Review Article

Education technologies in mental health for workers: an integrative review

Tecnologias educacionais em saúde mental para trabalhadores: revisão integrativa

Tecnologías educativas en salud mental para trabajadores: revisión integradora de la literatura

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Abstract

Objective: To identify in the scientific literature the educational technologies in mental health developed for or directed at workers.

Methods: This integrative review was carried out in May 2021 on the databases Medical Literature Analysis and Retrieval System Online (MEDLINE), accessed through the PubMed portal, Scopus, Web of Science, and Embase. The Population, Interest, Context strategy was used, in which controlled and uncontrolled descriptors were combined with Boolean operators OR and. For such, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses were used. The critical analysis and qualitative synthesis of the eight selected studies were performed descriptively.

Results: Among the technologies used for the mental health education of workers, there was a predominance of educational videos. Moreover, other technology types such as software and written materials also emerged. Seven technologies demonstrated an increase in the knowledge of workers subjected to them. Regarding the addressed themes, there was a predominance of depression and dementia.

Conclusion: It was possible to observe that the technologies used collaborated with the mental health knowledge of workers.

Resumo

Objetivo: Identificar na literatura científica as tecnologias educacionais em saúde mental desenvolvidas ou voltadas para os trabalhadores.

Métodos: Revisão integrativa, realizada em maio de 2021, nas bases de dados Medical Literature Analysis and Retrieval System Online (MEDLINE), acessada por meio do portal PubMed; Scopus; Web of Science e Embase. Utilizou-se a estratégia População Interesse Contexto, na qual foram combinados descritores controlados e não controlados com os operadores booleanos OR e AND. Para tanto, fez-se uso do *Preferred Reporting Items for Systematic Reviews and Meta-Analyses*. A análise crítica e a síntese qualitativa dos oito estudos selecionados foram realizadas de forma descritiva.

Resultados: Das tecnologias utilizadas para educação em saúde mental de trabalhadores, houve predomínio de vídeos educativos. Ademais, também surgiram outros tipos de tecnologias, como: softwares e material por escrito. Sete tecnologias demonstraram aumento do conhecimento dos trabalhadores que foram submetidos a elas. Quanto aos temas que foram abordados, houve predominância da depressão e da demência.

Conclusão: Foi possível observar que as tecnologias utilizadas colaboraram com o conhecimento sobre a saúde mental de trabalhadores.

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Conflicts of interest: nothing to declare.

Resumen

Objetivo: Identificar en la literatura científica las tecnologías educativas en salud mental desarrolladas o destinadas a los trabajadores.

Métodos: Revisión integradora, realizada en mayo de 2021, en las bases de datos Medical Literature Analysis and Retrieval System Online (MEDLINE), a la que se ingresó por medio del portal PubMed; Scopus; Web of Science y Embase. Se utilizó la estrategia Población Interés Contexto, en la cual se combinaron descriptores controlados y no controlados con los operadores booleanos OR y AND. Para eso, se usó el *Preferred Reporting Items for Systematic Reviews and Meta-Analyses*. De los ocho estudios seleccionados, se realizó el análisis crítico y la síntesis cualitativa de forma descriptiva.

Resultados: De las tecnologías utilizadas para la educación en salud mental de trabajadores, predominaron los videos educativos. También surgieron otros tipos de tecnologías, como software y material escrito. Siete tecnologías demostraron un aumento del conocimiento de los trabajadores que las utilizaron. Respecto a los temas que fueron abordados, predominaron depresión y demencia.

Conclusión: Fue posible observar que las tecnologías utilizadas colaboraron con el conocimiento sobre la salud mental de trabajadores.

Introduction

Worker health is understood as a field of complex practice and knowledge, given that it is supported by technical, political, social, and economic dimensions, all inseparably. For such, it aims to understand and favor the protection, promotion, recovery, and rehabilitation of the health of workers subjected to risks related to their work activities.[1]

From this perspective, it was possible to observe a change in the work organization pattern over the years, and, consequently, new means to produce vulnerabilities relative to health and work emerged. Therefore, this causal relationship implicated the need for worker protection measures.[2]

In this sense, it is verified that work started to require more significant involvement of worker subjectivity, so much so that, among so many illnesses, those referring to mental health became responsible for the significant reduction in work potential. Hence, the problem has been neglected, with few initiatives on the mental health of the working population.[3]

It is necessary to underscore the importance of work as a constituting factor of human beings, of that which characterizes them and makes them who they are. However, the experiences of researchers have shown that many people who suffer due to their professions and have manifested various symptoms and even psychic illnesses have not been accommodated by health services. Their accounts and work lives have not been a common theme among the professionals who work in mental and worker health in public health services. Hence, implementing actions that consider completeness and promote the knowledge of this population on mental issues becomes an important challenge.[4]

The use of tools necessary for the permanent development and education of workers with the purpose of developing professional skills to identify and respond to mental illness and psychic suffering, in addition to demystifying psychiatric treatment, is highlighted. For such, the need to train health professionals in the proper use of these tools is imperative.[5]

The technical-scientific advancement enabled the emergence of educational technologies that result from processes materialized from everyday experiences directed towards the development of knowledge and know-how to be used to a specific end.[6] Such technologies change the way professionals, particularly nurses, plan, provide, document, and review clinical care.[7]

Although some studies show the impact of using educational technologies, literature reviews related to the subject were not found. It is necessary to gather scientific evidence on the interface among educational technologies, work, and mental health to structure future research and pay attention to work-related problems. In view of this, this study aimed to identify the educational technologies in mental health developed for or directed at workers in the scientific literature.

Methods

This is an integrative review structured in six distinct steps: 1) elaboration of the research question; 2) definition of the databases and study inclusion and exclusion criteria; 3) definition of the pieces of information to be extracted from the selected studies; 4) assessment of the studies included in the review; 5) interpretation of the results; 6) presentation of the review/synthesis of the knowledge.[8]

The study was guided by a protocol devised by the researchers. The research question was devised according to the Population, Interest, Context (PICo) strategy.[9] The following structure was considered: P - workers; I - educational technology; Co - mental health. Hence, the following question was elaborated: what are the educational technologies in mental health developed for or directed at workers?

The bibliographic survey was carried out in May 2021 through access to the virtual databases Medical Literature Analysis and Retrieval System Online (MEDLINE), accessed through the PubMed portal, Scopus (Elsevier), Web of Science, and Embase.

The inclusion criteria were the following: primary papers in any language that presented educational technologies in mental health developed for or directed at workers. The exclusion criteria were the following: editorials, dissertations, theses, review articles, and those that did not respond to the research question. There was no temporal delimitation.

It is worth stressing that the area these workers belonged to was not delimited since this would further limit the results to be obtained.

To systematize the sample collection, the advanced search form was used, so to respect the peculiarities and distinct characteristics of each database. The descriptors were combined using the Boolean connector OR within each set of terms of the PICo strategy, then cross-linked with the Boolean connector AND, as shown in chart 1.

Chart 1. Search strategies and databases

Search strategies	Database
(((((“Occupational Health”[Mesh]) OR (“Permanent Workers”)) OR (“Occupational Groups”[Mesh])) OR (“Temporary Workers”)) AND ((((((“Multimedia”[Mesh]) OR (“Audiovisual Media”)) OR (“Educational Technology”[Mesh])) OR (“Technological Development”)) OR (“Instructional Film and Video”)) OR (“Video-Audio Media”))) AND ((((“Mental Health”[Mesh]) OR (“Health, Mental”)) OR (“Mental Disorders”[Mesh])) OR (“Psychiatric Diseases”))	Medline (via PubMed) and Web of Science (WOS)
((ALL (“Occupational Health”)) OR (ALL (“Permanent Workers”)) OR (ALL (“Occupational Groups”)) OR (ALL (“Temporary Workers”))) AND ((ALL (“Audiovisual Media”)) OR (ALL (“Educational Technology”)) OR (ALL (“Technological Development”)) OR (ALL (“Instructional Film and Video”)) OR (ALL (“Video-Audio Media”))) AND ((ALL (“Mental Health”)) OR (ALL (“Health, Mental”)) OR (ALL (“Mental Disorders”)) OR (ALL (“Psychiatric Diseases”))) AND (LIMIT-TO (DOCTYPE , “ar”))	Scopus
‘occupational health’/exp OR ‘named groups by occupation’/exp AND ‘multimedia’/exp OR ‘educational technology’/exp AND ‘mental health’/exp OR ‘mental disease’/exp AND ‘article’/it	Embase

The search was conducted by two independent researchers who standardized the descriptor use sequence and compared the obtained results. To guarantee access to the papers in their entirety, they were accessed through the journals portal of the Brazilian Coordination for the Improvement of Higher Education Personnel (CAPES), in an area with an Internet Protocol (IP) recognized by Universidade Federal do Piauí.

The studies found were imported into the bibliographic reference management software Endnote Web to exclude the duplicates. Soon after, the *Rayyan* QCRI[10] application was used to read the titles and abstracts, exclude the papers that did not respond to the research question, and select the papers that met the criteria for a full reading.

To extract and synthesize the information in the selected studies, the International Network of Nursing in Occupational Health (Red ENSO) form was adapted.[11] The following information was extracted: publication year, country, journal, language, theoretical framework, number contemplated workers, worker category to which the technology is intended, study design, study objective, evidence level, technology, technology classification, and outcome.

The evidence level was determined through the following classification: level I – meta-analysis of controlled and randomized studies; level II – experimental study; level III – quasi-experimental study; level IV – descriptive/non-experimental study or with a qualitative approach; level V – case or experience report; level VI – consensus and expert opinion.[12]

The technologies involved in health work were classified as follows: light, which are those related to bond generation, autonomization, reception, management as a way to govern work processes; light-hard, as in the case of well-structured knowledge that intervenes in health work, such as medical clinic, psychoanalysis, and epidemiology technologies; hard, as in the case of technological productions of the machine, rule, and organizational structure type.[13]

Initially, 458 publications were identified, and, after applying the inclusion and exclusion criteria, eight papers were selected for the sample in

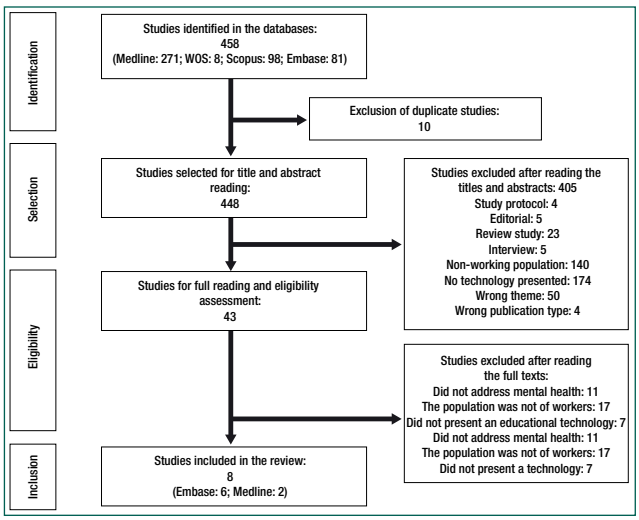

Figure 1. Flowchart of primary study selection, devised from the PRISMA recommendations

this review. The recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)[14], presented in figure 1, were followed to select the publications.

For being an integrative review, this research was not submitted to the Research Ethics Committee; however, the ideas of the authors of the publications used in developing this study were maintained. The critical analysis and qualitative synthesis of the selected studies were performed descriptively.

Results

Eight papers were selected, two (25.0%) from MEDLINE/PubMed and six (75.0%) from Embase. Six (75.0%) of them had been published in medical journals, one (12.5%) in a nursing journal, and one (12.5%) in a psychology journal.

All texts included were written in English. Regarding the study designs, four (50.0%) were randomized studies, one (12.5%) was a methodological study, one (12.5%) was a multimethod study, one (12.5%) was an intervention study, and one (12.5%) was a cohort study. Regarding the evidence level, four (50.0%) publications were classified as level I, two (25.0%) as level III, and two (25.0%) as level IV. Only one of the produced technologies (12.5%) was classified as light, while four were light-hard (50.0%), and three were hard (37.5%).

Regarding the number of contemplated workers, the studies varied, with populations ranging from 30 (12.5%) to 142 (12.5) workers.

Of the eight primary studies included, only two substantiated the construction/development of the technology in different theoretical frameworks: the theory of planned behavior and the cognitive behavioral approach.

Chart 2 presents the types of mental health technologies developed for or directed at workers, besides the year, country, objective, outcome, and category of the workers involved with the study.

Relative to the themes addressed by the technologies, it was observed that depression and dementia were each contemplated in two studies (25.0%). The abuse of alcohol and other drugs, autism spectrum disorders, anxiety disorders, and the stigma related to mental health were each addressed in one study.

Discussion

Health Worker interventions, especially regarding mental health, seek to transform the production processes, turning workers into health promoters to guarantee the comprehensive health care of workers, considering their insertion in production processes. However, such activities are still performed incipiently; these activities may be aimed at building educational technologies.[23]

Regarding the study designs, this research made it evident that four studies (50.0%) were randomized.[17,19,20,22] This result corroborates the fact that there is a need for more significant scientific rigor and precision in the results, besides the establishment of the cause-effect relationship when technologies are used.[24]

Concerning the scientific evidence level, six publications were classified as level II,[15,17,19-22] corresponding to the randomized clinical trials. This research approach is the most powerful tool to assess the efficacy of an intervention, be it related to

Chart 2. Synthesis of the papers in the review according to technology, year, country, objective, outcome, and worker category

Educational technology	Year/country	Objective	Outcome	Worker category
Video[15]	United States/2002	To analyze the efficacy of a new training program to improve the detection of depression by the nursing team in long-stay institutions.	There was a significant improvement after the intervention; the professionals maintained their skills.	Nursing Team
Video[16]	United States/2008	To present a video-based educational program intended for pediatricians to recognize and respond to depression in adolescents in primary care.	The overall feedback on issues related to the DVD and adolescent mental health was considered positive.	Pediatricians and pediatrics residents
Software[17]	United States/2010	To implement an interactive, web-based multimedia educational program for professional caretakers in nursing homes.	The professionals presented knowledge gains and agreed or totally agreed with the statement that they were "more confident about my skills" after the training program.	Nursing Team
Software[18]	United States/2013	To develop and empirically assess a web-based multimedia training program for mental health professionals about how to provide effective cognitive-behavioral treatment for patients with anxiety disorders.	All participants agreed or strongly agreed that the tutorial expanded their knowledge of anxiety disorders.	Social workers and psychologists
Software[19]	United States/2014	To produce a multimedia training program based on online cases to teach primary care providers knowledge and skills related to alcohol, tobacco, and other drugs.	The training offered pre-test and post-test showed an increase in knowledge.	Physicians and Nurses
Video[20]	United States/2014	To develop structured didactic material to train emergency professionals about autism spectrum disorders and assess its efficacy.	The data showed a statistically significant post-training trend of acquiring knowledge and subjective guarantee to respond to the needs of patients with autism spectrum disorders.	Physicians and Nurses
Video[21]	United States/2019	To assess the effect of a video elaborated to demystify mental health treatment about the barriers to seeking care among the military.	There was no significant difference between the groups in reducing the stigma.	Marines
Written and multimedia material[22]	Hong Kong/2020	To assess the feasibility of an intervention trial designed to investigate the effects of a continuous professional education program using Facebook on dementia knowledge and care.	In the post-intervention assessment, the participants from this group demonstrated a knowledge gain.	Health workers in general

a clinical treatment or, as in the case of the studies highlighted in this review, a technology.[25]

Substantiated by the critical, creative, and transformative perspectives, technologies are instruments used to facilitate knowledge formation and allow for the participation of all in educational processes, especially in health, and, from this perspective, they present classifications. One publication was found referring to the use of light technologies, given that it addressed written material.[26]

The use of the written material in the analyzed clinical trial guaranteed to intervention participants significant knowledge gains concerning dementia compared to the control group, which only received the information via email. The presented technology proved highly accessible and flexible, without geographical or time restrictions.[22]

In turn, the hard technologies conform in themselves well-structured and materialized knowledge and practices, already finished and ready,[12] such as software; this classification is corroborated in a review about technologies aimed at senior citizens, demonstrated by the presence of health systems/software.[26]

The first software included in this research addressed contents referring to dementia, with correlated subjects that passed through the management of the behavior of people affected by the disease, care during the ingestion of food and liquids, pain treatment, and the most effective way to communicate with the studied population.[17]

In turn, the second software addressed anxiety disorders; it was divided into nine modules that describe both the theory and practice in handling patients with this pathology.[18] The third program was developed through the collaboration among experts on the abuse of alcohol and other drugs, and, in turn, was subdivided into two modules: the basic curriculum, referring to the importance of the software, the benefits of the motivational interviews, and the interventions and referrals available to addicts; the second module addressed the motivational counseling, including its definition, main guidance counselors, general concepts, and specific techniques.[19]

Upon addressing the theoretical frameworks, it is understood that they are elements that potentialize the expected educational reach, and, hence, as in an integrative review on senior citizen health technologies,[6] this investigation also verified fragility regarding the theoretical foundation, given that only two papers pointed out the theory applied to build the technology.

In this scenario, as described in a bibliometric study, it is understood that theoretical substantiation consists of using concepts and principles that form a

logical chain of ideas and are useful to guide research development. Therefore, we stress that, in addressing Nursing research, one may draw upon an extensive possibility of using the theories built in this field to contribute to the practice, the reflection, and the analysis of what is used by researchers.[27]

Concerning the countries where the educational interventions were carried out in, a relevant production of technologies developed in the United States was found.[15-21] A scope review on mental health technologies also verified that the highest number of productions, as in this review, had been developed in the United States.[28]

The analysis of the papers evinces a scarcity of technologies for mental health education for workers, published mostly in medical journals.[15-20,22] Such a finding reflects the reduction of publications in the field of nursing concerning worker health, specifically regarding the production of educational technologies. From this scientific evidence, substantiated by a documentary study, it is verified that the work, which is considered an element that composes the identity of an individual, their experiences of pleasure and suffering, is a determining element with implications on the mental health of workers and needs to be researched by the science of Nursing.[29]

Educational videos were the most used educational technology in mental health directed at workers. The papers addressed scientific investigations that were able to determine the efficacy and viability of their use, demonstrating that their employment can increase worker knowledge.[15,16,20,21]

As demonstrated in an integrative review about the technologies used for the health education of deaf people, videos are considered efficient because they allow the visualization of phenomena through several techniques such as demonstrations and simulations, which contribute to the understanding of concepts through mental images or visual associations that are sometimes more realistic and interesting than the verbal description. Videos with educational purposes promote teaching and learning quality and increase the willingness to learn, memorize, and acquire specific teaching skills.[30]

The new psychoeducational strategies such as videos and software are being widely employed in public health as health promotion tools, aiming to offer information on a given phenomenon, its development, or its characteristics. It is a way to combine educational strategies for the process of developing skills, attitudes, and knowledge.[31]

In addressing the worker categories for which the technologies are intended, it was obtained that most involved health professionals,[15-20,22] among which the technologies are directed specifically to the Nursing team.[15,17]

In the development of the nursing work process, as highlighted by an integrative review on the use of technologies in the permanent education in nursing, the understanding and mastery of educational technologies may contribute to one's everyday work, enjoying their benefits for the better quality of one's practice due to their being new devices for the interlocution between everyday knowledge and practice so as to collaborate with the permanent education of such professionals.[32]

About the themes addressed by these technologies, we stress that depression and dementia were the most contemplated.[15-17, 22] In a randomized trial carried out in Austria by applying a depression-themed video technology, it was observed that it helped reduce the disease and promoted personal knowledge and skills regarding the theme,[33] as seen in the results of the studies discussed herein.

Upon addressing dementia among formal and informal workers typically called caregivers, an investigation carried out in Duque de Caxias, Rio de Janeiro, Brazil, evinced the need for health education, given that caregivers often are unaware of appropriate conducts in the face of the manifestations of the disease and the care requirements. It was concluded that it is necessary to focus on educational aspects for which educational technology can promote in subjects the awareness of the actual situation and the realization of the practice of care, overcoming the view of a merely technical and abstract educational technology for workers.[34]

As a limitation of this study, there is the fact that the search was performed with descriptors in English, so papers that were not in this language and that would have been eligible to integrate the

sample were not retrieved. Including only studies that developed educational technologies in mental health also restricted the results for technologies directed at workers on other themes.

Conclusion

The scientific evidence points out that, of the technologies used for the health education of workers, there was a predominance of educational videos, followed by software. Moreover, the themes addressed in more studies were depression and dementia. The studies showed that the contents and information of the technologies were understood by the workers and that there was effectiveness in their use. The geographic scope of the studies is pointed out as a gap in knowledge, given that most of them were developed in the United States, indicating how fragile the production of technologies involving the studied theme has been in other countries such as Brazil. Moreover, it was observed that relevant themes such as suicide, still so present in the population, were not addressed by the technologies, thus corresponding to a gap among the papers read. Lastly, given the few educational technologies in mental health directed at workers, the conduction of studies developing such technologies, especially through experiments, is suggested.

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