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Review

Health education tools/resources with adolescents during the COVID-19 pandemic: an integrative review

Ferramentas/recursos de educação em saúde com adolescentes durante a pandemia COVID-19: revisão integrativa

Herramientas/recursos de educación en salud con adolescentes durante la pandemia de COVID-19: una revisión integradora

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Abstract

Objective: To identify Health Education tools/resources used with adolescents during the COVID-19 pandemic. **Methods:** An integrative review conducted during January 2022 in the following databases: National Library of Medicine National/PUBMED (PMC), Embase, Cochrane Library, Web of Science and Cumulative Index to Nursing and Allied Health Literature (CINAHL). **Results:** The sample consisted of 22 articles, and the topics identified gave rise to four categories: Health Education tools/resources focused on preventing and reducing mental health-related problems (eight studies); Health Education tools/resources focused on promoting healthy lifestyle habits (five studies); Health Education tools/resources focused on establishing well-being-related feelings (two studies); and Health Education tools/resources on various topics (seven studies). **Conclusion:** The Health Education tools/resources focused on adolescents' health were mainly discussed in the context of preventing and reducing mental health-related problems triggered by the COVID-19 pandemic scenario.

Descriptors: Health Education; Adolescents' Health; COVID-19.

Whats is already known on this?
The COVID-19 pandemic triggered an educational crisis, demanding attention towards restoring the health and education of school-aged populations, such as adolescents.

What this study adds?
The study identified tools/resources that can assist in health education work with adolescents, positively impacting the vulnerabilities experienced by this population group.

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Resumo

Objetivo: *Identificar ferramentas/recursos de educação em saúde utilizados com adolescentes durante a pandemia COVID-19.* ***Métodos:*** *Revisão integrativa, cuja busca ocorreu durante o mês de janeiro de 2022, nas bases de dados National Library of Medicine/PUBMED (PMC), Embase, Cochrane Library, Web of Science e Cumulative Index to Nursing and Allied Health Literature (CINAHL).* ***Resultados:*** *A amostra foi constituída por 22 artigos, cujos temas encontrados deram origem a quatro categorias: ferramentas/recursos de educação em saúde focados na prevenção e redução de agravos relacionados à saúde mental (oito estudos); ferramentas/recursos de educação em saúde focados na promoção de hábitos de vida saudáveis (cinco estudos); ferramentas/recursos de educação em saúde focados no estabelecimento de sentimentos ligados ao bem-estar (dois estudos); e ferramentas/recursos de educação em saúde de temas variados (sete estudos).* ***Conclusão:*** *As ferramentas/recursos de educação em saúde voltadas para a saúde dos adolescentes foram abordadas, principalmente no contexto sobre prevenção e redução de agravos relativos à saúde mental, desencadeados pelo cenário da pandemia COVID-19.*

Descritores: *Educação em Saúde; Saúde do Adolescente; COVID-19.*

Resumén

Objetivo: *Identificar herramientas/recursos de Educación en Salud utilizados con adolescentes durante la pandemia de COVID-19.* ***Métodos:*** *Revisión integradora, cuya búsqueda se realizó durante el mes de enero de 2022 en las siguientes bases de datos: National Library of Medicine/PUBMED (PMC), Embase, Cochrane Library, Web of Science y Cumulative Index to Nursing and Allied Health Literature (CINAHL).* ***Resultados:*** *La muestra estuvo compuesta por 22 artículos, cuyos temas dieron origen a cuatro categorías: Herramientas/Recursos de Educación en Salud enfocados en prevenir y reducir problemas relacionados con la salud mental (ocho estudios); Herramientas/Recursos de Educación en Salud enfocados en promover hábitos de vida saludables (cinco estudios); Herramientas/Recursos de Educación en Salud enfocados en establecer sentimientos ligados al bienestar (dos estudios); y Herramientas/Recursos de Educación en Salud sobre temas variados (siete estudios).* ***Conclusión:*** *Las Herramientas/Recursos de Educación en Salud dirigidas a la salud de los adolescentes se abordaron principalmente en el contexto de la prevención y reducción de problemas relacionados con la salud mental, desencadenados por la situación impuesta por la pandemia de COVID-19.*

Descriptores*: Educación en Salud; Salud del Adolescente; COVID-19.*

INTRODUCTION

Health Education (HE) consists of combinations of learning experiences that aim at helping individuals and communities improve their own health through knowledge or behavioral changes and by means of resources that ease this strategy.[1]

However, in the COVID-19 pandemic context, an adaptation of the HE promotion means was necessary, including the use of digital tools/resources, encouraging the dissemination of good quality technical-scientific content with accessible language. This has contributed to promoting the health of the population, particularly among adolescents.[2]

It is known that adolescence is a period that encompasses the age group from ten to 19 years old, being a vital period characterized by significant changes that occur in the life of an adolescent, including biological, social, psychological and sociobehavioral ones. These changes contribute to an increase in vulnerabilities.[3]

The adolescent population is significant in developing countries, and in Brazil, there were approximately 201.1 million people in 2019, with 53,759,457 of them under the age of 18 years. In 2020, the population belonging to the age group from 0 to 19 years old was 61,156,335. When comparing the estimates, it is noticed that the population of children and adolescents has been growing significantly, with an increase of over seven million within a one-year period.[4]

Amidst the many changes that already occur in the lives of adolescents, the COVID-19 pandemic has contributed to exacerbating the vulnerabilities inherent to this phase since, to contain spread of the disease, strategies to prevent and control virus transmission and disease incidence were recommended. These measures required adolescents to readjust their lifestyle, as many of them typically spend long periods of time socializing in groups.[5]

Considering this population panorama and the vulnerabilities inherent to this phase, in addition to the lack of studies on this theme during the intense period of social isolation/distancing, it is crucial to implement health education tools/resources specifically targeted at adolescents. These tools should value their contexts and needs, prioritizing not only care but also focusing on protection and individual and collective strengthening, in an attempt to minimize vulnerabilities and reinforce empowerment.[6]

Health Education tools/resources serve as important strategies that can bring health professionals closer to the community, especially adolescents, strengthening the bond that has been weakened during the COVID-19 pandemic. The study objective was to identify Health Education tools/resources used with adolescents during the COVID-19 pandemic.

METHODS

This is an integrative review with its protocol filed on the *FigShare* platform.[7] The study followed these stages: formulation of the research question; definition of the databases and inclusion/exclusion criteria for studies; definition of the information to be extracted from the studies selected: evaluation of the studies included; interpretation of the results; and presentation of the review/knowledge synthesis.[8]

Formulation of the research question

The research question was formulated using the PICo (Population, Interest and Context) strategy: P - Adolescents; I – Health Education tools/resources; Co – COVID-19 pandemic. The strategy allowed formulating the following guiding question: "Which are the HE tools/resources used with adolescents during the COVID-19 pandemic?".

Definition of the databases and inclusion/exclusion criteria for studies.

The databases were defined by searching the Medical Literature Analysis and Retrieval System Online (MEDLINE) through the National Library of Medicine (PubMed) to identify the descriptors or keywords used in the studies that focused on HE tools/resources with adolescents during the COVID-19 pandemic. The controlled vocabularies were selected from the Descriptors in Health Sciences (*Descritores em Ciências da Saúde*, DeCS) and the Medical Subject Headings (MeSH), and the respective cross-references of the descriptors were conducted using the AND and OR Boolean operators (Chart 1).

Data collection was conducted in January 2022 through the CAPES Journals Portal, accessing the Federated Academic Community (*Comunidade Acadêmica Federada*, CAFe), in the following databases: Medical Literature Analysis and Retrieval System Online (MEDLINE) via the National Library of Medicine (PubMed); Cochrane Library; Web of Science; Cumulative Index to Nursing and Allied Health Literature (CINAHL); and Embase (Chart 1).

The inclusion criteria adopted were as follows: original articles that addressed HE tools/resources with adolescents during the COVID-19 pandemic; published in 2020 and 2021, as they were years in which social isolation/distancing was more intense, which forced adolescents to distance from their daily routines (school and leisure); in any language; and available electronically in full. Editorials, letters to the editor, reflexive studies and reviews were excluded, as well as populations and contexts that did not meet the research proposal.

Chart 1. Search strategy for the studies according to the databases identified. Fortaleza, Ceará, Brazil, 2022.

Database	Crossing	Number
Medical Literature Analysis and Retrieval System Online (MEDLINE) via the National Library of Medicine (PubMed)	(youth OR adolescent) AND ("health education" OR "community health education" OR education OR learning OR training) AND (COVID-19 OR "coronavírus infection" OR "COVID-19 virus disease" OR "COVID 19 virus disease" OR "COVID-19 virus diseases" OR "COVID-19 virus" OR "COVID-19 virus infection" OR "COVID 19 virus infection" OR "COVID-19 virus infections" OR "2019-nCoV infection" OR "2019 nCoVinfection" OR "2019-nCoV infections" OR "2019-nCoV" OR "coronavirus disease-19" OR "coronavirus disease 19" OR "2019 novel coronavirus disease" OR "2019 novel coronavirus infection" OR "2019-nCoV disease" OR "2019 nCoVdisease" OR "2019-nCoV diseases" OR "coronavirus disease 2019" OR "SARS coronavirus 2 infection" OR"SARS-CoV-2 infection" OR "SARS-CoV-2" OR "SARS CoV 2 infection" OR "SARS-CoV-2 infections" OR "COVID-19 pandemic" OR "COVID 19 pandemic" OR "COVID-19 pandemics")	3,058
Cochrane Library		79
Web of Science		77
Cumulative Index to Nursing and Allied Health Literature (CINAHL)		1,905
Embase	(youth OR adolescent) AND ('health education' OR 'community health education' OR education OR learning OR training) AND (COVID-19 OR 'coronavírus infection' OR 'COVID-19 virus disease' OR 'COVID 19 virus disease' OR 'COVID-19 virus diseases' OR 'COVID-19 virus' OR 'COVID-19 virus infection' OR 'COVID 19 virus infection' OR 'COVID-19 virus infections' OR '2019-nCoV infection' OR '2019 nCoVinfection' OR '2019-nCoV infections' OR '2019-nCoV' OR 'coronavirus disease-19' OR 'coronavirus disease 19' OR '2019 novel coronavirus disease' OR '2019 novel coronavirus infection' OR '2019-nCoV disease' OR '2019 nCoVdisease' OR '2019-nCoV diseases' OR 'coronavirus disease 2019' OR 'SARS coronavirus 2 infection' OR 'SARS-CoV-2 infection' OR	4,505

	'SARS-CoV-2' OR 'SARS CoV 2 infection' OR 'SARS-CoV-2 infections' OR 'COVID-19 pandemic' OR 'COVID 19 pandemic' OR 'COVID-19 pandemics')	
Total		9,654

Source: Research data.

Definition of the information to be extracted from the studies selected

The information to be extracted from the studies selected was defined following a template created in Excel, including the following information: author, title, year of publication, country, language, journal, objective, study design, number of participants, level of evidence, type of health education tool/resource, and outcome.

Evaluation of the studies included in the review

The studies included in the review were evaluated according to their level of evidence, following this classification: Level I - Systematic reviews and meta-analyses of randomized clinical trials; Level II - Randomized clinical trials; Level III - Non-randomized controlled trials; Level IV - Case-control or cohort studies; Level V - Systematic reviews of qualitative or descriptive studies; Level VI - Qualitative or descriptive studies; and Level VII - Experts' opinions and/or reports from experts' committees. This hierarchy classifies levels I and II as strong evidence, levels III to V as moderate evidence, and levels VI to VII as weak evidence.[9]

The Rayyan app[10] was used to assist in the process of organizing and selecting the studies, as well as removing duplicates. Subsequently, the titles and abstracts of the articles were examined in the Rayyan app, and those that met the selection criteria were considered for the next phase. These were organized according to the selection database/library, in an Excel spreadsheet. Subsequently, the articles were read in full. Selection was carried out independently and simultaneously by two researchers, and the differences were solved by consensus.

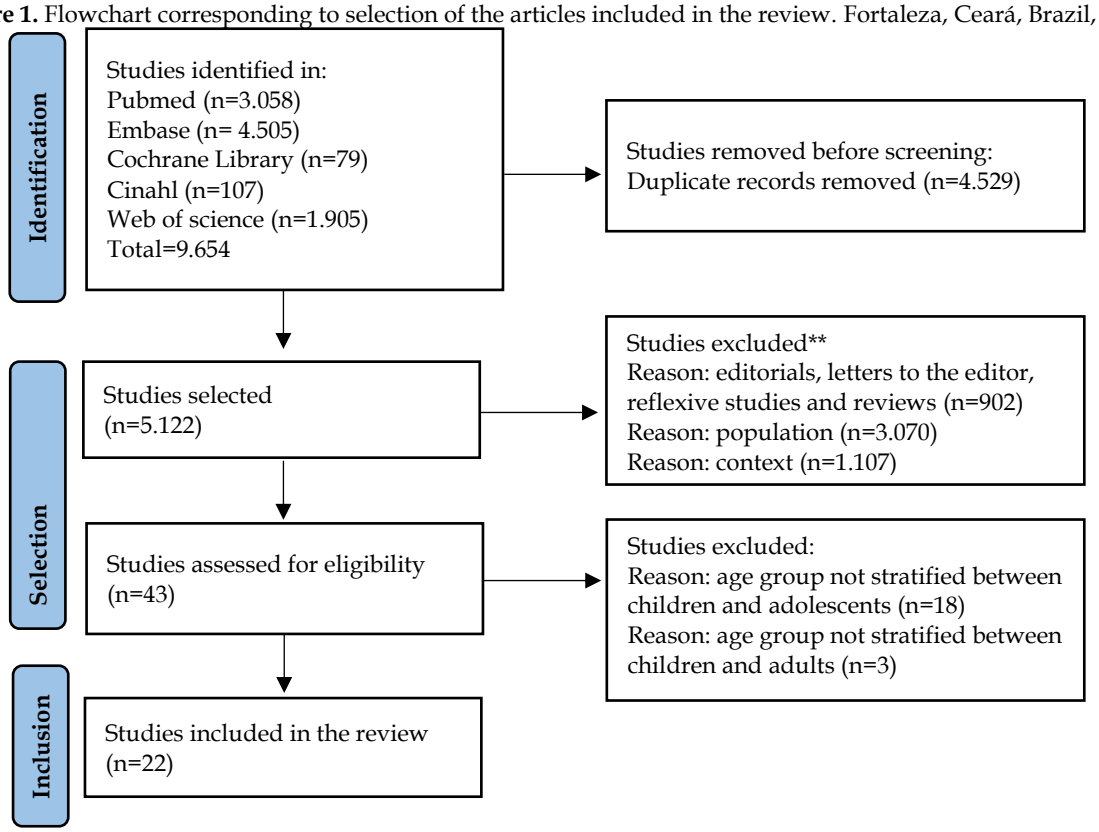
Interpretation of the results and presentation of the review/knowledge synthesis

The data were interpreted descriptively, and the results were presented in a summary chart that included the author's name, year and country of publication, objective, study type, number of participants, level of evidence, and type of HE tool/resource. They were then discussed based on the available literature on the theme.

RESULTS

A total of 9,654 articles were identified and, after analyzing their titles and abstracts and applying the inclusion and exclusion criteria, 43 articles were pre-selected for full-text reading. Among the 43 articles analyzed, 22 were included in the final sample of this review. The search and study selection process was based on the recommendations set forth by the PRISMA group[11-13] and can be seen in the flowchart presented in Figure 1.

Figure 1. Flowchart corresponding to selection of the articles included in the review. Fortaleza, Ceará, Brazil, 2022.



Source: Adapted from PRISMA 2020 (Boers M, 2018; Mayo-Wilson E et al., 2018; Stovold E et al., 2014).

The 22 articles that comprised the final sample were published in the 2020 and 2021. Among the countries where the research studies were conducted, the United States (41.0%) and China (41.0%) led in terms of number of publications. Studies were also conducted in South Korea (4.5%), Brazil (4.5%), Australia (4.5%) and Greece (4.5%). Regarding the study designs, randomized controlled trials (63.7%) stood out. When evaluating the level of evidence, 50.0% of the publications were classified as Level II - Randomized clinical trials (Chart 2).

The types of HE tools/resources used in the approach with adolescents during the COVID-19 pandemic were applied remotely (95.5%); with 14 (63.7%) in individual educational guidance, seven (31.8%) in group guidance and one in a combined manner, that is, both in individual and in group guidance (4.5%) (Chart 2).

To better discuss the educational approach of the studies analyzed, we decided to organize the grouped articles into four categories of studies: health education tools/resources focused on the prevention and reduction of mental health-related problems (eight studies); health education tools/resources focused on promoting healthy lifestyle habits (five studies); health education tools/resources focused on establishing well-being-related feelings (two studies); and health education tools/resources on various topics (seven studies).

The HE tools/resources focused on the prevention and reduction of mental health-related problems that comprised the majority of the studies (8; 36.4%) were the following: psychological counseling combined with outdoor exercises; aerobic exercise combined with acceptance and commitment therapy; aerobic exercise and mindfulness meditation training; mindfulness training; peer social support; social network; online physical activity support group; solution-focused psychological counseling; and health education through video (Chart 2).

Chart 2. Characterization of the studies and health education tools/resources. Fortaleza, Ceará, Brazil, 2022.

Author/Year/Country	Objective	Study design* and number of participants	Level of evidence **	Health Education tool/resource
Zhang J; Zhou; Zhang W., 2021[16]. China	To explore the effect of a research-based psychological counseling intervention on adolescents' mental health during the COVID-19 pandemic.	Randomized clinical trial n=160	II	Psychological counseling combined with outdoor exercises
Xu; Chen; Wang, 2021[17]. China	To explore the effect of aerobic exercise combined with acceptance and commitment therapy on adolescents' mental health during the COVID-19 outbreak, based on the Dual-Factor Model of Mental Health theory.	Randomized clinical trial n=1,200	VI	Aerobic exercise combined with acceptance and commitment therapy
Chen et al., 2021[18]. China	To explore the effect of an integration model intervention on adolescents' negative emotions during the COVID-19 epidemic.	Randomized clinical trial n=72	II	Aerobic exercise and mindfulness meditation training
Yuan, 2021[22]. China	To explore how the resilience development paths are impacted by mindfulness training.	Randomized clinical trial n=90	II	Mindfulness training
Arenas et al., 2021[24]. Brazil	To describe how the '*Pega Leve*' (PL) program is used at the Federal University of Rio Grande do Sul, Brazil.	Descriptive study n=42	VI	Peer social support
Berthaut; Chamignon, 2021[30]. United States	To describe the use of Discord.	Descriptive study n=15	VI	Social network
Jorgensen et al., 2021[31]. United States	To evaluate how an online support group can enable a remote group of cystic fibrosis patients to connect, create a safe space to share experiences, and receive support.	Qualitative study n=5	VI	Online physical activity support group
Li; Liu, 2021[33]. China	To combine the solution-focused theory and video-based health education to explore the effect of this intervention model on adolescents' mental health.	Randomized clinical trial n=126	II	Solution-focused psychological counseling and video-based health education
Zheng Y et al., 2021[35]. China	To investigate whether a digital behavioral change intervention aimed at promoting physical activity might reduce anxiety and digital visual fatigue in adolescents during prolonged home-based education amid the COVID-19 pandemic.	Randomized clinical trial n=954	II	Digital behavioral change for physical activity
Jeong et al., 2020[36]. South Korea	To develop a physical education fitness program for adolescents to counteract the decline in physical activity levels caused by the COVID-19 pandemic, as well as to investigate the effect of the program.	Randomized clinical trial n=240	VI	Physical education activity program
Barcelona et al., 2021[37]. United States	To evaluate how young people's healthy eating and physical activity behaviors can be influenced by a school-wide program that was transformed into a virtual environment at the onset of the COVID-19 pandemic.	Exploratory study n=879	VI	Virtual program for healthy eating and physical activity
Linnemayr et al., 2021[41]. United States	To evaluate the feasibility and acceptability of an automated text message intervention as a supplement to group counseling for	Randomized clinical trial n=77	II	Group session and text messages

	smoking cessation and provision of nicotine patches to assist homeless young people in quitting smoking.			
Murphy; Cooper, 2021[42]. United States	To describe a group-based Telehealth intervention and compare it to face-to-face group therapy.	Randomized clinical trial n=20	II	Telehealth
Luo et al., 2021[48]. China	To explore the effects of using RPE exercise intensity monitoring methods and a 12-week aerobic team training program of moderate and low intensity on anxiety, depression and sleep quality among depressed High School students after the COVID-19 epidemic.	Randomized clinical trial n=69	II	Aerobic training
Baek; Wong; Tarshis, 2020[50]. United States	To implement and evaluate a *yoga*-based psychoeducation program in a school setting.	Randomized clinical trial n=33	II	Pilot *yoga* program
Batchelor et al., 2021[52]. Australia	To examine how the Kids Helpline was used during the COVID-19 pandemic.	Descriptive study n=1,415,228	VI	National helpline via phone calls, WebChat and email.
Ding; Yao, 2020[54]. China	To evaluate the use of reasonable and efficient methods for intervening in adolescents' psychological problems during the COVID-19 pandemic.	Randomized clinical trial n=150	II	Peer social support
Flannery et al., 2021[56]. United States	To share the lessons learned from a pediatric and adolescent psychology service that offers online groups for young individuals with chronic health conditions and their healthcare teams.	Descriptive study	VI	Online groups
Kabakian et al., 2021[59]. United States	To evaluate adaptation of the SDE Program and its urgent implementation among CGMIS users.	Randomized clinical trial n=22	VI	Telemedicine
Deng et al., 2021[62]. China	To present the Digital Storytelling Project and a qualitative study exploring the COVID-19 pandemic through the lens of adolescents who share their experiences through film-making and evoke cross-cultural empathy in their audience.	Qualitative study n=70	VI	Cinema
Kolyvas; Nikiforos, 2021[63]. Greece	To assess the impact of technology use on remote teaching in early adolescence.	Descriptive study n=22	VI	Digital classroom
Pekçetin; Günal, 2021[67]. United States	To evaluate the efficacy of a web-based time-use intervention on university students' occupational balance.	Randomized clinical trial n=60	II	Web-based time-use study

Source: Research data (2022).

*The types of studies listed in this chart are described as in the article analyzed.

**The level of evidence of the studies was determined according to the classification by Melnik BM; Fineout-Overholt E (2011).

DISCUSSION

The COVID-19 pandemic scenario required the adaptation of new methodologies, including HE tools and resources with the adolescent population, considering the challenges experienced during this period, mainly in relation to mental health, lifestyle habits and well-being. Therefore, it has been a major challenge during a time when flexibility, agility and innovation were crucial to implement Health Education in a digital format that is acceptable to the target audience.[14]

In relation to the HE tools/resources focused on the prevention and reduction of mental health problems, periodic exercise has been found to be beneficial in treating or preventing anxiety and depression. When performed outdoors, where individuals are exposed to the environment, it exerts a strong protective effect on adolescents' mental health[15] and can be incorporated into psychological

interventions.[16] Three studies presented successful experiences with HE tools/resources characterized by these features.

The implementation of outdoor aerobic exercises combined with a psychological counseling intervention,[16] associated with an acceptance and commitment intervention[17] and along mindfulness-based meditation training,[18] emphasizes that, respectively, the researcher is the subject of their own psychological problem, serving as a starting point for this type of tool/resource and collaborating to reducing suicidal ideation in university students, alleviating the negative impact on adolescents' mental health, and strengthening resources for positive psychological effects.[19] They also enhance individuals' psychological resilience, cognitively neutralizing negative experiences, and improving their well-being.[20] Additionally, they offer a new perspective to alleviate adolescents' emotional problems, focusing on maintaining mindfulness, purpose, being in the present moment, and without judgment.[21]

Authors also propose the possibility of applying mindfulness therapy in the mental health of adolescents attending school, aiming to observe improvements in anxiety, depression and adaptation as a standalone tool/resource;[22] it is considered useful for simultaneously reducing internalizing/externalizing adversities and increasing resilience among children and adolescents.[23]

The presence of social media emerges as a strong alternative to address the problem of reduced contact with the support networks and a decrease in help-seeking behaviors, significantly impacting young people's behaviors, as evidenced by a study that used an online peer support tool/resource as a means to address university students' mental health amidst the COVID-19 pandemic,[24] corroborating with results from other research studies.[25,26]

Adolescents use Internet for leisure, communication and education activities. Using the cyberspace to obtain information was increased by 24.8% between 2015 and 2020, and this trend was intensified during the pandemic scenario, where the growth of online education and communication was significantly expanded,[27-29] what was shown in two studies.

One of the studies aimed at creating a support network among adolescents through the implementation of a social networking platform, setting up a virtual room where individual and group support could continue;[30] the other study was focused on the implementation of an online support group specifically addressing mental health topics,[31] which allowed creating a safe space, sharing experiences, and receiving support among young individuals.[32]

The video-based HE tools/resources are another effective way to alleviate the adolescents' anxiety and negative emotions and improve their positive ones,[33] as it assisted adolescents in developing cognitive processes and in properly understanding the epidemic, thereby preventing excessive worry, fear and other negative emotions resulting from information or imagination.[34]

The identification of HE tools/resources focused on promoting healthy lifestyle habits was found in five studies that worked with the implementation and/or development of physical activity promotion programs. Promoting physical activity through a digital behavioral change tool/resource,[35] incorporating musical cues[36] and combining it with a healthy eating program aimed at understanding how it can influence student and family behaviors in the virtual home environment[37] proved to be an effective approach to promoting physical activity and/or reducing sedentary behaviors.[38] This is because the students can engage in these activities at their preferred time and place with minimal intervention from the teacher, thereby improving their motivation, responsibility and autonomy;[39] in addition, it is worth emphasizing that this type of health education tool/resource the need for educators to adopt a comprehensive approach to promoting physical and mental growth.[40]

The feasibility and acceptability of an HE tool/resource on involving automated text messaging as an adjunct to group smoking cessation counseling and nicotine patch provision to help homeless youth quit smoking was also identified as a cataloged approach,[41] where the smoking adolescents who were offered this type of tool/resource were more likely to abstain from smoking for seven days when compared to the Control Group, as observed in a meta-analysis of 22 studies.[42]

The search to promote physical activity and healthy habits through Telehealth[43] was found in a study, identifying it as a relatively new approach to providing assistance during the COVID-19 outbreak and with the potential to promote online exercise programs or training and focus on discouraging sedentary behaviors while promoting healthy lifestyle habits in children and adolescents, which led to increased development of electronic devices, widespread use of online technologies, and enhanced exercise training and practice through apps, web channels and online platforms.[44-46]

In relation to the HE tools/resources focused on establishing feelings related to well-being, two studies were identified. It is important to emphasize that, during the COVID-19 pandemic, loneliness and lack of routines compromised adolescents' well-being[47] Frequently accompanied by anxiety, depression leads to sleep problems in depressed individuals.[48] Therefore, to address anxiety reduction, depression and sleep quality in depressed adolescents, a study explored the effects of using exercise intensity monitoring and long-term aerobic training methods.[49]

It is observed that adolescents with strong socioemotional skills are better able to manage daily challenges, which, in turn, can lead to better social, professional and academic functioning. With the intention of promoting psychosocial well-being among High School students, another study implemented a pilot school *yoga* program that addressed psychosocial topics, breathing exercises, *yoga* postures and relaxation techniques.[50] The program concentrates on the following core elements: emotional and behavioral self-regulation, mindfulness practices, mental well-being, and physical movement, showing that any form of physical activity/movement can foster a positive framework for well-being and mobility.[51]

The research study summarized seven HE tools/resources focused on mixed topics. To provide ongoing and free information during the pandemic, ranging from "simple universal care measures" such as providing information or referrals to addressing "complex mental health care measures" or "risk of self-harm or harm to others", such as psychoeducation, continuous counseling and harm risk assessment, a study implemented a national online helpline[52] that offered a range of benefits valued by young people, including no-cost, privacy and/or anonymity, easy access and a greater sense of control. It had the capacity to effectively reduce distress, despite its limitations.[53]

Another summarized study implemented Peer HE,[54] in which individuals share information, ideas or behavioral skills based on certain similarities such as age, gender, living environment and sociocultural experience and status.[55]

To share experiences about healthcare provision and support, strengthen social connection and reduce isolation among young people with chronic diseases, a study resorted to online groups.[56] Positive results were observed in terms of identity, connection and management of health conditions, allowing for opportunities for social connectivity, peer support, shared experience and learning and growth that cannot be mirrored in individual appointments, especially during a time of widespread social isolation.[57,58]

Telemedicine in providing educational assistance for young people with diabetes mellitus was another HE tool/resource found among the studies selected,[59] associated with better cost-effectiveness and patient satisfaction, leading to improved quality of life and fewer hospitalizations/emergency visits.[60]

Online educational programs using short films are quite effective in improving people's knowledge,[61] as evidenced by a research study that conducted cinema sessions through the exchange of films, allowing students to reflect on their own films and those of their peers, with the aim of evoking cross-cultural empathy in their audience.[62]

In this regard, a study applied the digital classroom due to the impact of technology on remote teaching,[63] using appealing methods and materials that motivate students to use appropriate tools, such as interactive books, discussion forums and blogs.[64]

Finally, it is known that the COVID-19 pandemic has caused certain deterioration in people's time management due to strict precautions to prevent spread of the virus, where adolescents, in particular, began to spend most of their day engaged in online games and using social media, which could lead to occupational imbalance.[65,66] This issue was worked on by one of the studies, which aimed at evaluating the efficacy of a web-based time-use tool on university students' occupational balance during the pandemic,[67] as it has the potential to improve cost-effectiveness and resource utilization in several health programs for students.[68,69]

The method used can be noted as a study limitation, which is not capable of conducting robust analyses, in addition to the quality of the evidence from the studies included. This research is relevant to the Nursing practice because the results obtained will contribute benefits for health professionals, especially nurses, to have options when adopting HE tools/resources with adolescents. In addition to this, promoting an emancipatory perspective goes beyond the curative model and expands knowledge about COVID-19, healthier lifestyles, prevention/control measures for the disease, and improving the quality of life and autonomy of individuals, especially adolescents, not only in pandemic scenarios but also in various other contexts.

CONCLUSION

Tools/resources focused on the prevention and reduction of mental health-related problems constituted the majority of the studies reviewed. The findings show that these tools/resources are viable and well-accepted by adolescents in the COVID-19 pandemic context, in addition to making up for the lack of studies evaluating the effectiveness of various HE tools/resources specifically targeted at this population group.

The results also reflect a diversity of approaches and themes in HE, aiming to address preventive care measures in various contexts experienced by adolescents during the pandemic, such as the need to promote healthy lifestyle habits and foster feelings related to well-being, among other topics.

Finally, it is essential to conduct new studies that investigate and compare different tools/technologies related to the topic and using more robust methodologies. This will allow for a comprehensive and evidence-based understanding of the efficacy of these tools in promoting adolescents' health.

CONTRIBUITIONS

Contributed to the conception or design of the study/research: Campos RKGG, Pinheiro, PNC. Contributed to data collection: Campos RKGG, Santos MH. Contributed to the analysis and/or interpretation of data: Campos RKGG, Santos MH. Contributed to article writing or critical review: Campos RKGG, Pinheiro PNC, Vieira NFC, Lima FET, Fernandes ARL, Maniva SJC. Final approval of the version to be published: Pinheiro PNC, Vieira NFC, Lima FET, Fernandes ARL, Maniva SJC.

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