - I disclosed someone's personal information online. - I forced someone to run errands through a smartphone. 			
Greece 5 (Kokkinos et al., 2014)	University students (aged 18-35 years)	not stated.	Cyberbullying (CB) is an aggressive, intentional act committed by a group or an individual against a victim who	The Cyber-bullying/ Victimization Experience	Not stated	-14% of cyberbullying offenders, -11% of cyberbullying victims

Table 2.1 Continued

Author of Articles	Study population	Year of study	Definition of cyberbullying	Instrument	Timeframe	Results
5	old) in Greece.		cannot easily defend himself or herself, using electronic means of interaction consistently and over time (Hinduja & Patchin, 2009). Cyberbullying perpetrator and victimization were classified based on the mean score of the questionnaire that assess direct and indirect behaviour of perpetrator and victims via the use of cell phones or internet.	Questionnaire (CBVEQ)		-33% both offenders and victims
Finland 6 (Lindfors et al., 2012)	Adolescents aged from 12-18 years old in Finland.	2009.	Bullying that occurs over the internet or on a mobile phone is referred to as cyberbullying (Lindfors et al., 2012). Cyberbullying victimization was evaluated with the question of 'During the last year, have you been bullied by mobile phone or via the internet?'	The Adolescent Health and Lifestyle Survey	Within one year.	-11% of adolescents reported engaged as cyberbullying victim during the last year. -9% of adolescents reported involved as cyberbullying perpetrator during the last year.

Table 2.1 Continued

Author of Articles	Study population	Year of study	Definition of cyberbullying	Instrument	Timeframe	Results
6			Cyberbullying perpetrator was assessed by 'Have you bullied others or participated in bullying others by mobile phone or the internet during the last year?'. Spain			
7 (Rodríguez-Hidalgo et al., 2020)	Secondary school adolescents aged 11 to 18 years old in Spain and Ecuador	not stated.	Cyberbullying is an aggressive, recurrent interpersonal behaviour aimed at injuring a victim through the use of information and communication technologies. (Del Rey et al., 2015; Kowalski et al., 2012; Slonje et al., 2012; Peter K. Smith et al., 2008; Ybarra et al., 2014) Cyberbullying victims defined as any individual who scored equal or higher than 2 (Yes, once or twice a month) in any of the items of cybervictimization and scored equal or lower than 1 (Yes, once or	European Cyberbullying Intervention Project Questionnaire (ECIP-Q)	Within one month	-The prevalence of cyberbullying victims and perpetrator among adolescents in Spain was 8.8% and 3.1% respectively. -The prevalence of cyberbullying victims and perpetrator among adolescents in Ecuador was 8.7% and 5.1% respectively.

Table 2.1 Continued

Author of Articles	Study population	Year of study	Definition of cyberbullying	Instrument	Timeframe	Results
7			twice) in all the items of cyberaggression in ECIP-Q. Cyberbullying perpetrator defined as any individual who scored equal or higher than 2 (Yes, once or twice a month) in any of the items of cyberaggression and scores equal or lower than 1 (Yes, once or twice) in all the items of cybervictimization.			
Taiwan, China, Hong Kong						
8 (J. K. Chen & Chen, 2020)	Children and adolescents from primary to high school in Taiwan, Tianjin in Mainland China, and	Not stated.	Cyberbullying is defined as a student's intentional use of online short message services and electronic gadgets to threaten or harass other students. (Kiriakidis & Kavoura, 2010; Strom & Strom, 2006). The definition include cursing, insulting, humiliating, threatening, intimidating, making unwanted sexual remarks, posting	Self-reported questionnaire consisting of 14 items derived from cyberbullying victimisation and perpetration scales were selected to	Prevalence reported at least one time during semester studies.	-Prevalence of cyberbullying perpetration reported among whole sample was 16.7%. - Prevalence of cyberbullying victimization of whole sample was 29.7%.

Table 2.1 Continued

Author of Articles	Study population	Year of study	Definition of cyberbullying	Instrument	Timeframe	Results
8	Hong Kong		private pictures, spreading rumours, and spreading a computer virus (J. K. Chen & Chen, 2020; Kiriakidis & Kavoura, 2010)	evaluate respondents' frequencies of involving and being involved in various cyberbullying behaviours through electronic devices or on social media (J.-K. Chen, 2018)		

Table 2. 2 Instruments used to measure cyberbullying among adolescents.

Instrument	Items and scoring	Strengths	Limitations
Cyberbullying Scale (CBS)	The questionnaire was a single factor with two general questions and 14 items measured with five	- It is available in Malay language and had validated by Saman et al. (2021) among secondary school	It does not evaluate forms of cyberbullying perpetrator.

Table 2.2 Continued

Instrument	Items and scoring	Strengths	Limitations
	<p>Likert-type scales: ranging from '0=never' to '4=all the time'. The first two questions were objective based questions asking for medium used by students to cyberbully others and being cyberbullied by others.</p>	<p>adolescents in Muar Johor. It had good psychometric properties and good internal consistency [Cronbach's alpha: 0.87, construct reliability (CR): 0.832].</p> <ul style="list-style-type: none"> - CBS had excellent internal consistency (Cronbach's $\alpha=0.94$) and significant positive correlations with related constructs of anxiety, depression, and loneliness (Stewart et al., 2014). - It can be used to measure cyberbullying behaviour among adolescents. - It evaluates cyberbullying victimization and perpetrator among adolescents within few months. 	<ul style="list-style-type: none"> - None of studies found using this scale to measure cyberbullying among adolescents.

Table 2.2 Continued

Instrument	Items and scoring	Strengths	Limitations
Student School Survey	<p>Questionnaire consisting of 70-item measure assessing the frequency of bully perpetration, victimization, and bystander behaviour. Other subscales include social cohesion and trust, perceived peer support, school climate, perceived problem of bullying at school, self-esteem, moral approval of bullying, and informal social control (Williams & Guerra, 2007).</p> <p>Cyberbullying behaviour was assessed based on 2 questions as follow:</p> <ul style="list-style-type: none"> - Cyberbullying victimization was assessed by the question of “Another teen or group of teens told lies or made fun of me using the Internet (email, instant messaging, cell phone text messaging, or websites)”. 	<ul style="list-style-type: none"> - It can be used to assess cyberbullying behaviour among adolescents. - good internal consistency (Williams & Guerra, 2007). 	<ul style="list-style-type: none"> - Does not include other methods of cyberbullying such as picture cell phones, text messages, online video clips, social networking site and chatroom. - Does not include other forms of cyberbullying victimization such as receiving online threats, exclusion, doxing, cyberstalking.