

Evidence-based digital technologies for mental health intervention among construction workers: A systematic literature review

Justus Ngala Agumba¹, Oluseyi Julius Adebowale²

¹Tshwane University of Technology, Pretoria, Staalsartillerie Road, South Africa ²Tshwane University of Technology, Pretoria, Staalsartillerie Road, South Africa

agumbajn@tut.ac.za

Abstract

Mental health issues pose a global challenge within the construction industry. The implementation of digital interventions to treat and aid workers with psychological problems has garnered attention. This paper aims to investigate using digital technologies as interventions to support the recovery of construction workers from mental health-related challenges. The methodology for article selection in this systematic review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Article searches were conducted on Scopus, Google Scholar, Science Direct, and Web of Science databases.

The potential of digital technologies to aid in the recuperation of mental health among construction workers was explored. The evaluation involved three outcomes: the psychological/mental illness/disorder being treated, the digital intervention methods employed, and the effect on the mental health recovery of construction workers after implementing these technologies.

The findings revealed that smartphones and mobile apps were the predominant digital methods used for intervening in the treatment of mental health issues among construction workers. The study established that technology has the potential to assist construction workers struggling with mental health challenges, particularly in recovering from suicidal ideation. However, the persistence of a self-stigma mentality remained an obstacle. This review exclusively incorporated evidence-based research articles to draw its conclusions. Consequently, further research on a broader scale is imperative to validate these findings.

Keywords

Construction workers, digital technology, mental health

1. Introduction

The United Nations' sustainable development goals, acknowledge the importance of healthy lives and the promotion of well-being for all ages, for improved health (United Nations, 2015). However, mental disorders, such as schizophrenia, depression, anxiety, personality disorders, and substance abuse, remain a leading source of disability, healthcare expenditure, and personal suffering in all countries (Saxena et al., 2013). In South Africa mental health disorders in the construction industry require attention (National Institute for Occupational Health, 2020), which is influenced by abnormal thoughts, emotions, behaviour, and relationships with others. Most of these mental disorders can be treated (World Health Organization, 2017). However, evidence of treatment gaps for mental disorders exists in both high and middle-income countries (Saxena et al., 2013).

Despite the treatment gaps, the psychological treatment of mental health problems is changing. This transformation is driven by the availability of "digital technology" (Fairburn & Patel, 2017). These technologies provide the public, medical professionals, and researchers with new avenues to access help, track progress, and enhance understanding of mental well-being (National Institute of Mental Health, 2019). Mobile health (m-health), electronic health (e-health), and 'smart health' play a significant role in ensuring that mental health receives attention within the global health agenda (Mills & Hilberg, 2020).

The WHO Mental Health advocated for a minimum 20% increase in service coverage for severe mental disorders by the year 2020, emphasizing the importance of technology in promoting self-care (World Health Organization, 2013). A quarter of construction employees in the United Kingdom (UK) have contemplated suicide, and between 2011 and 2015, more than 1,400 construction workers died by suicide (World Health Organization, 2019). Considering this challenge, this paper aims to ascertain the digital technology employed to address mental or psychological disorders among construction workers.

2. Method

PRISMA framework was adopted (Moher et al., 2009) to aid in reviewing relevant literature. The review embraced a scientific research methodology to evaluate research outcomes. Restricting the search to the last two decades, from 2003-2023 reflects the current state of knowledge and practices in the field. The databases yielded 38 documents. Trial keyword searches showed that these databases cover areas relevant to digital technologies for mental health intervention among construction workers. The literature search was conducted using several keywords: "Mental health" AND "Construction Worker" AND "Technology" AND ("Intervention" or "Treatment") to name a few. The search query was performed within the articles fields i.e., titles, abstracts, and keywords. Considering these search to just one of the three fields.

Scopus, Scholar, Science Direct, and WoS, databases were preferred for searching as they contain construction and H&S publications (Babalola et al., 2019). Only journal articles and conference papers were retained for this study as they contain comprehensive scholarly literature (Hosseini et al., 2023). After screening the 38 publications, 3 articles were found to be satisfactory. Articles written in languages other than English, in press, and duplicates were eliminated. The inclusion and exclusion criteria used in a previous study (Babalola et al., 2019) were adopted to select articles per their relevance to the research objective. The rating scale consisted of the numbers 0=no relevance, 1=little relevance, 2=medium relevance, and 3=high relevance by analyzing their abstracts. In the context of the study objectives, 3 articles received a quality assessment rating of "medium to high relevance".

3. Results

The utilization of digital technology to aid construction workers dealing with mental disorders is presently in its infancy stage. Only three research articles addressing the use of digital technologies to treat mental disorders among construction workers were found. Previous studies assessed the viability of wristband-type wearable sensors to monitor the physical and mental well-being of construction workers. The sensors hold the potential for the early identification of stress-inducing factors in construction workers (Jebelli et al., 2018). To contribute to laying the groundwork in the research field, the three evidenced-based studies retrieved in this study make some key findings, i.e., smart-phone intervention to address mental stigma, the impact of a multimodal, community-based program for suicide prevention in the construction industry, using MATES in Construction (MIC) program, and the relationship between an electronic mental health stigma campaign and suicidal thoughts and behaviours.

4. Discussion

4.1 Digital technologies used

The evidence obtained in the articles revealed the technologies used were smartphones, digital mobile apps, and telephone calls. This is consistent with the opinion of a previous study (Fairburn & Patel, 2017), indicating that "digital technology" using computers, the internet, mobile devices such as smartphones, and mobile software apps is revolutionizing how mental health is being treated.

Smartphones as technology, possess the potential to serve as a digital tool aiding construction workers grappling with self-stigma. Through discrete access to online resources, skill development applications, and remote mental health support, smartphones can mitigate isolation, enhance competencies, and offer confidential assistance, consequently ameliorating the challenges of self-stigma within this workforce (Milner et al., 2018). The MATESmobile app was used to assist workers who had suicide ideation. It can provide vital aid to construction workers experiencing suicidal thoughts. The app can effectively intervene, providing timely assistance and fostering

a safer environment for these workers (Milner et al., 2020). Within the context of using smartphones as digital technology to address self-stigma among workers and the utilization of the MATESmobile app for assisting workers with suicide ideation, these programs exhibit a multifaceted approach, blending various modes of intervention and community social engagement.

Empirical evidence, exemplified in the study on MATES in Construction program, highlights its effectiveness in boosting mental health awareness, encouraging help-seeking behaviours, and lowering suicide risks (Gullestrup et al., 2011). This substantiates the viability of such multimodal approaches.

4.2 Mental disorders treated with the technologies

In the construction industry, suicide ideation has been of great concern among its stakeholders (Milner et al., 2019). Prevalence of self-reported mental health effects among bricklayers and supervisors include a high need for recovery after work, distress, depression, and post-traumatic stress disorder (Boschman et al., 2013). Workers who reported stress related to the stigmatization of mental health problems were at the greatest risk of high psychological distress. Stress associated with the stigma attached to mental health problems predicted high psychological distress [19].

The prevalence of mental health self-stigma and suicide ideation among construction workers thrive in an environment that discourages open expression of emotional struggles. Technological tools, such as smartphone apps like MATESmobile, can provide confidential and accessible avenues for seeking help, breaking down barriers of shame and isolation. These interventions address the demanding job conditions and limit mental health resources, offering timely support and resources to mitigate self-stigma and alleviate the risk of suicide ideation.

4.3 Effects of technological interventions on construction workers

Smartphones impact on self-stigma

Self-stigmatization can be treated using different methods. In a study using smartphone in Australia (Milner et al., 2018). The electronic Contact and Connect stigma reduction program was not effective in reducing self-blame, shame, and help-seeking inhibition among a participating sample of male construction workers in Victoria, Australia.

MATES in Construction impact on suicide prevention

MATES in Construction is a program to assist in the suicide prevention of construction workers. The interventions in MATES were multimodal approach. This incorporates face-to-face contact and telephone engagement as a follow-up service. The researchers established that there is evidence to support the social validity and effectiveness of MIC for improving suicide and mental health awareness, help-seeking behaviour, and treatment engagement, thereby reducing the suicide risk for construction workers in Queensland, Australia.

Blended digital technology to prevent suicide ideation

A blended digital technology using the MATESmobile app offers the potential to enhance the effects of face-to-face training, resulting in greater skills and knowledge in suicide prevention, as well as a reduction in suicidality and distress (Bowers et al., 2019). MATESmobile application, together with face-to-face training, is beneficial in enhancing help-seeking intentions from MATES workers/connectors and workmates to a greater extent than face-to-face training only (Boschman et al., 2013). The Contact and Connect electronic stigma program was not effective in reducing thoughts about suicide, communication about suicide, or suicide among construction workers (Milner et al., 2020). This suggests the need for a better understanding of the relationship between stigma and suicidality in future studies.

5. Conclusions

Only three research articles were reviewed that matched the required criteria to establish the evidence of the use of digital technology as an intervention for assisting construction workers with mental health disorders. This suggests, that there have been few formal studies undertaken globally to inform the construction industry stakeholders of the digital technologies interventions to assist construction workers who are suffering from mental health. Hence, the industry is in its infancy in understanding the impact of digital technology on the different mental health challenges that construction workers are facing globally. Furthermore, the intervention of using digital programs is not sufficient to inform the construction workers of its impact on their mental illnesses. The studies reviewed only focused on suicide ideation and self-stigma.

However, it recommended encouraging the use of digital technology in assisting its workers diagnosed with mental health disorders for them to be assisted in their recovery process. The authors advocate digital technology to

be used as a viable tool because of future pandemics as in the case of measures such as social distancing to prevent the diffusion of the virus and hopefully assist in preventing mental challenges of construction workers.

The number of research articles to derive credible findings was limited. This suggests that the findings should be interpreted with caution and advocates for more research to be conducted to justify digital technology's influence in assisting construction workers with mental health disorders to recover.

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