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Preventive Measures in Problematic Gaming in Asia: A Systematic Literature Review

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ABSTRACT

The rise of problematic gaming (PG) prevalence among the youth is a growing concern globally. PG is a symptom of Gaming Disorder (GD) that has been classified as a mental disorder by the World Health Organization (WHO) in the International Classification of Diseases 11th Revision (ICD-11). Despite the use of Public Service Announcements (PSAs) as a preventive measure in many countries, their effectiveness in increasing the awareness of PG in Asia, particularly in Malaysia is still questionable. The role of PSAs in preventing PG is a topic that deserves closer examination, open to debate and requires a more critical evaluation. The objective of this study is to identify diverse preventive measures employed to prevent PG in Asia, with a specific focus on determining whether PSA has been used or suggested based on empirical support to enhance awareness among Asian youth. A systematic review of the literature between 2015 and 2022 was performed with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology, utilizing Scopus, Web of Science, and Google Scholar as the main sources for the search efforts. We systematically analysed 22 PG and GD prevention articles in Asia between 2015 and 2022, which yielded five main themes which were parent and family prevention, clinical practice, self-control, policy and technology restrictions, and school initiatives. Recommendations for future research in this field have been provided to enhance further understanding and effectiveness of PG and GD prevention efforts in Asia.

Keywords: *Public service announcement, problematic gaming, prevention, youth, systematic review.*

INTRODUCTION

The advent of information technology and digital communication, especially those that rely on visuals, has marked the post-millennial era. Visuals not only simplify daily life but also offer entertainment through video games, particularly to the youth. The rapid pace of technology and the expansion of the Internet network offers unlimited and boundary-less visual entertainment through various types and genres of video games, increasing the involvement of more players at various age levels. The development of competitive video gaming activities around the world has made it a recognized form of sports (e-sports) by governments and competed by youth at various tournament levels, including university sports. (Kementerian Belia dan Sukan, 2020; Esports Uni-league, n.d.; University e-League, n.d.). In the meantime, this development has led to a growing concern about problematic gaming (PG) and gaming disorders (Esposito et al., 2020; King & Delfabbro, 2020).

PG, a symptom of gaming disorder that has been recognised as a mental illness by the WHO in the ICD-11 and can be defined as a situation where excessive or compulsive engagement in video games leads to negative consequences in multiple domains of life (George & Griffiths, 2020; King & Delfabbro, 2020; WHO, n.d.). PG is considered a subcategory

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of gaming disorder and is described as a pattern of persistent or recurrent gaming behaviour characterized by impaired control over gaming, increased priority given to gaming over other activities to the extent that gaming takes precedence over other interests and daily activities, and continuation or escalation of gaming despite the occurrence of negative consequences (WHO, n.d.).

Despite the benefits video games provide, such as improving cognitive abilities and memory, they also carry the potential for negative effects such as addiction problems, harm to physical and mental health, strained relationships, and negative impacts on academics and career success for some individuals. (Esposito et al., 2020; George & Griffiths, 2020; King & Delfabbro, 2020; Lopez-Fernandez & Kuss, 2020; Nurmagandi & Hamid, 2020). Unfortunately, gaming disorder preventive research has yet to establish a universally agreed-upon screening, treatment, drugs, prevention, or policy to address the issue effectively (King & Delfabbro, 2020).

Although China and South Korea are considered leaders in PG prevention, they continue to implement error-testing policies without sufficient empirical evidence to support their efforts (Xiao, 2020). According to Xiao (2020), the People's Republic of China implemented an official policy in the Chinese Language called the "Prevention of Online Gaming Addiction in Juveniles" on October 25, 2019. Several measures aimed at addressing the PG issue includes: 1) Users identity verification to determine age appropriate access to gaming, 2) Game time restriction for juveniles between 10 pm to 8 am, 3) Gameplay limit from 1.5 hours for working days and 3 hours in public holidays including weekends, and 4) In-game spending limits according to specific juvenile age. South Korea or officially known as Republic of Korea has implemented legal intervention shutting down law between 12am to 6am for all juveniles under the age of 16 (International Labour Organization, 1997; Xiao, 2020). This intervention aims to protect juveniles from harmful entertainment as well as encouraging adequate rest.

The COVID-19 pandemic only served to exacerbate this issue, as communities were forced to rely on digital devices for entertainment and connection while stuck at home (Ko & Yen, 2020). Youth, in particular, became more vulnerable to unchecked device use, leading to a rise in PG cases (Heng & Rabbani, 2020; Soh et al., 2018). In response to this growing concern, many authorities have turned to PSAs as a means of raising awareness and combating PG (Hasrul & Mohd Azul, 2021; Jerome et al., 2021). PSA is a mode of non-profit communication through credible sources such as the Malaysian Ministry of Health (KKM) that is used to spread awareness and educate the public on important issues such as health, crisis, and risk through targeted campaigns (Hasrul & Mohd Azul, 2021). Realizing the important role played by new media, KKM has published awareness content on digital addiction, cyberbullying, and abuse under the mental health issue through the My Health KKM campaign on various platforms such as Facebook, Twitter, Instagram, and YouTube (Bahagian Pendidikan Kesihatan, 2021). These announcements are designed to reach a wide audience with the goal of promoting a positive change in behavior or attitudes towards a particular cause. However, despite official recognition of PG as a serious issue by the WHO, government interventions and policy implementation efforts have failed to effectively curb its prevalence (Abdul Rahman, 2021; Asyraf, 2018; Heng & Rabbani, 2020; Ming et al., 2019; Muhaimin et al., 2019). Based on meta-analyses conducted by Chia et al. (2020) for Southeast Asia and Liao et al. (2022) for East Asia, the findings revealed a 20% prevalence rate in 7 out of 11 Southeast Asian countries, while East Asia recorded a prevalence rate of 12%. Some of the weakness factors in the use of PSA have been identified in the study of Hasrul and Mohd Azul (2021)

such as being linear, not emphasizing the creative publishing aspect and not integrating it with an attention-grabbing delivery style. Despite ongoing efforts by global scholars to reach consensus on standardizing the screening, treatment, policy, and prevention of PG and gaming disorder, as emphasized by King and Delfabbro (2020), the field continues to face significant challenges. As pointed out by Xiao (2020), there is a lack of sufficient empirical evidence to support leading countries' prevention policies. This issue has been confirmed by Hasrul dan Mohd Azul (2021), who concluded that PSAs also lack comprehensive and specific guidance.

The lackluster response to PG is surprising in the field of communication, leading to questions about the usage and efficacy of PSAs as a preventive measure in Asia. The Asian region was selected as the focus of this study due to its unparalleled concentration of gamers globally and the substantial impact of social influences within the gaming community. Additionally, Asia plays a pivotal role in the global gaming market, as evidenced in many research (Chau et al., 2019; Jeong et al., 2019; King & Delfabbro, 2020; Sim et al., 2021). Moreover, Chau et al. (2019) also explicitly claim that Asia is among the region's most heavily affected and deserving of emphasis because it has recorded a 40 per cent global prevalence rate of problematic gaming. Furthermore, Chia et al. (2020) explicitly stated that the prevalence of PG in Asian countries is higher compared to other regions around the world.

To shed light on this issue, a systematic review was conducted to gather and analyze scattered PG prevention research across Asia between 2015-2022, including any mentions of the use of PSAs. This study aims to provide a clearer understanding of the role of PSAs in PG prevention in Asia and serves as a catalyst for further research in this area.

The Need for a Systematic Literature Review

Systematic Literature Reviews (SLRs) play a critical role in the advancement of various fields, including healthcare, social sciences, and technology. It is a comprehensive and structured review of the existing literature on a specific research question that can be utilized to answer what role has been played by PSAs to address PG. For this purpose, SLR uses predefined methods to identify, critically appraise, and synthesize available evidence on Asian PG prevention methods. SLRs can also provide a valuable source of information for a wide range of authorities and advertisers, as for this case KKM and advertising agencies, helping to support evidence-based decision-making such as identifying the status of the current PSA campaigns. SLRs offer several advantages to PG prevention studies over traditional and manual literature reviews by making it a more robust method for conducting research. The biggest advantages of SLRs to this study are: 1) Offers reliability and validity by identifying and synthesizing the best available evidence from a valid source of information such as Scopus and Web of Science, 2) Provide a comprehensive and transparent overview of the existing evidence to understand the current state of knowledge in PG prevention, 3) Making it easier to informed how PSA has been studied for PG prevention on the best available evidence (Mohamed Shaffril et al., 2019).

These reviews can benefit from a transparent article retrieval process, a broader research area that is more comprehensive, and an objective that helps to mitigate research bias. Moreover, they can encourage us to produce high-quality evidence with more meaningful results by adhering to the PRISMA guidelines (Gregory & Denniss, 2018; Mohamed Shaffril et al., 2019). Unlike SLRs, manual literature searches are prone to various forms of bias, and it is challenging to prove that a comprehensive search has been conducted.

The current systematic review aims to answer the crucial question: What are the preventive measures employed to prevent PG in Asia, and what is the prevalence of PSA as one of the preventive measures for PG? The primary focus of this investigation is to examine PG prevention methods used or proposed in Asian countries between 2015 and 2022. A systematic search of articles based on the PG and gaming disorder scope is crucial to ensure accurate and irrefutable results. By searching multiple databases such as Scopus and Web of Science with the addition of Google Scholar to support it, the present study increases the chances of retrieving high-quality and relevant articles. These databases are considered reliable sources of information related to PG and gaming disorder and have been selected for this systematic review due to their credibility and reputation.

METHODOLOGY

This section explains the use of PRISMA in the present study and provides a transparent framework that enables a comprehensive and rigorous search of relevant literature on the topic of PG prevention. The use of PRISMA also helps to ensure that the review is thorough and robust and that the results are accurate and credible. Five main sub-sections, namely PRISMA, resources, inclusion and exclusion criteria, the systematic review process, and data abstraction and analysis are employed in the current research.

PRISMA

The use of Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) in the present study provides a transparent framework that enables a comprehensive and rigorous search of relevant literature on the topic of PG prevention. It is a standard guidance to evaluate and examine the quality and rigour of a particular review. PRISMA allows the author to discover and synthesise potential literature from leading journal databases using organised, transparent and replicable procedures (Mohamed Shaffril et al., 2020; Moher et al., 2009). In order to effectively achieve the objectives of this research, clear inclusion and exclusion criteria were established, and the methodology and references used were explicitly stated. The process of filtering relevant literature was divided into three stages: identification, screening, and quality appraisal, as depicted in Figure 1.

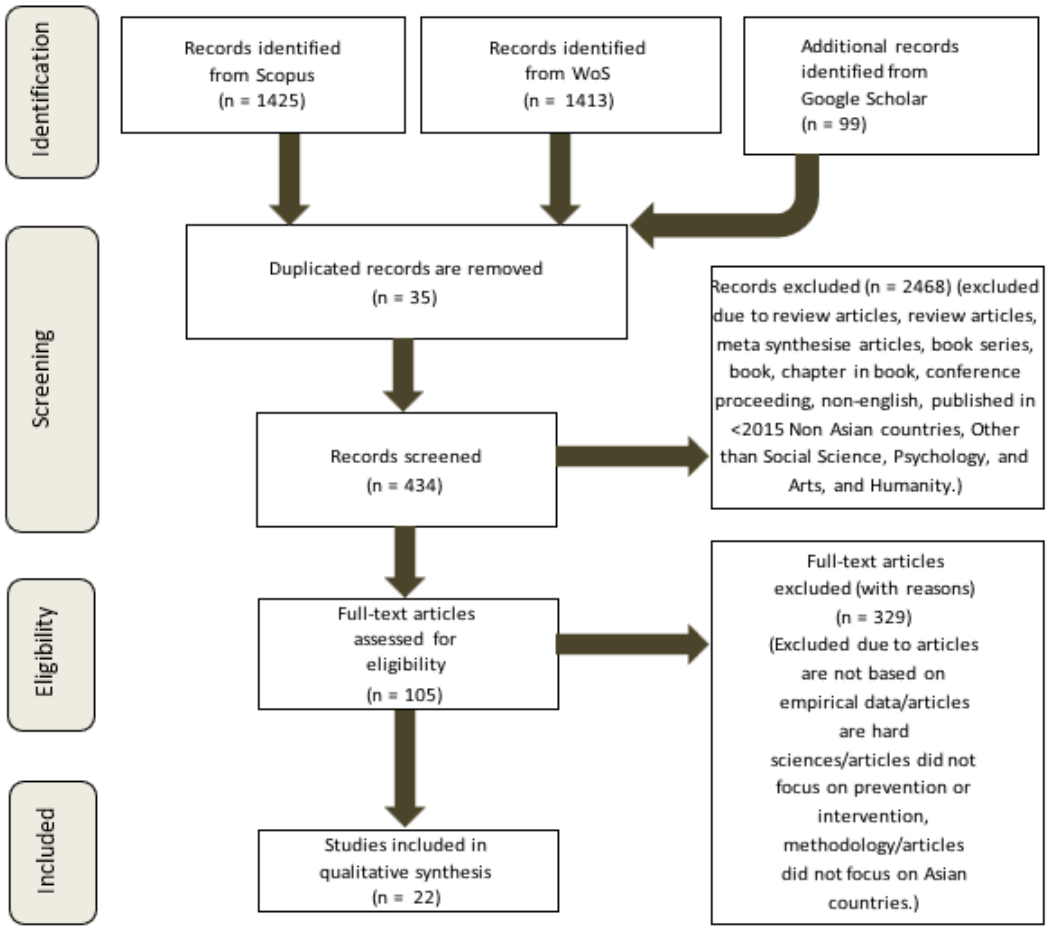

Figure 1: flow diagram of the study (adapted from Moher et al., 2009)

Resources

The review methods of this study were conducted by considering original Asian PG prevention studies from two leading journal databases such as Scopus and Web of Science (WoS) which are renowned sources that contain relevant journals on PG and gaming disorder, and Google Scholar as a supporting database. The selection of Scopus and WoS was made based on their robust capability to cover more than 256 fields of studies including communication (Mohamed Shaffril et al., 2019). Google Scholar has also been used as an addition to article searches because there is no perfect and comprehensive database.

Table 1: The search string

Database	**Search String**
WoS	TS=(("problematic gaming" OR "internet gaming disorder" OR "gaming disorder" OR "gaming addiction" OR "game* problem*") AND ("prevention" OR "prevent*" OR "avoid*" OR "avoidance" OR "hinder*" OR "hindrance" OR "stop*" OR "stoppage" OR "intercept*" OR "interception" OR "interrupt*" OR "deter*" OR "obstruct*" OR "obstruction"))
Scopus	TITLE-ABS-KEY("problematic gaming" OR "internet gaming disorder" OR "gaming disorder" OR "gaming addiction") AND ("prevention" OR "prevent" OR "avoid" OR "avoidance" OR "hindrance" OR "stoppage" OR "intercept" OR "interception" OR "interrupt" OR "deter" OR "obstruct" OR "obstruction")

Table 2: The inclusion and exclusion criteria

The inclusion and exclusion criteria		
Criterion	**Eligibility**	**Exclusion**
Literature type	Journal (research articles)	Journals (review), book series, book, chapter in book, conference proceeding
Language	English	Non-English
Timeline	Between 2015 and 2022	<2015
Countries and territories	Asian countries	Non-Asian countries
Subject area	Social Science, Psychology, and Art & Humanities	Other than Social Science, Psychology, and Art & Humanities

The Systematic Review Process for Articles Selection

a. Identification

The process of systematically searching and selecting articles in this study was carried out in three stages, beginning with the identification of relevant keywords and related terms utilizing thesaurus, dictionaries and past studies. Referring to Table 1, search strings were developed using the Scopus, Web of Science (WoS), and Google Scholar advanced search protocol using all relevant keywords, which resulted in the retrieval of 1425 articles from Scopus, 1413 articles from WoS, and an additional 99 articles from Google Scholar, for a total of 2928 articles.

b. Screening

To ensure the quality and rigour of the current study, strict inclusion and exclusion criteria were established and adhered to throughout the article selection process. From the initial search that yield a total of 2928 articles, 35 duplicate articles were removed and the pool of articles was reduced to 2893. To further narrow down the selection, the inclusion criteria were applied, which limited the study to articles from the fields of Social Science, Psychology, and Arts and Humanities, published between the years 2015 and 2022. The subject area criteria have been established to ensure the retrieval of relevant articles without including other fields, particularly those related to hard sciences. The search year is set from 2015 to 2022 based on compelling evidence, including studies by Müller et al. (2015) indicating a substantial increase in cases of PG since 2015. Based on these criteria, 2468 articles were removed from consideration for being outside the scope of the study, such as systematic review articles, meta-synthesis articles, book series, and conference proceedings written in non-English languages by non-Asian authors. This approach is adopted to prioritize high-quality original research that generates fresh primary data, thereby minimizing the potential for duplications or redundancies in the review process. writers from Asia who use a widely understood language such as English is essential to ensure that the references provided are from Asian sources and accessible to readers. This left 434 articles for further screening.

c. Eligibility

The titles, abstracts, and main content of the 434 articles were thoroughly examined to ensure that they met the inclusion criteria and were relevant to the current study. 329 articles were excluded for not being based on empirical data or for not focusing on PG prevention in Asian territories. A total of 105 articles were prepared for manual eligibility screening. Finally, 22 articles were deemed eligible for systematic analysis.

Data Abstraction and Analysis

The recent study took an innovative approach by conducting an integrative review, which allowed for a thorough analysis and synthesis of various research designs such as qualitative, quantitative, and mixed methods. This study aimed to transform one type of research design into another, as described by Mohamed Shaffril et al. (2019), by either qualitizing quantitative data or quantizing qualitative data related to the prevention of PG. To achieve this, the current study adopted a two-phase approach. In the first phase, a thematic analysis was carried out on 22 selected articles to extract relevant statements or data that answered the research questions. This process involved a careful examination of each article to uncover the most significant information. In the second phase, the raw data was transformed into themes, concepts, or ideas through the use of a coding method. This phase was crucial in generalizing the data and creating meaningful groups based on the nature of the information.

As a result of this rigorous process, the study was able to identify five main themes related to PG prevention in Asia, including parents and family, self-control, policy and technology restrictions, and school, and clinical. Further examination of these themes led to the identification of 15 sub-themes that were related to each other. To ensure the validity of these themes and sub-themes, two experts in communication and multimedia technology conducted a thorough review. The outcome of this study provides a comprehensive overview of the current state of PG prevention research in Asia and offers a valuable reference for future research in this field.

RESULTS AND DISCUSSION

Results

a. General Findings

The analysis of relevant literature related to problematic gaming prevention in Asia yielded a total of five main themes and 15 sub-themes. The main themes, which are presented in Table 1, are parents and family (3 sub-themes), self-control (2 sub-themes), policy and technology restrictions (5 sub-themes), school (2 sub-themes), and clinical (3 sub-themes). To further shed light on the current state of PG prevention research in Asia, the study included a total of 22 previous studies that were conducted in various countries in the region, including China, South Korea, Hong Kong, Malaysia, Singapore, Thailand, the Philippines, Vietnam, and Japan. Specifically, there were seven previous studies in China (Deng et al., 2017; Dou et al., 2022; Liang et al., 2019; Su et al., 2018; Tian et al., 2019; Wang et al., 2021; Xiang et al., 2022), five studies in South Korea (Byeon et al., 2022; Han et al., 2020; Hong et al., 2020; Jeong et al., 2019; Lee et al., 2021) two studies in Hong Kong (Chau et al., 2019; Li et al., 2019), Malaysia (Benrazavi et al., 2015; T'ng et al., 2022) and Singapore (Choo et al., 2015; Sim et al., 2021), one study each in Thailand (Apisitwasana et al., 2018), Philippines (Kuriala, 2020), Vietnam (Cuong et al., 2022) and Japan (Sakuma et al., 2017). A visual representation of this information can be seen in Figure 2.

In the case of the present study, regarding the year of publication, two articles were published in 2015 (Benrazavi et al., 2015; Choo et al., 2015), two articles were published in 2017 (Deng et al., 2017; Sakuma et al., 2017), two articles were published in 2018 (Apisitwasana et al., 2018; Su et al., 2018), five articles were published in 2019 (Chau et al., 2019; Jeong et al., 2019; Li et al., 2019; Liang et al., 2019; Tian et al., 2019), three articles were published in 2020 (Han et al., 2020; Hong et al., 2020; Kuriala, 2020), and three articles were published in 2021 (Lee et al., 2021; Sim et al., 2021; Wang et al., 2021) and five articles were published in 2022 (Byeon et al., 2022; Cuong et al., 2022; Dou et al., 2022; T'ng et al., 2022; Xiang et al., 2022) as can be seen in Figure 3.

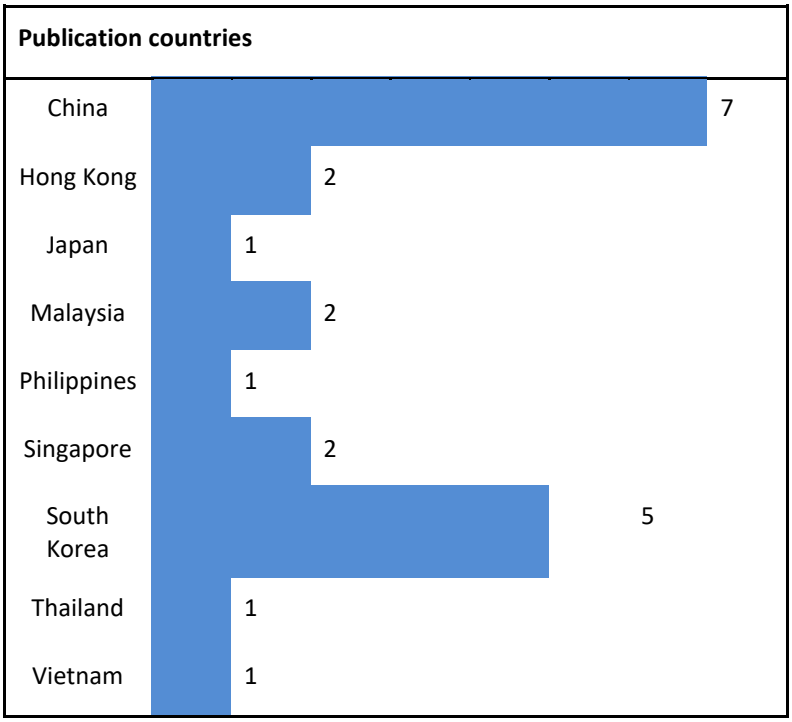

Figure 2: Countries where the studies were conducted

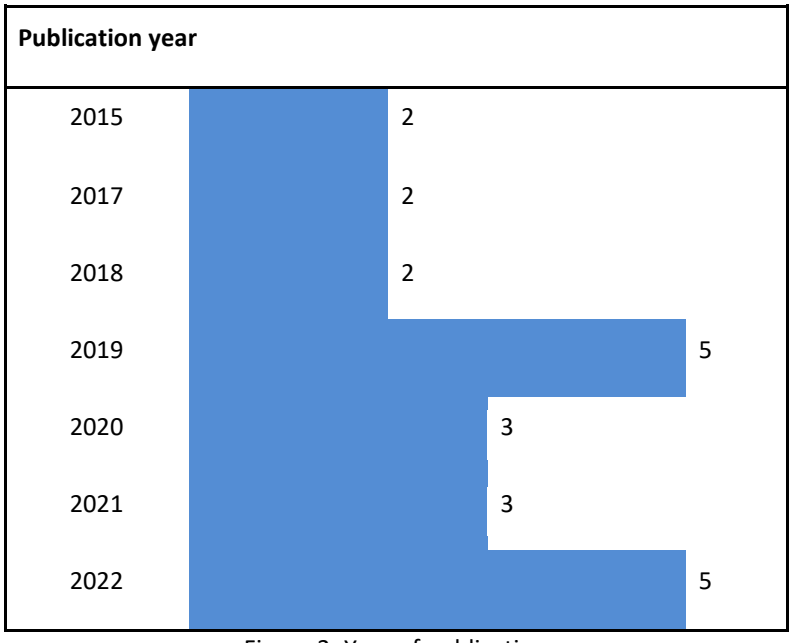

Figure 3: Year of publication

b. Main Findings

In this systematic literature review, we aimed to critically assess and synthesize the current state of knowledge on PG and gaming disorder prevention in Asia. Our findings revealed five main themes of PG prevention practised and provide valuable insight into the use and effectiveness of PSAs as a preventive measure aimed at increasing awareness of PG and gaming disorders among youth. This SLR sheds light on the current understanding of PG prevention and highlights key areas for future research. The five main themes of preventing PG in Asia have been identified as parents and family, self-control, policy and technology restrictions, school, and clinical discussed in this section.

Out of these, the themes of parents and family and self-control themes received the most emphasis in 20 Asian studies, each receiving ten studies. The second most emphasized theme was clinical with 8 studies, followed by a school with three studies and policy and technology restrictions with 2 studies.

The theme of parental and family prevention received the most attention from previous studies addressing PG in Asia. There were ten studies suggested involving parents and family in preventing PG (Apisitwasana et al., 2018; Choo et al., 2015; Cuong et al., 2022; Dou et al., 2022; Jeong et al., 2019; Li et al., 2019; Liang et al., 2019; Sim et al., 2021; Su et al., 2018; Tian et al., 2019). Three sub-themes were identified under this theme, including supervision (with eight highlights), interpersonal relationships (with seven highlights), and motivational rewards (with four highlights). The supervision sub-theme involves parents and families monitoring their family members' gaming activity, (Choo et al., 2015; Cuong et al., 2022; Dou et al., 2022; Jeong et al., 2019; Li et al., 2019; Liang et al., 2019; Su et al., 2018; Tian et al., 2019), while the interpersonal relationship sub-theme involves encouraging family members to not be isolated (Apisitwasana et al., 2018; Choo et al., 2015; Dou et al., 2022; Jeong et al., 2019; Li et al., 2019; Liang et al., 2019; Su et al., 2018). There was also a motivational reward sub-theme involving giving incentives to prevent PG from becoming more severe (Apisitwasana et al., 2018; Liang et al., 2019; Sim et al., 2021; Su et al., 2018).

The theme of self-control PG prevention was proposed by ten studies (Apisitwasana et al., 2018; Chau et al., 2019; Cuong et al., 2022; Deng et al., 2017; Jeong et al., 2019; T'ng et al., 2022; Wang et al., 2021) with two sub-themes: motivation or reward (with five highlights) and willingness and self-initiative (with seven highlights).

Clinical themes were also emphasized in eight studies. (Byeon et al., 2022; Deng et al., 2017; Han et al., 2020; Hong et al., 2020; Kuriala, 2020; Lee et al., 2021; Sakuma et al., 2017; Sim et al., 2021). Three sub-themes were identified under this theme, including physical exercise (with three highlights), drugs (with one highlight), and counselling and therapy (with eight highlights). From a clinical perspective, physical exercise can help reduce the likelihood of children becoming addicted to video games (Deng et al., 2017). while certain drugs can help reduce cravings or calm the mind for cases of medium to high PG symptoms (Lee et al., 2021). However, most studies recommend therapy through counselling, such as Cognitive Behavioral Therapy (CBT), instead of drugs (Byeon et al., 2022; Deng et al., 2017; Han et al., 2020; Hong et al., 2020; Kochuchakkalackal, 2020; Lee et al., 2021; Sakuma et al., 2017; Sim et al., 2021).

Schools were emphasized as important in PG prevention at least according to three studies (Deng et al., 2017; Tian et al., 2019; Xiang et al., 2022). Schools are encouraged to organize workshops and other activities such as sports, singing, and competitions to divert students' interests away from video games (Deng et al., 2017; Tian et al., 2019; Xiang et al.,

2022). These activities may lessen students' gaming cravings in time with friends.

Policy and technology restrictions were proposed by two studies and had five sub-themes, including app restriction, app supervision, therapeutic apps, leisure apps, and safety mediation, all with only one highlight (Benrazavi et al., 2015; Chau et al., 2019). Hong Kong suggested using three types of applications as supervision and therapy, including leisure activities other than video games to divert addiction (Chau et al., 2019). While Malaysia suggested using app restriction and internet safety mediation (Benrazavi et al., 2015).

Country	Author	Parents/Family			Self-control		Policy & Technology Restrictions					School		Clinical		
		SP	IR	MV	WL	MV	AR	SA	TA	LE	IS	WK	OT	PH	DR	CT
China	(Deng et al. 2017)					✓						✓		✓		✓
	(Su et al. 2018)	✓	✓	✓												
	(Liang et al. 2019)	✓	✓	✓												
	(Tian et al. 2019)	✓											✓			
	(Wang et al. 2021)					✓										
	(Xiang et al. 2022)				✓							✓	✓			
	(Dou et al. 2022)	✓	✓		✓											
South Korea	(Jeong et al. 2019)	✓	✓			✓										
	(Han et al. 2020)															✓
	(Hong et al. 2020)													✓		✓
	(Lee et al. 2021)														✓	✓
	(Byeon et al. 2022)													✓		✓
Hong Kong	(Chau et al. 2019)					✓		✓	✓	✓						
	(Li et al. 2019)	✓	✓													
Malaysia	(Benrazavi et al. 2015)						✓				✓					
	(T'ng et al. 2022)				✓	✓										
Singapore	(Choo et al. 2015)	✓	✓													
	(Sim et al. 2021)			✓		✓										✓
Thailand	(Apisitwasana et al. 2018)		✓	✓	✓	✓										
Philippines	(K. Kuriala & Reyes 2020)															✓
Vietnam	(Cuong et al. 2022)	✓			✓											
Japan	(Sakuma et al. 2017)															✓

SP = Supervision
IR = Interpersonal Relationship
MV = Motivation/Reward
WL = Willingness/Self Initiative
AR = Apps Restriction
SA = Supervision Apps
TA = Therapeutic Apps/Games
LE = Leisure
IS = Internet Safety Mediation
WK = Workshop
OT = Others
PH=Physical/Exercise
DR = Drugs
CT = Counseling /Mind Therapy

Table 3: Asian PG prevention themes and sub-themes

c. Discussion

In this systematic review of studies on PG prevention measures in Asia, we have identified five main themes with 15 sub-themes between 2015 and 2022. The findings indicate that the majority of studies on PG prevention in Asia, with 47% originating from Southeast Asia. Validating claims made by Xiao (2020), China and South Korea are the most advanced countries in PG prevention, based on the amount of research conducted in the field. In contrast, Malaysia only produced two studies with seven years gap on PG prevention in the country since 2015, highlighting the need for more research in the field.

The findings also show that PSA has not been considered or proposed as a PG prevention method in any of the studies reviewed. This was expected given that PSA in Malaysia is not focused on specific problems and is spread in a general manner. However, it is surprising that PSA also does not play a significant role in addressing the PG problem in other Asian countries. Out of the 53 Asian countries recognized by the United Nations, only a few have produced a small number of studies on PG and gaming disorder prevention since 2015, indicating the urgent need for more empirical research in the field of PG prevention in Asia, particularly in the field of communication

The results of this research indicate that none of the studies has considered or proposed the use of PSA as a method for preventing PG nor gaming disorder. No direct recommendation for the use of PSA was found in these studies. This was expected as PSA in Malaysia does not have a specific focus on addressing problems and covers a broad range of topics (Hasrul & Mohd Azul, 2021). However, it is surprising that PSA has not played a significant role in preventing PG in other Asian countries. Out of the 53 Asian countries recognized by the United Nations, only a few countries have produced a limited number of studies on PG prevention since 2015 (King & Delfabbro, 2020; Sirola et al., 2020; United Nations, n.d.). This highlights the urgent need for more empirical research on PG and gaming disorder prevention in Asia.

The main function of Public Service Announcements (PSAs) is to educate the general public and increase awareness about crucial issues and causes through effective message design, as produced by government agencies, non-profit organizations, or community groups (Hasrul & Mohd Azul, 2021; Jerome et al., 2021; Manganello et al., 2020). The ability to effectively raise awareness and influence public opinion on pressing matters is what is expected from PSAs (Ma et al., 2021; Önen & Watson, 2022; Zul Imran et al., 2021). However, its role and effectiveness are contingent upon a solid foundation, such as empirical research. Thus, it is necessary to approach the prevention of problematic gaming and gaming disorders, with specialized PSAs.

Despite the recognized benefits of PSAs, it is surprising that they are not widely acknowledged as a prevention tool for PG and GD (King & Delfabbro, 2020). There are several potential reasons for this, such as a lack of research supporting their efficacy, the government's hasty adoption without empirical evidence, or insufficient funding and public support for the creation of impactful PSAs (Hasrul & Mohd Azul, 2021; Jerome et al., 2021; Xiao, 2020). These reasons require clarification, especially in the Asian region where PSAs are not widely recognized as an effort to prevent PG and GD. It is of utmost importance to comprehend the reasons behind the underutilization of PSAs as a prevention tool, in order to take necessary measures and enhance their effectiveness in preventing problematic behaviors, such as PG and GD. This includes giving serious consideration to PSAs as a method for preventing PG. By doing so, we can ensure that PSAs are utilized to their full potential in promoting public awareness and positive social change.

CONCLUSION

The current systematic literature review aimed to examine the prevalence of PSA as a preventive measure for PG and gaming disorder in Asia by identifying and categorizing the various types of PG prevention measures between 2015 and 2022. Through an extensive systematic review, the research was able to identify five main themes that represented the PG and gaming disorder prevention methods in Asia. These themes were: (1) parent and family prevention, (2) clinical prevention, (3) self-control, (4) policy and technology restrictions, and (5) school prevention.

The first theme, parent and family prevention, focuses on using methods such as supervision, improving interpersonal relationships, and motivating individuals to prevent PG. The second theme, clinical prevention, emphasizes the use of mind therapy counselling, physical exercise, and drugs to prevent PG. The third theme, self-control, highlights the importance of personal initiative and willingness in preventing PG. The fourth theme, policy and technology restrictions, stresses the role of technology and policy in restricting,

supervising, and mediating PG through therapeutic and leisure apps. Finally, the fifth theme, school prevention, emphasizes the role of schools in holding prevention workshops and activities that can reduce the effects of PG.

Despite these various prevention measures, the current research found that none of the studies considered or proposed the use of PSA as a PG or gaming disorder prevention method. This is surprising given that PSA is widely used in many countries in Asia, but without any empirical evidence to support its effectiveness. This highlights the need for more research in the field of communication and the use of PSA in particular as a prevention measure for PG in Asia. It is important to note that the regions in Asia with the highest population densities would greatly benefit from a well-designed and effective PSA campaign. A well-designed and well-executed PSA campaign has the potential to provide both cognitive and affective impact, working like a vaccine to prevent PG from spreading. This is especially important given that early social awareness and prevention are low-risk and will save a significant amount of time and resources compared to conventional healing efforts.

In conclusion, the current systematic literature review highlights the need for more research in the field of communication and the use of PSA as a prevention measure for PG in Asia. With the most populous continent on Earth, covering 8.6 per cent of the planet's total land area and home to 60 per cent of the world's population, it is critical to explore the use of traditional and new communication media, in particular public service announcements, to prevent PG from spreading and to promote early prevention efforts. By taking proactive measures, many parties can avoid PG and gaming disorders altogether or reduce the likelihood of them occurring. This can save time, money, and resources compared to treating an established problem. Additionally, preventing PG and gaming disorder can lead to better outcomes and improved quality of life, as treatments for established conditions may not be as effective or may have unwanted side effects. Taking preventative measures can also promote overall wellness and a healthier lifestyle. Therefore, the saying "prevention is better than cure" emphasizes the importance of taking steps to avoid problems before they occur. To effectively prevent PG and gaming disorder, it's imperative that awareness is communicated widely and with impactful messaging through the use of PSAs.

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