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The Efficacy of Cognitive Behavioral Therapy for Internet Addiction: A Systematic Literature Review

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Abstract

Internet addiction has emerged as a prevalent global concern. Past studies have indicated that internet addiction negatively affects behavior, impacting mental and physical well-being. However, comprehensive, and systematic investigations into effective treatments are essential to address this issue. Cognitive Behavioral Therapy (CBT) presents an intervention approach that targets thoughts, emotions, and cognition issues. This systematic literature review (SLR) focuses on the impact of CBT in addressing internet addiction. The review procedure includes five essential methodological steps: guided review methodology, research question development, searching strategies, identification, screening, and eligibility. Guided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, this review utilized the Scopus and ProQuest databases for article retrieval. Thematic analysis revealed three primary themes, namely: (1) CBT techniques; (2) types of intervention; and (3) CBT integration. These themes encompassed a total of 14 sub-themes. These findings elucidate the potential of CBT-based interventions in effectively treating internet addiction. This systematic study is anticipated to contribute to developing early intervention strategies for internet addiction, particularly among adolescents, due to the proven therapeutic efficacy of CBT approaches. Furthermore, these insights provide a foundation for future researchers to develop comprehensive programs in the field, thereby contributing to advancing knowledge and practice.

Keywords: Cognitive Behavioral Therapy, Effective, Internet Addiction

Introduction

In recent decades, the internet has become an indispensable tool for managing daily activities, from information gathering and communication to building social networks. Global statistics highlight a substantial user base of 4.95 billion individuals (Hootsuite, 2022). Even so, while the internet has brought convenience, some individuals struggle with uncontrolled

online behavior, leading to addiction. However, this situation worsened when the whole world faced Movement Control Orders (MCO) to comply with COVID-19, causing the world's population to focus on using the internet at home. Using the internet more frequently might lead to internet addiction. Of Course, it may have a negative impact on individual's behavior, social function, and mental health (Chao et al., 2020). Mental health problems such as stress, anxiety, depression, and others are linked to increased internet use (Dong et al., 2020; Guessoum et al., 2020).

The term *"internet addiction"* has been used interchangeably with various related concepts. Ivan Goldberg (1995) referred to it as *"pathological compulsive internet use"* Davis et al., (2002) as *"problematic internet use"* Block (2008), Pies (2009) and Holden (2010) as *"pathological internet use"* and Kimberly Young (1998) as "*internet addiction".* This term encompasses a disorder characterized by impaired impulse control, distinct from substance abuse (Young, 1998). The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) recently recognized *"Internet Gaming Disorder"* as a potential diagnosis. It involves obsessive gaming, increased gaming need, inability to reduce game time, deception about gaming hours, and using games to alleviate negative mood (American Psychiatric Association, 2013).

Diverse definitions of internet addiction exist. Shaw and Black (2008) characterize it as excessive, poorly managed preoccupation with computers and the internet leading to impairment or distress. Internet addiction manifests through excessive digital technology use and risky online behavior, often as an escape from real-life challenges (Agbaria, 2022). Its effects include waning interest, diminished psychological functioning, social withdrawal, heightened psychosocial distress, missed work obligations, disrupted family time, and disrupted routines (Alavi et al., 2021).

To address internet addiction, numerous treatment programs have been developed; among them is Cognitive Behavioral Therapy, known as CBT. CBT is recognized for effectively treating addiction issues, including internet addiction (Young, 2013). This therapeutic approach aids individuals in understanding the impact of their thoughts and emotions on their behavior (Pakpour et al., 2022). CBT employs cognitive restructuring to alter core beliefs and improve problem-solving skills, promoting adaptive behaviors (Ede et al., 2023). By targeting personal cognition and emotions, CBT techniques, like cognitive restructuring, are particularly beneficial for those struggling with internet addiction (Davis, 2001; Yukun et al., 2018).

This systematic literature review (SLR) aims to assess the effectiveness of CBT interventions, particularly in treating internet addiction, and how they directly enhance effective internet usage. While research on CBT for internet addiction exists, this proposed SLR is distinct because it focuses on CBT techniques and types specifically tailored for internet addiction. Meanwhile, systematic exploration of crucial aspects like treatment techniques and intervention types is still lacking. Therefore, a systematic literature review (SLR) is necessary to comprehensively evaluate CBT's effectiveness in treating internet addiction. SLR entails an organized, transparent, and replicable process for locating and synthesizing relevant research (Higgins et al., 2011). It prioritizes evidence, impact, validity, and causation, scrutinizing study design, analytical methodologies, and causal relationships (Lockwood et al., 2015). Through this SLR on CBT and internet addiction, counseling practitioners can play a role in planning

and providing treatment for those experiencing internet addiction, especially highly vulnerable students.

This review's central research question is *"How effective is CBT for internet addiction?"*. The objective of this SLR is also to identify relevant articles on CBT interventions, analyze the effectiveness of CBT, and assess the impact of CBT treatment on internet addiction. This paper focuses on determining the efficacy of CBT in reducing internet addiction. These insights provide a basis for future researchers to develop comprehensive interventions, advancing knowledge and practice in the field.

Methods

Review Protocol – PRISMA

The systematic literature review was guided by PRISMA 2020, or Preferred Reporting Items for Systematic Reviews and Meta-Analyses, which serves as a set of established criteria aiding authors in conducting thorough reviews. PRISMA facilitates the assessment and evaluation of review quality and robustness. While it predominantly focuses on analyzing randomized trials, it can also serve as a framework for presenting systematic reviews across various research types (Page et al., 2021). PRISMA enables an accurate search for terms within a substantial scientific literature database during a specified time frame, as demonstrated by studies (Shaffril et al., 2019).

Guided by PRISMA, the systematic literature review is constructed by formulating research questions using the PICo method, recommended by PRISMA. PICo, denoting *"P"* for Population or Problem, *"I"* for Interest, and *"Co"* for Context, structures the review's fundamental inquiries. The subsequent phase involves three systematic steps for document search: identification, screening, and eligibility. Following this, a quality appraisal review is executed, guided by criteria outlined by Kitchenham and Charters (2007). A sequence of stages ensues upon selecting appropriate articles, including data extraction and analysis. The research question formulated guides the author throughout the thematic analysis process during data extraction.

Formulation of the Research Question

To shape the research question, the author utilized the PICo method, as advised by Lockwood et al. (2015). This approach facilitated the formulation of the study question by encompassing three vital components: internet addiction (problem), effectiveness (Interest), and Cognitive Behavioral Therapy (context). As a result, the research question for this study was derived as follows: *"How effective is Cognitive Behavioral Therapy in treating internet addiction?".*

Systematic Searching Strategies

It is crucial to employ systematic searching techniques to enhance the efficiency and effectiveness of the research process. The authors implemented a three-step approach, following the processes detailed by Shaffril et al. (2018): identification, screening, and eligibility.

Identification

The research question formulation clarified the primary keywords: internet addiction, effective, and Cognitive Behavioral Therapy. The review process encompassed the Scopus and

ProQuest databases. To enhance the keyword pool, the author expanded it by incorporating related terms derived from prior studies and expert suggestions. This resulted in several additional keywords such as efficacy *or* efficiency *or* effectiveness *and* cognitive behavioral therapy *or* cognitive behavior therapy *or* cognitive behavioral therapy *or* CBT, in conjunction with terms like internet addiction, problematic internet use *or,* excessive internet use *or* gaming addiction, *or* social media addiction. The search for these keywords was facilitated using search process functions such as field codes, phrase searching, wildcards, and Boolean operators. Employing this approach, a total of 1,517 articles were initially identified.

Screening

The second step involves the screening of all identified articles. The subsequent phase entails the elimination of articles based on predetermined specific criteria aimed at refining the article list. This process also addresses the removal of duplicate articles. The established criteria for this study encompass articles published between 2013 and 2023, articles containing empirical data, and those written in English. Additionally, the selected subject area is focused on psychology and social sciences. Refer to Table 1. Articles not meeting these criteria will be excluded. From the initial pool of 1,517 articles in the first stage, 141 articles remain for subsequent evaluation. The final selection of included articles is made through discussion.

Table 1
Inclusion and Exclusion Criteria

Criterion	**Inclusion**	**Exclusion**
Timeline	2013 - 2023	2012 and earlier
Document type	Article (With empirical data)	Review Articles, Chapters in Books, Conference Proceedings, Wire Feeds, Blogs, Podcasts & Websites, Newspapers, Working Papers, Reports Trade Journals, Magazines, *etc.*
Language	English	Non-English
Subject area	Psychology and Social Sciences	Medicine, computer science, neuroscience, arts and humanities, environmental science, pharmacology, toxicology and pharmaceutics, engineering, management and accounting, agricultural and biological sciences, etc.
Limited	Full text / Open access	Peer review

Eligibility

The researcher manually reviewed the collected articles following the screening phase. The titles and abstracts were examined and read to ensure that the papers met the defined criteria and were of good quality. A total of one hundred forty-one articles were excluded due to not meeting the criteria, particularly those that did not focus on the issue of internet addiction or Cognitive Behavioral Therapy. This left a final set of 26 articles ready for quality appraisal. Refer to Figure 1.

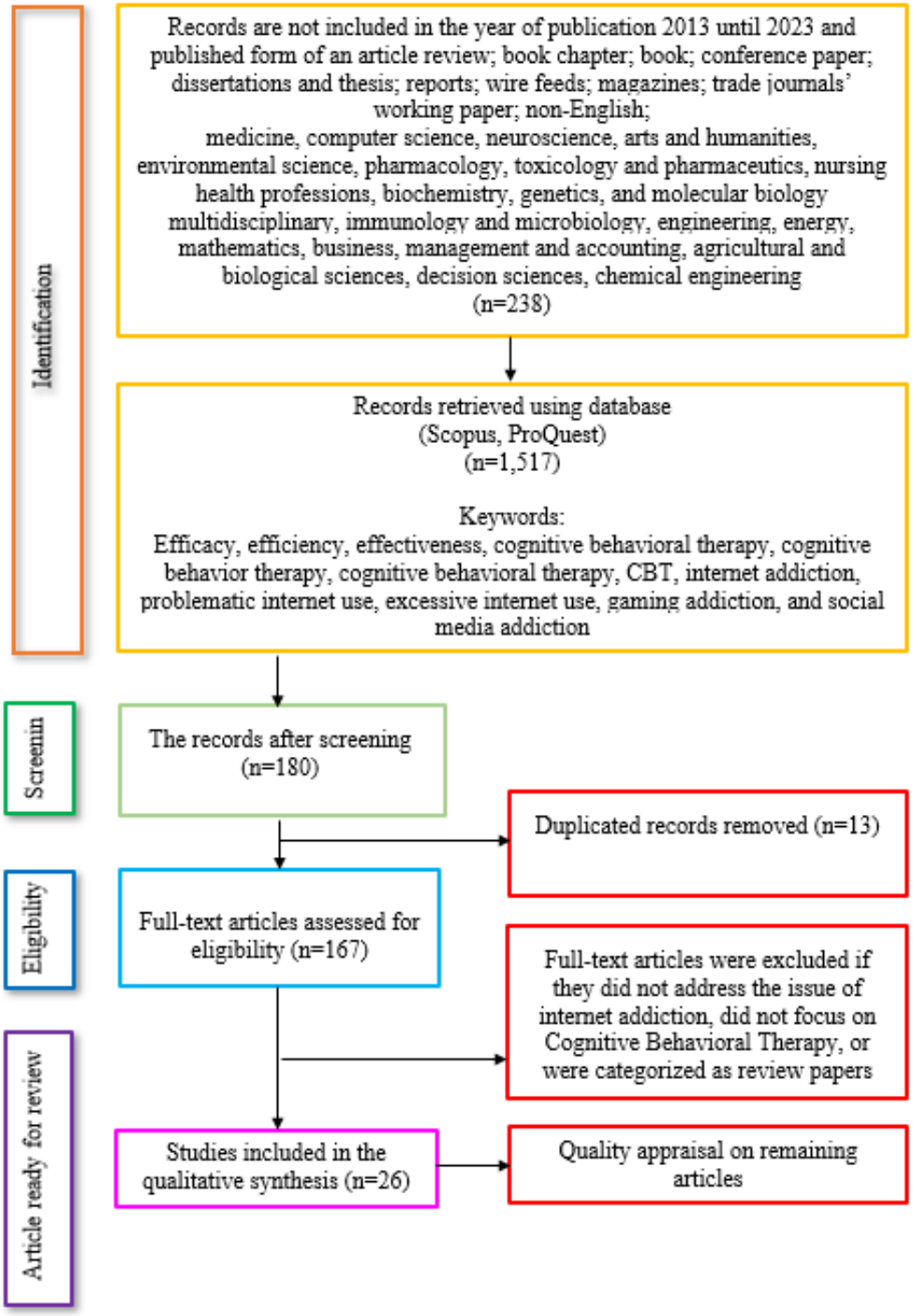

Figure 1. The flow chart of the diagram (Moher et al., 2009)

Quality Appraisal

Quality appraisal is a crucial stage in the compilation of SLR articles. It aimed to ascertain the adequacy of the methodology and analysis employed in the chosen studies. To fulfill this objective, the review process adhered to guidelines proposed by Kitchenham and Charters (2007). Six Quality Assessments (QAs) were defined:

- QA1: Is the purpose of the study clearly stated?
- QA2: Is the interest and the usefulness of the work clearly presented?
- QA3: Is the study methodology clearly established?

- QA4: Is the concept of the approach clearly defined?
- QA5: Is the work compared and measured with other similar work?
- QA6: Are the limitations of the work clearly mentioned?

Each article underwent evaluation based on six criteria, with a three-option scoring system employed to record responses. The options were: *"Yes"* (Y) with a score of 1, *"Partly"* (P) with a score of 0.5, and *"No"* (N) with a score of 0. For an article to be accepted, it had to attain a score of 3.0 or higher. The evaluation for quality assessment was a collaborative effort involving two partners conducted via Google Meet. We discussed and selected one by one article that satisfied the criteria and prerequisites for methodology and analysis. The selected articles will be graded according to the established criteria. In total, 22 articles fulfilled all criteria, while 3 articles met at least 5 criteria, and 1 met at least three criteria. Refer to Table 2.

Table 2
Results of Quality Appraisal

Author	Research Design	QA 1	QA 2	QA 3	QA 4	QA 5	QA 6	Number of criteria fulfilled	Inclusion in the review
Wölfling et al. (2019)	QN	1	1	1	1	1	1	6/6	✓
Bong et al. (2021)	QN	1	1	1	1	1	1	6/6	✓
Ede et al. (2023)	QN	1	1	1	1	1	1	6/6	✓
Hofstedt et al. (2023)	QN	1	1	1	1	1	1	6/6	✓
Agbaria (2022)	QN	1	1	1	1	1	1	6/6	✓
Bağatarhan & Siyez, (2022)	QN	1	1	1	1	1	1	6/6	✓
Lindenberg et al. (2022)	QN	1	1	1	1	1	1	6/6	✓
Ke & Wong (2018)	QN	1	1	1	1	1	1	6/6	✓
Yukun et al. (2018)	QN	1	1	1	1	0.5	1	5.5/6	✓
Ke & Wong (2018)	QN	1	1	1	1	1	0	5/6	✓
Han et al. (2020)	QN	1	1	1	1	1	1	6/6	✓
Lu et al. (2020)	QN	1	1	1	1	1	1	6/6	✓
Alavi et al. (2021)	QN	1	1	1	1	1	1	6/6	✓
Szász-Janocha et al. (2020)	QN	1	1	1	1	1	1	6/6	√
Canoğullari & Cenkseven Önder (2022)	MX	1	1	1	1	1	1	6/6	✓
André et al. (2022)	MX	1	1	1	1	1	1	6/6	✓
Lee et al. (2016)	QN	1	1	1	1	1	1	6/6	✓
Zhou et al. (2021)	MX	1	1	1	1	1	1	6/6	✓
Tadpatrikar et al. (2023)	QN	1	1	1	0.5	0	0	3.5/6	✓
Liu et al. (2022)	QN	1	1	1	1	1	1	6/6	✓
Pape et al. (2023)	QN	1	1	1	1	1	1	6/6	✓
Müller et al. (2023)	QN	1	1	1	1	1	1	6/6	✓
Affouneh et al. (2021)	QN	1	1	1	1	1	1	6/6	✓
Torres-Rodríguez et al. (2018)	QN	1	1	1	1	1	1	6/6	✓
El-Sherbini & Abdou (2020)	QN	1	1	1	1	1	0	5/6	✓
Yang et al. (2022)	QN	1	1	1	1	1	1	6/6	✓

QA=Quality Assessment, QN=Quantitative, MX=Mix Method, Y=1, P=0.5, N=0

Data Extraction and Thematic Analysis

Data extraction and thematic analysis are conducted in a deductive manner analysis. For this phase, the method of thematic analysis inspired by Flemming et al. (2019) was chosen. Flemming et al. (2019) suggested that thematic synthesis is highly appropriate for data extraction, given that the data originate from various research sources. Thematic analysis is an examination that can detect and identify patterns within existing study materials, showcasing similarities or relationships within the available data (Braun & Clarke, 2019).

Initially, the researchers familiarized themselves with the entire dataset by reading it repeatedly, which provided them with vital insights into the raw data that formed the basis for subsequent stages. The next step involved creating preliminary codes that organized the data in detail. During this phase, the researchers scrutinized selected articles and extracted relevant data related to the primary research questions. Following this, themes were developed, and researchers used inductive coding techniques to identify links and similarities among the coded data. The synthesis process relied on an inductive coding framework, resulting in themes emerging from the coded data. The emerging themes were evaluated, edited, and polished to reflect the data appropriately. Finally, the themes were combined into a unified narrative that gave a thorough grasp of the study topics under consideration.

Three themes are selected according to the research questions throughout this review process. These three themes are (1) CBT techniques, (2) Types of interventions, and (3) CBT integration. Subsequently, repeated readings are conducted to identify sub-themes. 14 sub-themes are selected. This process is iterated until completion. After presenting the final array of themes and sub-themes, the researchers sought the validation of two experts who profoundly understand qualitative synthesis and community development. These experts assessed the themes and sub-themes to verify their relevance and alignment with the research inquiries.

Results

For this part, results were discussed in three parts, namely (a) background of the selected studies, (b) Research Question 1: CBT techniques, (c) Research Question 2: CBT intervention, and (d) Research Question 3: CBT of integration.

Background of the Selected Studies

From 26 articles, a total of five articles focused their research in German (Lindenberg et al., 2022; Müller et al., 2023; Pape et al., 2023; Szász-Janocha et al., 2020; Wölfling et al., 2019), and another five other articles in China (Liu et al., 2022; Lu et al., 2020; Yang et al., 2022; Yukun et al., 2018; Zhou et al., 2021). In addition, three articles are from Korea (Bong et al., 2021; Han et al., 2020; Lee et al., 2016), and two articles respectively from three countries such as Sweden (André et al., 2022; Hofstedt et al., 2023), Türkiye (Bağatarhan & Siyez, 2022; Canoğullari & Cenkseven Önder, 2022), and Malaysia (Ke & Wong, 2018a). One research in each country such as Israel (Agbaria 2022), Nigeria (Ede et al., 2023), Iran (Alavi et al., 2021), India (Tadpatrikar et al., 2023), Palestine (Affouneh et al., 2021), Spain (Torres-Rodríguez et al., 2018), and Egypt (El-Sherbini & Abdou 2020). Refer to Figure 2.

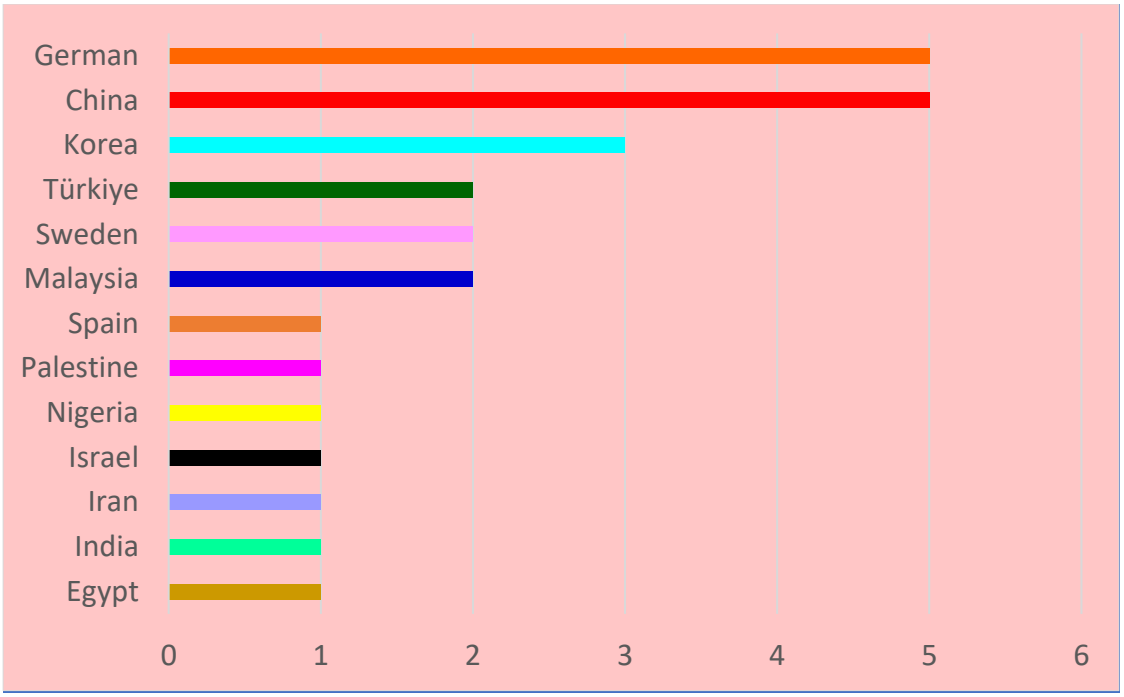

Figure 2: Countries where the articles selected

It was recorded that 23 studies focused on quantitative approach analysis (Affouneh et al., 2021; Agbaria, 2022; Alavi et al., 2021; Bağatarhan & Siyez, 2022; Bong et al., 2021; Ede et al., 2023; El-Sherbini & Abdou, 2020; Han et al., 2020; Hofstedt et al., 2023; Ke & Wong, 2018a; Lee et al., 2016; Lindenberg et al., 2022; Liu et al., 2022; Lu et al., 2020; Müller et al., 2023; Pape et al., 2023; Szász-Janocha et al., 2020; Tadpatrikar et al., 2023; Torres-Rodríguez et al., 2018; Wölfling et al., 2019; Yang et al., 2022; Yukun et al., 2018) and other three studies focused on Mix-Method approach (André et al., 2022; Canoğullari & Cenkseven Önder, 2022; Zhou et al., 2021). Refer to Figure 3.

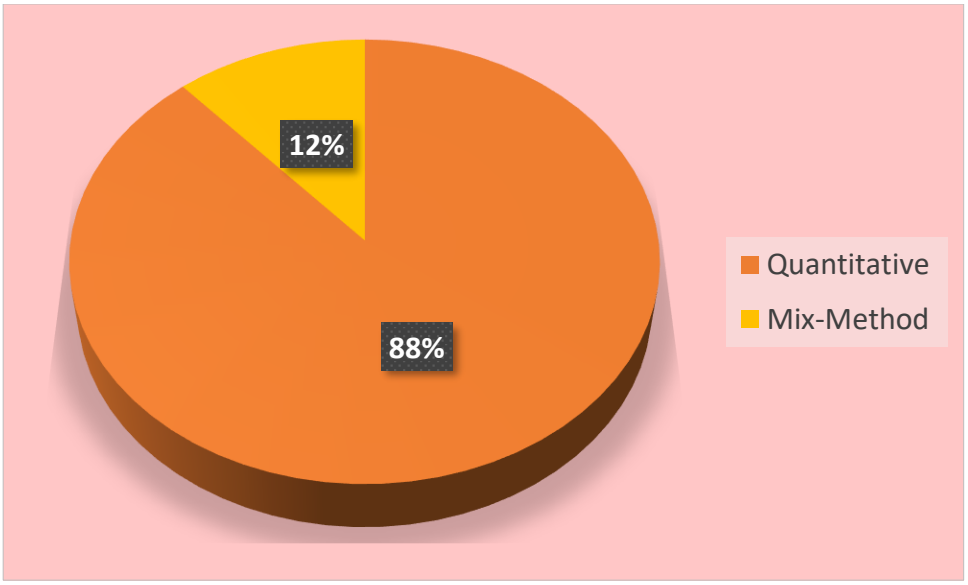

Figure 3: Methodology of articles

Based on the year of publication, one article was published in 2016 (Lee et al., 2016), four articles in 2018 (Ke & Wong, 2018a; Torres-Rodríguez, Griffiths, Carbonell, et al., 2018; Yukun

et al., 2018), one article in 2019 (Wölfling et al., 2019), four articles in 2020 (El-Sherbini & Abdou, 2020; Han et al., 2020; Lu et al., 2020; Szász-Janocha et al., 2020), four articles in 2021 (Affouneh et al., 2021; Alavi et al., 2021; Bong et al., 2021; Zhou et al., 2021), seven articles in 2022 (Agbaria, 2022; André et al., 2022; Bağatarhan & Siyez, 2022; Canoğullari & Cenkseven Önder, 2022; Lindenberg et al., 2022; Liu et al., 2022; Yang et al., 2022), and currently five articles were published in 2023 (Ede et al., 2023; Hofstedt et al., 2023; Müller et al., 2023; Pape et al., 2023; Tadpatrikar et al., 2023). Refer to Figure 4.

Furthermore, the articles were also published in a variety of publications. Four articles were published in the Journal of Behavioral Addictions (Müller et al., 2023; Szász-Janocha et al., 2020; Torres-Rodríguez, Griffiths, Carbonell, et al., 2018; Yukun et al., 2018), two articles were published at Frontiers in Psychiatry (Hofstedt et al., 2023; Pape et al., 2023). Only one articles was published in the following publications: International Journal of Environmental Research and Public Health (Yang et al., 2022), Assiut Scientific Nursing Journal (El-Sherbini & Abdou, 2020), Clinical Psychology Psychotherapy (Han et al., 2020), Cyberpsychology, Behavior, And Social Networking (Ke & Wong, 2018), Hacettepe University Journal of Education (Canoğullari & Cenkseven Önder, 2022), International Journal of Mental Health and Addiction (Agbaria, 2022), International Journal of Mental Health Promotion (Lu et al., 2020), International Journal of Yoga (Tadpatrikar et al., 2023), JAMA Network Open (Lindenberg et al., 2022), JAMA Psychiatry (Wölfling et al., 2019), Journal of Korean Medical Science (Lee et al., 2016), Journal of Rational-Emotive & Cognitive-Behavior Therapy (Bağatarhan & Siyez, 2022), Journal Rational-Emotive Cognitive-Behavior Therapy (Ke & Wong, 2018), PLoS ONE (Liu et al., 2022), Psicologia: Reflexão e Crítica (Affouneh et al., 2021), Psychiatric Quarterly (Zhou et al., 2021), Psychiatry Investigation (Bong et al., 2021), Trends in Psychiatry and Psychotherapy (Alavi et al., 2021), Trends in Psychiatry and Psychotherapy Original (Ede et al., 2023), and last journals Upsala Journal of Medical Sciences (André et al., 2022).

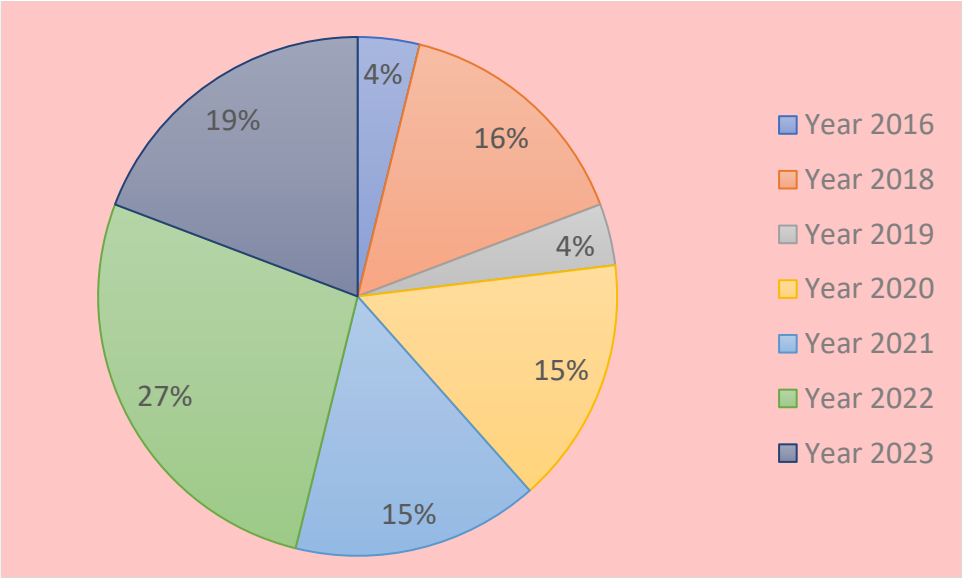

Fig. 4: Publication years of selected studies

RQ 1: Cognitive Behavioral Therapy Technique

The CBT technique is one intervention strategy aimed at reducing internet addiction. Within this section, numerous studies have examined the efficacy of CBT in tackling internet

addiction, emphasizing the array of techniques employed. The results show that seven sub-themes related to CBT techniques were identified. Refer to Table 3.2.

Cognitive Restructuring

The most favorite technique used in preview studies is cognitive restructuring. Most researchers focused on cognitive restructuring because it helps individuals reduce distorted thoughts irrespective of gender (Ede et al., 2023). These techniques also rectify cognitive conditioning that drives individuals to initiate internet use and identify and reverse overuse triggers (Agbaria, 2022). Cognitive-behavioral group therapy was developed to address these cognitive distortions (Alavi et al., 2021). For example, the CBT prevention program employs the Socratic inquiry approach to enhance awareness of problematic thoughts and challenge cognitive distortions (Bağatarhan & Siyez, 2022). Past researchers have also utilized this technique for treating internet addiction, including El-Sherbini and Abdou (2020), Han et al. (2020), Ke and Wong (2018b), Ke and Wong (2018a), Lu et al. (2020), Müller et al. (2023), Szász-Janocha et al.(2020), Tadpatrikar et al. (2023), Torres-Rodríguez et al. (2018), Yang et al. (2022), and Yukun et al. (2018).

Journal Writing

Another frequent technique in previous studies is journal writing or a home daily journal (HDJ). According to Bong et al. (2021), HDJ was effective for internet addiction among adolescents. In addition, keeping an internet journal and employing reminder cards might help to control internet addiction (Bağatarhan & Siyez, 2022). HDJ is particularly useful for managing smartphone addiction outside of school or clinical settings, especially among teenagers, and can solve the problem of unhelpful thinking and behavior addiction (Bong et al., 2021; Lee et al., 2016). Furthermore, writing diaries can help users to record their behaviors, feelings, and thoughts (Zhou et al., 2021). Past authors who also used this technique were Ke and Wong (2018b), Alavi et al. (2021), Canoğullari and Cenkseven Önder (2022), Pape et al. (2023), and Ede et al. (2023).

Homework

The second most frequently used technique is homework, also called assignment. Participants in CBT were given homework to practice with instructions to keep track of it at home. For example, participants were given forms and highlights to record their ideas about internet use, which increased their awareness and ability to limit usage (Bağatarhan & Siyez, 2022). Bong et al. (2021) suggested 10 minutes should be taken to review homework and in the earlier stage of the helpful process. It will also enhance the client's interest in attending the therapy sessions. Other researchers who used this technique are Ede et al. (2023), Han et al. (2020), Ke and Wong (2018b), Yukun et al. (2018), Pape et al. (2023), Agbaria (2022) and Lee et al. (2016).

Relaxation

The third most frequent technique used in CBT is relaxation. Relaxation intervention can boost blood pressure and oxygen flow to the brain, increase cortical excitability, and reinforce nervous system flexibility, all of which benefit human bodily function and psychological adaptability (Alavi et al., 2021). In addition, it helps participants to appreciate nature and genuinely engage in the program (Ede et al., 2023). Other past researchers who used

relaxation techniques were Agbaria (2022), Ke and Wong (2018b), Lu et al. (2020), Yukun et al. (2018), Tadpatrikar et al. (2023), and Canoğullari and Cenkseven Önder (2022).

Activity Scheduling

One of the most mentioned techniques used in previous studies is activity scheduling or time management. According to Hofstedt et al. (2023), activity scheduling measures changes in time and the reduction of time spent online. Other researchers who use this technique are Agbaria (2022), Ede et al. (2023), Yang et al. (2022), Affouneh et al. (2021), Alavi et al. (2021) and Canoğullari and Cenkseven Önder (2022).

Problem-Solving

Problem-solving is mentioned in most of the previous studies, but they are not explained explicitly. The authors who used this technique in their studies are Affouneh et al. (2021), Ede et al. (2023), Hofstedt et al. (2023), Szász-Janocha et al. (2020), Torres-Rodríguez et al. (2018) and Yang et al. (2022).

Mindfulness

The technique that is also mentioned by previous studies is mindfulness. According to Liu et al. (2022), mindfulness intervention can enhance self-control. It aids students in diminishing their smartphone usage desire and alleviates discomfort associated with separation from their smartphones (Yukun et al., 2018). Additionally, a brief mindfulness intervention can potentially decrease problematic smartphone usage among individuals (Liu et al., 2022).

Role Playing

These studies also suggest role-playing is one of the techniques of CBT prevention programs for internet addiction Bağatarhan and Siyez (2022) and Agbaria (2022).

RQ 2: Types of intervention

Results revealed three sub-themes for types of intervention. They are (a) Group, (b) Program, (c) individual, and (d) online.

Group

The most frequent intervention used in the previous studies is group work. Under this sub-theme, the researcher administered treatment to clients experiencing internet addiction through a structured group (Affouneh et al., 2021; Hofstedt et al., 2023; Liu et al., 2022; Prasetiawan et al., 2023; Zhou et al., 2021). They believe that CBT group therapy a strong psychological treatment technique and efficient for internet addiction (Ede et al., 2023). In addition, this intervention's advantage lies in its structure and the nature of the program (Yukun et al., 2018). According to Canoğullari and Cenkseven Önder (2022), the intervention and group sessions are in line with theoretical principles, utilized techniques to decrease participants' internet use, incorporated ice-breaking activities for session preparedness, and implemented support strategies to strengthen group communication, resulting in significant benefits for the students.

Additionally, this intervention program involves children or adolescents and parents. This educational program assists parents in learning more effective communication with their children regarding internet addiction and safer usage (Canoğullari & Cenkseven Önder, 2022).

For example, with this group, the sessions help adolescents share emotions with their families and strengthen their relationships (Canoğullari & Cenkseven Önder, 2022). Alavi et al. (2021) state that small groups can create client social connections. Although the treatment group was diverse, the CBT program was successful across this spectrum, irrespective of age, coexisting conditions, or treatment location (Wölfling et al., 2019). The group intervention seems to be efficacious in emotionally involving patients by allowing them to contemplate cognitive distortions and receive support from fellow group members (Wölfling et al., 2019).

Program

The second most frequent intervention used is a program. Under this sub-theme, the researcher conducted treatment for clients experiencing internet addiction through a program. The study results indicate that the implemented program reduced the severity of internet use disorder symptoms after a one-year follow-up despite using a brief 4-session intervention (Szász-Janocha et al., 2020). The intervention was carried out using small, homogeneous groups, as this approach offered several benefits, including addressing fundamental self-needs and enabling participants to fulfill their reflective requirements through the role of fellow participants as *"mirrors"* (Agbaria, 2022). In addition, training through a cognitive-behavioral program can lead to increased self-control and reduced internet addiction (Agbaria, 2022). The effectiveness of the cognitive-behavioral prevention program arises from its rootedness in the cognitive-behavioral approach, as well as its comprehensive psycho-educational content that employs a range of techniques, including role-playing, question and answer sessions, and brainstorming (Bağatarhan & Siyez, 2022). Other researchers who conducted CBT intervention programs to address internet addiction are El-Sherbini and Abdou (2020), Han et al. (2020), Lee et al. (2016) and Torres-Rodríguez et al. (2018).

Individual

Not many articles were found under this sub-theme. This article conducted CBT treatment for individuals clinically experiencing internet addiction in a hospital setting (Tadpatrikar et al., 2023). Other researchers also conducted this program with individuals (André et al., 2022).

Online

Usually, individual treatments are conducted face-to-face. However, patients can also access the treatment online. The online-based therapy was first designed for Internet Use Disorder studied by (Pape et al., 2023). It combines established therapeutic approaches, holds relevance during the COVID-19 pandemic, and significantly addresses a gap by reaching a wide range of patients. In addition, patients can engage virtually anywhere, and a private setting can be advantageous for the therapeutic process (Pape et al., 2023).

RQ3: CBT Integration

Two previous studies integrate Yoga and Music Therapy with CBT intervention to provide treatment for internet addiction.

CBT-Yoga

Yoga is a traditional and modern method of mind control that has been integrated. According to Tadpatrikar et al. (2023), the incorporation of a treatment module successfully reduced smartphone usage, leading to a more significant reduction in clinical symptoms and increased

treatment adherence, with CBT enhancing cognitive control and yoga synchronizing biorhythms to enhance sleep quality and appetite. Furthermore, CBT-Yoga is a unique endeavor that combines conventional approaches to mind management.

CBT-Music Therapy (MT)

Bong et al. (2021) focused on combining CBT and MT to treat internet addiction and coexisting psychiatric symptoms. The combination presented demonstrated a more significant reduction in internet addiction within the CBT-MT group than the CBT-only group. Furthermore, MT offers various benefits, such as emotional relaxation, establishing a sense of connection, enhancing participation in assignments, fostering enthusiasm for therapy, and facilitating adaptation to the therapeutic process.

Discussions

The results of this study demonstrated the effectiveness of Cognitive Behavioral Therapy (CBT) for patients suffering from internet addiction. Various CBT techniques have been employed in treatments such as cognitive restructuring, journal writing, Homework, relaxation, activity scheduling, problem-solving, mindfulness, and role-playing. In addition, intervention is also carried out with group sessions, programs, individual therapy, and online platforms. Some studies combine CBT with other therapies to help reduce internet addiction. CBT has long been advocated as a treatment and extended to reduce internet addiction in recent decades (El-Sherbini & Abdou, 2020). It also significantly and positively impacts internet addiction, addressing its compulsive nature and the consequential occupational and social challenges (Alavi et al., 2021). CBT was identified to be effective in treating internet addiction in many studies, such as Affouneh et al. (2021;), Agbaria (2022) and Ede et al. (2023).

Technique is an important matter and needs to be emphasized in implementing treatment. Undeniably, the treatment is effective when the techniques used are appropriate in helping the client. The technique commonly used in addressing this issue is cognitive restructuring. According to Ede et al. (2023), cognitive restructuring can change core thoughts and improve problem-solving skills toward acquiring desired adaptive behaviors. As therapy progresses, it focuses on the cognitive assumptions and distortions that have developed and the effects on behavior (Affouneh et al., 2021). Cognitive restructuring is implemented to disrupt this behavioral pattern. During this phase, the therapist closely examines the individual's thoughts, placing them *"under the microscope"* and encouraging them to revise negative self-perceptions (Malak, 2018).

Another technique frequently used is journal writing. Journal writing is particularly useful for managing smartphone addiction outside of school or clinical settings, especially among teenagers, and it solves the current problem of unhelpful thinking and behavior addiction (Bong et al., 2021). He added again that journal writing would be effective for various conditions, including substance addiction and internet or game addiction. For example, journal writing comprised *'time per day using the smartphone'*, *'smartphone contents utilized'*, *'locations where the smartphone was used',* and *'reflective self-evaluation'* (Lee et al., 2016).

Another widely used technique is the homework. According to Pakpour et al. (2022), after every session, an adolescent will be required to complete their homework assignments by consulting the exercises associated with each session to establish a consistent pattern of

conduct, which is necessary to engage in a novel endeavour, thus facilitating an assessment of their conduct over an extended duration. This technique also helped adolescents change daily behaviour (Torres-Rodríguez, Griffiths, & Carbonell, 2018). However, this technique is successful if the participant commits to the treatment session by completing the task given.

Technique relaxation is another technique that can manage one's feelings (Lu et al., 2020). Relaxation can be done with deep breathing or muscle relaxation. The participants will practice relaxation during the program and can practice at home. The previous studies used relaxation techniques during the fourth and fifth treatment sessions (Lu et al., 2020). Still, Ahmed Mohamed et al. (2021) and Pakpour et al. (2022) used this technique during the fifth session, and Alavi et al. (2021) did this technique in the sixth session. Most therapists use relaxation techniques in mid-session because, nowadays, clients can learn to control impulses and manage emotions.

CBT is more effective when the treatment is implemented in groups. Treatment sessions carried out in groups will be more focused because there are many members in the group. According to Yusop et al. (2020), group therapy has demonstrated positive outcomes for individuals in a group setting facing various challenges, including internet addiction. CBT group is much like the study conducted by Ede et al. (2023) has shown effectiveness as an intervention for managing and overcoming high-risk behaviors. Kim et al. (2018) mentioned that it is conjectured that these individuals have achieved a shared enhancement outcome through group CBT, which involves not only diminishing their internet usage but also encountering positive chances for social interaction. Furthermore, group therapy can also help people free from social isolation and increase the quality of their social ties (Alavi et al., 2021). People with similar characteristics, social inclinations, and interests may be influenced to form a group (Ede et al., 2023). Therefore, group treatment has a positive effect, especially receiving social support from group members. These will further strengthen one's identity to move towards positive change.

Table 3.2
Findings

Author / Theme	**Country**	**CBT Technique**								**Type of Intervention**				**CBT Integration**	
Sub-themes		CR	R	H	M	JW	AC	RP	PS	P	G	I	O	MT	Y
Lee et al. (2016)	Korea					○				○					
Ke & Wong, (2018)	Malaysia	○													
Yukun et al. (2018)	China	○	○	○	○						○				
Torres-Rodríguez et al. (2018)	Spain	○							○						
Ke & Wong (2018)	Malaysia	○	○	○		○									

Wölfling et al. (2019)	German										○				
El-Sherbini & Abdou (2020)	Egypt	○								○					
Han et al. (2020)	Korea	○		○											
Lu et al., (2020)	China	○	○												
Szász-Janocha et al. (2020)	German	○							○	○					
Affouneh et al. (2021)	Palestine						○		○						
Zhou et al. (2021)	China					○					○				
Bong et al. (2021)	Korea					○								○	
Alavi et al. (2021)	Iran	○	○			○	○				○				
Yang et al. (2022)	China	○					○		○						
Canoğullari & Cenkseven Önder (2022)	Turkey		○			○	○				○				
Agbaria (2022)	Israel	○	○				○			○					
Lindenberg et al. (2022)	German														
Bağatarhan & Siyez (2022)	Turkey	○		○		○		○			○				
Liu et al. (2022)	China				○						○				
André et al. (2022)	Sweden											○			
Pape et al. (2023)	German			○		○						○	○		
Hofstedt et al. (2023)	Sweden						○		○		○				
Tadpatrikar et al. (2023)	India	○										○			○
Müller et al. (2023)	German	○													
Ede et al. (2023)	Nigeria	○	○	○		○	○		○		○				

Table 3.2
Continued

Technique of CBT	Type of Intervention	Integration of CBT
CR = Cognitive Restructuring R = Relaxation H = Homework M = Mindfulness JW = Journal Writing AC = Activity Scheduling R = Role-playing PS = Problem solving	P = Program G = Group I = Individual O=Online	CBT-MT = Cognitive Behavioral Therapy-Music Therapy CBT-Y = Cognitive Behavioral Therapy-Yoga

Strength and Limitations

Several studies stated their limitations. First, the details concerning the techniques employed in these studies are inadequately explained. This lack of elaboration complicates the researcher's ability to determine the techniques' efficacy. Second, the selected studies do not focus on a specific population, as research concentrating on adolescents is scarce and makes it challenging to obtain comprehensive data. Third, the researcher omitted studies that did not elucidate their research procedures, even though the discussed topics were highly intriguing. What is important that the themes generated are aimed at elucidating the effectiveness of Cognitive Behavioral Therapy (CBT) as an intervention in treating internet addiction. Despite some limitations, this systematic literature review (SLR) has undergone a review protocol process which the selection study of research and eligibility were conducted. Furthermore, quality appraisal was used to minimize bias in selection. Data extraction and thematic analysis were conducted by the researchers until the final review and data validity was achieved through group collaboration.

Conclusion, Implications, and Future Directions

A thematic analysis of 26 selected articles, assessed based on quality appraisals, provides valuable insights into the effectiveness of Cognitive Behavioral Therapy (CBT) as an intervention strategy for individuals struggling with internet addiction. The findings are categorized into three main themes and 14 sub-themes, highlighting the critical role of CBT in addressing the challenges of internet addiction while effectively improving mental health outcomes. This study broadly supports CBT as the optimal approach for tackling this issue, with its diverse and flexible techniques enabling effective application to high-risk populations. These findings also contribute to the enhancement of knowledge and competencies among therapists in implementing appropriate interventions.

From a theoretical perspective, this study affirms that CBT is a flexible and effective approach for treating internet addiction. It emphasizes the interconnection between behaviour, thoughts, and emotions, teaching clients to identify triggers for addictive behaviours by focusing on their thoughts and emotional responses. The analysis indicates that CBT, implemented in types of intervention such as individual sessions, group therapy, programs,

and online platforms—yields positive outcomes for individuals with internet addiction. However, online implementation requires further investigation, as it remains underexplored in prior research. Techniques such as cognitive restructuring, relaxation, journaling, and homework assignments are identified as core components of CBT and should be incorporated into intervention frameworks. The uniqueness of CBT also lies in its ability to be integrated with other therapeutic approaches, making it more dynamic and relevant in treating internet addiction. This demonstrates that CBT is not only effective as a standalone intervention but also as part of a more holistic therapeutic approach.

From a contextual perspective, this study offers practical guidance for mental health professionals in addressing internet addiction and mental health challenges more broadly. Furthermore, these insights provide a foundation for future researchers such as school counselors, psychological counseling, mental health practitioners, and policy makers to develop comprehensive programs in the field, thereby contributing to advancing knowledge and practice. Emphasis is placed on utilizing the various techniques within CBT, which can be tailored to diverse populations, particularly high-risk groups such as adolescents. CBT has the potential to help mental health professionals create supportive environments and provide effective strategies for individuals with internet addiction. This proactive approach enables them to address the issue while contributing to the development of more progressive mental health policies.

This study not only strengthens theoretical foundations but also establishes a robust basis for the practical application of CBT in treating internet addiction. It underscores the need for further research to refine CBT methods, including analysing long-term benefits, sustainability, and adaptability to diverse populations. By supporting the development of more inclusive and effective interventions, this study ensures that CBT remains a relevant and primary approach in addressing current mental health challenges.

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