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# PROBLEMATIC INTERNET USE (PIU) AND ITS IMPACT ON MENTAL HEALTH IN THE MALAYSIAN CONTEXT

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**Abstract:** With the rapid advancement in technology, problematic internet use (PIU) has received increasing attention over the years. Different perspectives view PIU differently, such as viewing it as an addiction, impulse control disorder, or/and relationship-building deficits. A lack of an agreed definition could be problematic in accurately measuring how PIU affects mental health. This article aims to explore the disagreement in defining PIU in the context of Malaysia. A narrative review was conducted to examine various aspects of PIU, including smartphone addiction, social media addiction, Internet Pornography Use (IPU), and online game addiction, shedding light on their associations with weight-related self-stigma, nomophobia and psychological distress, particularly in the context of the COVID-19 pandemic. The research uncovers gender differences, revealing socially acceptable IPU among males and potential distress among females. Cultural and social factors contribute to diverse patterns of internet overdependence, influenced by early exposure and gender roles. Emotional stability emerges as a crucial factor, with higher PIU correlating with increased emotional distress. The study calls for tailored interventions, considering demographic nuances and cultural contexts.

**Keywords: Problematic Internet Use, Mental Health, Smartphone Addiction, Social Media Addiction, Internet Pornography Use.**

## INTRODUCTION

In this era, it is arguably impossible to live a normal life without an internet connection. Various aspects of our lives rely on the internet, such as searching for information online, communicating with others via social media, performing online transactions, and getting online entertainment. In Malaysia, the Internet User Survey 2022 conducted by the Malaysian Communications and Multimedia Commission (MCMC) reported that 92.7% of the Malaysian population are Internet users (Malaysian Communications and Multimedia Commission, 2022). Also, during the COVID-19 pandemic, there was a significant shift from physical activities to online activities, which increased internet usage (Burkauskas *et al.,* 2022; Malaysian Communications and Multimedia Commission, 2022). Meanwhile, the internet has helped make our lives more convenient. Using it in the wrong way or using it excessively brings about drawbacks such as online gambling addiction, overconsumption of online pornography, social media addiction, cyberbullying, and online video gaming addiction (Fineberg *et al.,* 2018; Király *et al.,* 2020; Peeters *et al.,* 2019).

Problematic Internet Use (PIU) is generally used as an umbrella term referring to disordered internet usage patterns (Fineberg *et al.,* 2018). For example, individuals use it excessively to the point that surfing the internet consumes a big proportion of their time, thereby affecting their normal daily functioning. Also, it has been reported that PIU can lead to various negative consequences, such as poorer physical health and mental health issues, such as anxiety and depression (El Asam *et al.,* 2019; Gecaite-Stonciene *et al.,* 2021).

PIU has been widely studied in recent years, and despite its effects on one's mental health, The concept is yet to be considered as a disorder under the Diagnostic and Statistical Manual of Mental Disorders (DSM). This is potentially due to the inconsistency in terms of the definition of PIU. A meta-analysis conducted by Tokunaga and Rains (2016) reported that in some studies, terms such as internet addiction, compulsive internet use, and pathological internet use were used interchangeably with PIU as well. Based on the authors' analysis, they concluded that there are generally three perspectives in terms of how PIU is defined across different studies.

**PIU as Addiction**

According to this perspective, PIU is seen as similar to substance dependence, such as alcohol addiction or drug addiction. It is then characterised by (1) increased commitment to internet-related activities, (2) unpleasant feelings without the internet, (3) increased tolerance to online activities, and (4) denial of the problematic behaviours (Li & Chung, 2006; Tokunaga & Rains, 2016). For instance, an individual starts spending more time on the internet and feels uncomfortable without access to the internet, to the point that it affects their social, occupational, or recreational activities. They might try to stop, but their attempts were not successful. The failure to stop is a hallmark feature according to the perspective of addiction (Tokunaga & Rains, 2016). Excessive use or overdependence on the internet, mostly among youngsters, often results in some addiction-related symptoms like increased use of time and energy experience of feelings of discomfort, stress, and loneliness, which subsides with internet-related activities, among others (Kandell, 1998).

**PIU as An Impulse Control Disorder**

PIU, as an impulse control disorder, indicates that one prioritises short-term gain or instant gratification and is not able to control one's impulses (Di Carlo *et al.,* 2021). From this perspective, it is conceptualised in five dimensions. Firstly, it is an uncontrollable behaviour, and secondly, cognitive preoccupation takes place when one is constantly thinking about internet-related activities. Thirdly, internet-related activities are used to escape problems or negative emotions. Fourthly, tolerance and withdrawal occur, just like the definition of addiction, and lastly is, the negative outcomes following the short-term gains (Tokunaga & Rains, 2016). The differences between the view of PIU as an impulse control disorder and addiction are the presence of cognitive preoccupation and instant gratification over long-term gains.

**PIU as Relationship Building Deficits (Tokunaga & Rains, 2016)**

The third view explains PIU regarding deficits in building relationships, especially in the offline setting. Similar to the previous two views, preoccupation is one of the features. Next, it assumes that PIU develops as a result of efficacy in interpersonal communication online. This means that individuals prefer online communication as they view themselves as lacking social competency in offline settings, and PIU is then developed gradually. Also, this perspective discusses preoccupation. As opposed to preoccupation with internet-related activity, this perspective believes that one is preoccupied with the negative thoughts of their ineffective offline communication skills. The last dimension from this perspective is mood alteration. Individuals experience negative emotions due to poor social communication in offline settings, and establishing meaningful relationships online helps eliminate these negative emotions.

**Review of Related Studies**

Interestingly, the study of PIU traces back way before the expansion of the internet. Young (1996) described a case of a client who experienced internet addiction, and following that, research related to this general topic under the umbrella term of PIU started to grow. A meta-analysis conducted for research related to PIU completed before 2009 reported over 350 studies (Tokunaga & Rains, 2010). This number was reported 15 years ago and with the rapid expansion of the internet, the number is expected to grow exponentially. However, the lack of an agreed definition can be problematic. It contributes to different measuring tools, and without a consensus about what it is about, conflicting results may arise, and the generalisability of studies can be limited as well. In this article review, the authors are interested in reviewing studies of PIU conducted in the Malaysian context in order to

understand how it is defined in the Malaysian context, as there may be limited attention on the concept. Also the impact of PIU on mental health will also be examined during the article review.

## METHODOLOGY

In the SCOPUS database, studies related to PIU conducted in Malaysia were sought, with the selected time range spanning from 2018 to 2023. Several keywords used include PIU, online game addiction, pornography, internet addiction, stress, mental health, and mental illness. A total of 16 studies were found, and 13 were included in the review. Among the five excluded studies, some journals are no longer SCOPUS-indexed, and some have not studied the impact on one's mental health. Next, the definition of PIU in those studies was examined, and the impact on mental health was also summarised.

## RESULTS

The results will be discussed in two parts, i.e., beyond Malaysia and within Malaysia.

### Beyond Malaysia

#### *Prevalence*

Beyond Malaysia's borders, internet addiction (IA) and its association with mental health reported varying prevalence rates among participants based on their reported daily internet usage (Stanković & Nešić, 2022). Approximately 2.5% of individuals spent one hour online, while a substantial portion, comprising 41%, reported internet usage up to 3 hours daily. Similarly, another 41.5% spent up to 6 hours online, and a minority of 15% exceeded 6 hours.

#### *PIU and Mood Regulation*

Moreover, correlations between mood regulation and the negative consequences of internet use indicated a noteworthy relationship between PIU, specifically when it reaches severe levels, and a decline in Health-Related Quality of Life (HRQoL). In other words, as PIU levels increase, particularly in its severe form, there is a corresponding deterioration in HRQoL. For instance, excessive emotion regulation (e.g., using the internet to talk to others when feeling lonely) and a preference for online social interactions were linked to elevated levels of emotional loneliness (Costa *et al.,* 2018). Furthermore, the research findings suggest a positive relationship between PIU and emotional symptoms, conduct problems, and hyperactivity. This implies that an increase in both internalising (emotional) and externalising (behavioural) symptoms may serve as indicators for numerous psychiatric disorders prevalent in adolescents, including depression, anxiety disorders, and sleep disorders (Goodman & Goodman, 2009). However, interestingly, Stanković and Nešić (2022) did not show a direct statistical significance in sleep quality. Nonetheless, the collective evidence underscores the importance of recognizing the diverse impacts of PIU on internet users' well-being and mental health.

#### *PIU and Alcohol Consumption*

Besides that, a comprehensive meta-analysis by Zhang and colleagues (2018) unveiled a discernible trend among students identified with IA during the initial assessment. This trend points towards a concerning escalation in both depression levels and alcohol consumption over time. This noteworthy finding underscores the potentially detrimental effects associated with persistent IA, suggesting a correlation between adverse mental health outcomes and an increased propensity for engaging in alcohol-related behaviours among this particular student population (Lau *et al.,* 2017).

The revealed connection between IA and mental health issues implies that the consequences of excessive internet use extend beyond the digital realm and may significantly impact various facets of individuals' psychological well-being. The observed rise in depression levels suggests a potential bidirectional relationship, where IA may contribute to heightened depressive symptoms. Conversely, pre-existing depression could potentially drive individuals towards increased internet use as a coping mechanism. This potential relationship can be defined from the perspective of relationship-building

deficits (Stanković & Nešić, 2022). Additionally, the linkage to elevated alcohol consumption underscores the complexity of these associations, suggesting a need for a holistic approach when addressing mental health concerns related to internet addiction. These global insights serve to emphasise the nuanced and multifaceted nature of the relationship between IA and mental health, shedding light on shared trends while acknowledging the potential influence of unique cultural or gender-specific dynamics. Understanding these intricate connections is crucial for developing targeted interventions and support systems that can effectively address the diverse challenges posed by IA on mental health outcomes worldwide.

### *PIU and Gender Differences*

Gender differences were observed, and two studies found that boys were more likely to develop IA compared to girls (Chang *et al.,* 2014; Ko *et al.,* 2007). This could be because problematic video gaming was more common among males. Also, it was reported that excessive exposure to violent games shows lower empathy scores, higher impulsivity, exposure to violent games, and higher scores for both physically and relationally aggressive behaviour (Konkolÿ Thege *et al.,* 2015). Moreover, children who continued to be excessive gamers experienced higher levels of anxiety, social phobia, and depression (Gentile *et al.,* 2011). However, among females, IA emerged as a statistically significant predictor of depression, indicating a potential gender-specific impact, while a study revealed that female students exhibit a lower likelihood of developing IA compared to their male counterparts. Apart from examining gender differences in IA, this study also explored the relationship between IA and mental health symptoms (Charlton *et al.,* 2013). The results indicated that female students, who were less likely to experience IA, demonstrated a prominent correlation between IA and symptoms of depression, anxiety, and stress. This implies that irrespective of gender, those with higher levels of IA were more likely to exhibit mental health challenges, suggesting a potential link between problematic internet use and adverse psychological outcomes among the student population.

## Within Malaysia

### *Definition of PIU in the Malaysian Context*

Based on the review, the definition of PIU in the Malaysian context is vague. Most of the studies did not clearly define what PIU is and the underlying mechanism or concept behind the measuring tools used. With the limited information available, the articles are sorted loosely into the three perspectives mentioned earlier and some of the articles appear in more than one perspective due to the unclear definition of PIU by the authors. Table 1 below summarises the articles reviewed and the definitions used.

Table 1: Definition of PIU in Articles Reviewed.

| Authors | Definition | Category |
|---|---|---|
| Fu *et al.,* 2022 | Unclear | Addiction (*sorted into this category based on the measuring tools used*) |
| Jaafar *et al.,* 2021 | Internet overdependence was used to replace "addiction." However, the study also included preoccupation and failure of self-control as of the characteristics, which are characteristics of impulse control disorder. | Addiction<br>Impulse control disorder |
| Jaafar *et al.,* 2022 | "Internet addiction (IA) is defined as uncontrolled, compulsive, and excessive behaviour that may disrupt daily life and cause distress." | Impulse Control Disorder |
| Liu *et al.,* 2022 | Unclear | Addiction (*sorted into this category based on the measuring tools used*) |
| Mooi *et al.*, 2019 | "Obsessive internet use significantly impacts individuals' psychology and lifestyle, termed internet addiction (IA)." | Addiction |

| | | |
|---|---|---|
| Nikmat *et al.*, 2022 | "Problematic Internet use involves excessive, poorly controlled behaviours, causing impairment or distress. Some argue that "Internet addiction" is more suitable for specific online activities like gaming." | Impulse Control Disorder |
| Roslan *et al.*, 2021 | "Internet Gaming Disorder is characterised by persistent Internet gaming with other players, leading to significant impairment or distress." | Addiction |
| Tan *et al.*, 2022 | "Several terms have been used, such as excessive use of pornography, problematic online pornography use, pornography addiction, and cybersex addiction. Nonetheless, the term 'problematic Internet pornography use' (IPU) will be used in this paper." | Impulse Control Disorder |
| Tong *et al.*, 2019 | "PIU is when a person has excessive or poorly controlled preoccupations, urges or behaviours related to Internet use resulting in impairment and distress to their life." | Impulse Control Disorder |

### *PIU on Weight-Related Self-Stigma and Nomophobia*

In a comprehensive examination of smartphone and social media addiction in Malaysia (Liu *et al.,* 2022), the research offered substantial support for the hypothesis linking these technological dependencies to heightened levels of weight-related self-stigma and nomophobia. Nomophobia, a combination of the words "no mobile phone" and "phobia," refers to the fear of being without one's mobile device or the inability to use it (Rodríguez-García *et al.,* 2020). The study revealed a significant correlation, indicating that individuals immersed in smartphone and social media addiction were more likely to experience increased levels of both weight-related self-stigma and nomophobia. This aligns with the notion that extensive smartphone use and social media engagement may contribute to negative self-perceptions about weight and an elevated fear of being without one's mobile device (Yildirim & Correia, 2015).

### *PIU and COVID-19*

Meanwhile, the study findings indicated that 45.3% of students experienced a moderate to severe level of psychological distress, a figure significantly higher compared to the prevalence reported in other studies before the pandemic, which ranged from 32.6% to 37.7% (Nikmat *et al.,* 2022). This heightened prevalence surpassed rates observed before the COVID-19 pandemic, raising concerns about the pandemic's potential impact on students' mental well-being. Additionally, another study explored PIU among college and university students in Malaysia reported an overall rate of 32.2%, slightly higher than pre-pandemic statistics (Rosliza *et al.,* 2018). These findings highlight the interconnectedness of psychological distress and PIU, suggesting a potential escalation during the pandemic. The comparison to pre-pandemic rates underscores the need for targeted interventions and support mechanisms to address the evolving mental health landscape among students in Malaysia. Similarly, Fu and colleagues (2022) revealed a concerning landscape of emotional distress among secondary school students, particularly in the context of the COVID-19 pandemic. The prevalence rates of depression (64.7%), anxiety (78%), and stress (57.4%) underscore a significant elevation compared to previous studies conducted before the pandemic. Notably, anxiety emerged as the most prevalent issue experienced by the students in the study. This stark increase in emotional distress signals the unique challenges and adversities faced by secondary school students during the ongoing global health crisis.

### *Problematic Pornography Internet Use and Mental Health*

In an extensive exploration of the relationship between problematic internet pornography use (IPU) and psychological distress, Tan and colleagues (2022) brought forth compelling evidence supporting a significant correlation, indicative of a positive association. This finding adds to the understanding of the intricate connections between technology-related behaviours and mental health outcomes. On the one hand, it was found that despite being addicted to games, a significant proportion of students experienced no to minimal depression (43.48%), anxiety (26.09%), and stress (65.22%). On the other hand, only a small percentage were severely depressed (4.35%) and severely stressed out (4.35%) (Roslan *et al.,* 2021). Statistical tests revealed a significant association between the level of depression,

anxiety, and stress and the degree of game addiction. These findings suggest that while a substantial number of students addicted to games did not experience severe mental health symptoms, there is a noteworthy connection between game addiction and higher levels of depression, anxiety, and stress among those who did.

***PIU and Concerning Age Group***

Moreover, the widespread availability of smartphones and increased internet accessibility among younger age cohorts contribute to the higher prevalence of internet overdependence in youths (Jaafar *et al.,* 2021). The authors highlighted the role of technological advancements in shaping the digital landscape for young individuals, making them more susceptible to the allure and potential pitfalls of excessive internet use. The widespread use of social media platforms and online communication tools further intensifies the impact on this demographic, fostering an environment where constant connectivity is not only prevalent but often encouraged.

Additionally, the findings from another study not only emphasize the age-related patterns of pathological internet use but also point to the significance of educational settings in understanding and addressing this issue among the youth (Tong *et al.,* 2019). The academic environment, with its reliance on technology for learning and communication, may unintentionally contribute to the development of problematic internet use habits among students. Recognizing these contextual factors is crucial for implementing targeted interventions that address the specific challenges faced by young individuals in managing their digital behavior and maintaining a healthy balance between online and offline activities. Based on past studies' emphasis on psychological distress in younger age groups in Malaysia, it becomes imperative to explore the interplay between internet overdependence and mental health within the unique socio-cultural context of the country (Jia & Loo, 2018; Radeef & Faisal, 2017).

***PIU and Ethnicity***

Ethnic differences emerge in computer ownership, online duration, frequency, and internet use experiences among urban youths, with the Chinese ethnic group showing higher computer ownership and more extensive online engagement (Jaafar *et al.,* 2021). Similarly, in a study conducted at the University of Malaya, the majority of pathological users were Chinese (31.5%) and perceived themselves to be from families with a higher socio-economic status (32.5%) (Tong *et al.,* 2019). Furthermore, these studies shed light on gender differences, proposing that males exhibit higher levels of problematic IPU (Tan *et al.,* 2022) and internet overdependence (Jaafar et al., 2021) compared to females. The study on internet game addiction among Malaysian students revealed that a minority (17.3%) of respondents were identified as being addicted to online games (Roslan *et al.,* 2021). Notably, the prevalence of game addiction differed by gender and ethnicity, with a higher prevalence observed among male students (35.72%) compared to their female counterparts (8.8%). Ethnicity also played a role, with the highest prevalence found among the "Others" category (44.45%), followed by Chinese (30%), Malay (14.71%), and Indian (8.33%). Overall, these studies have addressed the multifaceted aspects of internet addiction, considering both gender-specific vulnerabilities and socio-economic influences on PIU and its potential repercussions on mental health among the population.

## DISCUSSION

### Definition of PIU in the Malaysian Context

PIU, in the Malaysian context, is arguably poorly defined, and most of them focused on the perspective of PIU as an addiction and PIU as an impulse control disorder. For example, in some studies, the definition of PIU appeared to overlap between different perspectives, such as defining PIU as an addiction with cognitive preoccupation and poor self-control, which overlaps between addiction and impulse control disorder. Also, there is a lack of studies examining PIU from the perspective of relationship-building deficits. This indicates that the understanding of PIU in the Malaysian context is arguably still vague and weak. With an inconsistent definition of PIU, the results could be misleading as the studies are arguably studying different constructs or different aspects of the same constructs. The measuring tools used could also be problematic as they might not be measuring what the authors intended to measure. In short, it is crucial for studies to clearly define what PIU is in their context, and

more studies are needed to examine PIU from various perspectives for a more comprehensive understanding.

## Impact of PIU on Mental Health

### *PIU on Weight-Related Self-Stigma and Nomophobia*

The study conducted in Malaysia provided substantial evidence supporting the hypothesis that smartphone addiction and social media addiction are correlated with heightened levels of weight-related self-stigma and nomophobia among university students. As individuals invest more time in smartphone and social media usage, they become more susceptible to encountering weight stigma information or posts, such as disparaging descriptions of being overweight, leading to a subsequent rise in weight-related self-stigma (Clark *et al.,* 2021). Furthermore, the research highlighted that individuals addicted to smartphones and social media use are prone to become fearful of being without their devices, thus fostering the development of nomophobia and potential mental health issues (Xu *et al.,* 2022).

### *PIU and COVID-19*

Aligning with this, the study on Universiti Teknologi Mara (UiTM) students during the COVID-19 pandemic further underlines the impact of PIU, particularly heightened engagement in social media, on psychological distress. The increased internet usage during weekends, influenced by movement restrictions, is identified as a significant factor associated with problematic internet use, contributing to reduced engagement in social interactions and potentially exacerbating psychological distress among young individuals (Huckins *et al.,* 2020).

### *IA Trends Among University Students*

Two insightful studies shed light on the dynamics of IA among university students. Zhang and colleagues (2018) focused on young adults, particularly allied health students, revealing a prevalent IA trend in this demographic, especially among health students, who showed a prevalence five times higher than their peers. The study uncovered a significant link between IA and symptoms of depression, anxiety, and stress, emphasizing the intricate relationship between mental health and technology behaviours in this specific group. Building on this, another study by Mooi and colleagues (2019) noted gender differences in IA prevalence. Female students were less likely to experience IA, potentially influenced by the higher proportion of Muslim females and their strong religiosity, which acts as a protective factor against addictive behaviours. Despite the lower prevalence rate, female students with IA were significantly associated with depression, possibly due to psychological factors stemming from negative events and biological changes during puberty. The study highlighted that females, who tend to use the internet more for information searching, might experience social isolation, contributing to depression. Anxiety scores emerged as persistent predictors of IA in both genders, emphasizing the interconnected factors of religiosity, gender, internet use patterns, and mental health outcomes.

### *Gendered Dynamics of Internet Pornography Use (IPU)*

On the other hand, Tan and colleagues (2022) aligned Internet Pornography Use (IPU) seamlessly with prior research in Western samples (Giordano & Cashwell, 2017), affirming the prevailing understanding that males consistently tend to report higher levels of problematic IPU. Despite Malaysia's legal, educational, and media sectors strongly condemning IPU while highlighting its negative repercussions, this does not act as a deterrent, particularly for males. Notably, male IPU in this context is often considered socially acceptable and seen to acquire sexual knowledge (Litsou *et al.,* 2021). This social acceptance may shield males from criticism for engaging in pornography consumption, potentially contributing to the escalation of IPU to problematic levels. Previous studies have indicated gender-specific differences in psychological distress (Bridges & Morokoff, 2011). The findings suggest that females reporting problematic IPU may experience more psychological distress. This could be attributed to their potential vulnerability to psychopathological symptoms, such as loneliness and anxiety, linked to problematic IPU (Yurdagül *et al.,* 2021). Furthermore, given that the production of internet pornography is predominantly male-driven and often features sexist content tailored to male preferences (Cawston, 2019), females may be more susceptible to psychological distress due to the objectification and devaluation depicted in these materials. Therefore, even when males and females

exhibit similar levels of problematic IPU, women appear more prone to experiencing heightened psychological distress.

***Gendered Dynamics and Psychological Impacts of Online Game Addiction***

Moreover, in a study, male students are more prone to developing online game addiction, often linked to games that evoke feelings of aggression (Roslan *et al.,* 2021). This inclination aligns with research findings indicating that individuals, particularly youth, classified as problem or addicted gamers face an increased risk of experiencing negative emotions. These emotions include feeling low, irritable, in a bad mood, nervous, tired, exhausted, and fearful compared to their non-problematic counterparts. The connection between game content inducing aggression and the subsequent psychological impacts emphasises the importance of understanding and addressing the factors contributing to online game addiction among male students. A study found that higher PIU levels among Asian students were noted, possibly due to competitive academic environments and the popularity of online gaming in Asian countries (Tong *et al.,* 2019). Besides that, most university students exhibited PIU, with patterns indicating a focus on recreational and pornography purposes (Tong *et al.,* 2019). A significant portion spent up to 4 hours daily on the internet for recreational activities, such as chatting and using mobile phones for internet access. This aligns with findings from other regions, like Hong Kong, highlighting dissatisfaction with university life and engaging in recreational internet activities as risk factors for PIU (Ding *et al.,* 2016). Over half of the respondents used the internet and smartphones to escape problems or alleviate a dysphoric mood, emphasizing the role of recreational use in coping.

***The Cultural and Social Factors Influencing Internet Overdependence Among Malaysians***

The observed disparities in internet overdependence prevalence in Asian countries, including Malaysia, may stem from cultural and social differences, as well as variations in internet accessibility and government policies across regions. The current generation of urban Malaysian youths, exposed to the internet since the age of five, faces challenges associated with problematic internet use, influenced by the technological determinism theory (Malaysian Communications and Multimedia Commission, 2017). Early internet exposure, often utilized for academic purposes, contributes to extended online durations beyond their intentions. Gender differences, while indicating higher prevalence in males, also reveal emerging concerns for young women, challenging previous assumptions about gender roles in internet overdependence. Ethnic variations, particularly among the Chinese ethnic group, showcase disparities in computer ownership and online engagement (Jaafar *et al.,* 2021).

***PIU and Emotional Distress***

Furthermore, many studies have shown that higher levels of IA are linked to increased emotional distress (Akin & Iskender, 2011). Therefore, Fu *et al.* (2022) focused on whether the Big Five personality traits play a role in this connection. The main finding is that emotional stability is the crucial factor mediating the link between Internet addiction and emotional distress. This means that individuals with higher emotional stability experience lower emotional distress and are less likely to develop Internet addiction. On the other hand, individuals with lower emotional stability tend to have stronger responses to stressful situations. Importantly, internet addiction may increase the likelihood of emotional distress (Fu *et al.,* 2022). Other research suggests a causal link between social media use and depressive symptoms, indicating a correlation between higher social media use and increased depression levels (Hartanto *et al.,* 2021). This emphasizes the significance of emotional stability in mitigating both Internet addiction and emotional distress.

**Strengths**

Past studies exhibit strengths in their effective handling of a relevant and contemporary issue, especially pertinent to the younger demographic, known for their extensive use of smartphones and the internet. Notably, including varied findings, such as divergent perspectives on sleep issues, adds a layer of complexity to the discussion, enhancing its richness and relatability, even in comparison to Western studies. Additionally, an interesting aspect highlighted in another study is that females tend to exhibit lower levels of problematic IPU. Despite this finding, the study notes that females appear more susceptible to experiencing heightened psychological distress. The study's exploration of the impact of

a significant global event, specifically COVID-19, on mental health and internet use, highlights the vital role the internet played as a primary means of connection during lockdowns.

An additional strength lies in the attention to weekends and lifestyle changes during the pandemic, offering valuable insights into the practical implications of problematic internet use. The discussion on gender differences and potential psychological distress associated with PIU adds depth to the study, considering the nuanced experiences of male and female students. Finally, the emphasis on the importance of emotional stability in preventing internet addiction and emotional distress adds a crucial dimension, stressing the need for a holistic approach to comprehending and addressing mental health concerns among university students.

**Weaknesses**

Past studies' weaknesses are evident in their narrow focus on defining PIU primarily as addiction, impulse control disorder, and relationship-building deficits, neglecting a more comprehensive exploration that could uncover nuances in internet use patterns. Most Malaysian studies predominantly concentrate on specific forms of problematic internet use, like addiction to the internet, social media, gaming, and pornography, rather than addressing PIU in its entirety. This limited scope impedes a thorough understanding of the broader spectrum of PIU and its multifaceted dimensions.

Furthermore, including participants from "other" ethnicities may not truly represent Malaysia's ethnic diversity, compromising the generalisability of findings. The exclusive focus on an affirmative action institution representing Malay and Bumiputera ethnicity restricts the study's outcomes to a more specific population, limiting broader applicability. Moreover, the study's exclusive focus on youth raises concerns about generalisability to adults and the elderly engaged in excessive internet usage. Given the increasing participation of adults and the elderly in online activities, excluding them introduces a significant gap in understanding problematic internet use across age groups. Future research should consider incorporating a more diverse sample to offer a comprehensive understanding of PIU across demographic categories. The simplicity and lack of in-depth exploration in these studies, coupled with the absence of causal factors and intervention strategies, pose challenges in formulating comprehensive insights into PIU. The quantitative nature of the research, while providing valuable data, may fall short of offering a profound understanding of individual differences in Problematic IPU, especially considering the early stage of research on this topic.

Additionally, the absence of data on reasons for smartphone use in the context of smartphone addiction is a notable limitation, hindering a comprehensive understanding of motivations behind excessive smartphone use. The study's inability to establish a cause-and-effect relationship, indicated by the bi-directionality in the relationship between IPU and psychological distress, introduces complexity and limits the ability to draw definitive conclusions. Moreover, the lack of comparative studies between different states in Malaysia further restricts the contextual understanding of variations in problematic internet use across regions.

## CONCLUSION

Overall, motivations for internet use range from entertainment and online gaming to educational activities, with social networking being a prominent reason. PIU correlates significantly with poor social interaction and psychological distress, including depression, anxiety, stress, and loneliness among Malaysian youths. The displacement of valuable time with family and friends is a suggested consequence. Notably, nomophobia, Attention Deficit Hyperactivity Disorder symptoms, and social phobia are linked to internet overdependence. Local studies also highlight the impact of prolonged smartphone usage on sleep quality and daytime tiredness (Nasser *et al.,* 2020). Globally, a consistent relationship between internet overdependence and poor psychological well-being is reported, emphasizing the pervasive impact of excessive internet use on mental health, regardless of a country's developmental status.

In conclusion, these studies revealed complex relationships between various PIUs and mental well-being in Malaysia. Smartphone and social media addiction correlates with weight-related self-stigma and nomophobia. Gender-specific patterns emerge in problematic IPU, with societal perceptions contributing to males' higher susceptibility to problematic IPU. The exploration of IA emphasises the need for targeted interventions, considering demographic nuances among allied health students and gender differences in IA prevalence. Examining online game addiction highlights its gender-specific nature, particularly among male students exposed to aggression-inducing game content. Additionally, the investigation into the interplay of Big Five personality traits, emotional stability, and IA unveils potential protective factors against associated emotional distress. As the digital landscape evolves, these findings collectively stress the urgency of tailored interventions addressing multifaceted influences on students' mental health, encompassing technology use, personality traits, and societal norms. Understanding these relationships is increasingly crucial for the well-being of Malaysians, necessitating ongoing research and targeted support initiatives.

**Implications**

The study's implications suggest a need for educational programs and interventions that specifically target the promotion of healthy smartphones, social media usage, and IA among university students in Malaysia. Furthermore, there is a recommendation for the development of interventions targeting online game addiction, with a specific focus on male students who exhibit a higher prevalence of this concern. Recognizing the interconnected nature of internet use, mental health, and various stressors, the study advocates for a holistic approach to comprehensively address these issues. University authorities are encouraged to implement interventions involving proactive screening for problematic internet use, awareness campaigns on the adverse health outcomes of excessive internet use, and the promotion of a healthy and active lifestyle. Lastly, to enhance effectiveness, these interventions should be tailored to consider gender differences and cultural contexts, particularly addressing issues related to pornography.

**Future Research**

In future research, it is crucial to explore the cultural factors unique to Malaysia and their influence on internet use patterns and mental health outcomes. This involves exploring cultural attitudes towards technology, understanding social expectations, and considering the role of family and community in either mitigating or exacerbating mental health issues related to internet use. Additionally, there is a need to identify both risk and protective factors contributing to PIU and mental health problems, examining elements such as strong social support, resilience, and coping strategies that may act as buffers against negative outcomes.

Future investigations should also focus on the impact of PIU on academic performance and occupational functioning in Malaysia, exploring how excessive internet use may influence productivity, job satisfaction, and educational achievements. To address these issues effectively, there is a call for the development and evaluation of intervention strategies tailored specifically to the Malaysian context. These interventions could encompass educational programs, counseling services, or technology-based approaches aimed at reducing PIU and addressing associated mental health concerns. Moreover, conducting comparative studies among Malaysia's 14 states would be valuable in identifying both similarities and differences in the relationship between problematic internet use and mental health, providing a more comprehensive understanding of this issue nationwide.

**Informed Consent Statement**

As this study involved no human subjects and no animal subjects, no informed consent was necessary.

**Conflict of Interest**

The authors declare that there are no conflicts of interest associated with this article within their scope of knowledge.

**Ethics Statement**

Given that this study consisted solely of a review and analysis of publicly available articles, no ethical approval was required.

**Author Contributions**
All authors contributed equally to the conception, design, execution, and analysis of the study. They collectively drafted and revised the manuscript for intellectual content and approved the final version for submission.

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**Data Availability Statement**
The data sets analyzed during the writing of this article are available upon reasonable request. Requests for access to the data should be directed to weijuntan1095@gmail.com. We are committed to transparency and reproducibility in research, and we encourage fellow researchers to reach out for access to the data for further analysis and validation.

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