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MSc Public Health and Social Care in Practice

THE EFFECTIVENESS OF DIGITAL MENTAL HEALTH INTERVENTIONS IN REDUCING WORK-RELATED BURNOUT AMONG OFFICE WORKERS IN ENGLAND : A SYSTEMATIC REVIEW

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DECLARATION

I, PRIYANKA DOMALAPALLY declare that this dissertation has been completed by myself, that the work contained herein is entirely my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or qualification, in whole or in part, except as specified.

Signature: Priyanka.
Date: 14-05 2025.

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Signature: Priyanka.
Date: 14-05-2025.

ABSTRACT

Background: Work-related burnout is an increasing problem in contemporary workplaces, especially among office workers who encounter rising workloads, high-performance expectations, and digital overexposure. Digital mental health is useful for treating pressure, despair, and anxiety in the workplace, but undertakings and engagement with these interventions remain a concern.

Aim: The aim of this research is to evaluate the effectiveness of digital mental health interventions in minimising work-related pressure and reducing burnout among employees in England.

Methods: A total number of 12 cross-sectional and longitudinal studies have been selected from databases like Tandfonline, Sagepub, PubMed, Frontiers, ACM Digital library, Springer, NCBI, Frontiers, and Taylor & Francis. Additionally, search terms like “work-related issues”, “stress”, “burnout”, “mental-health intervention”, “England workers”, “workplace culture”, and “reduction of stress”.

Results: The National Health Service (NHS) in England discovered that nearly 46.8% of healthcare workers are feeling unhealthy due to work-related stress, depression, and anxiety. In such a context, interventions like online intervention, Mindfulness-based interventions (MBIs), and Psychoeducation Interventions help facilitate enhanced mental health in the work settings via interactions and support from others as components of therapy.

Conclusion: Employee mental health and well-being are registered to be improved by personalising digital interventions that enable them to promote workplace distress and increase job satisfaction. The research is significant for leaders in healthcare organisations to comprehend their lacking in executing mental-health interventions among workers and fix these shortcomings.

Keywords: “work-related stress”, “mental-health interventions”, and “England workers”.

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ABBREVIATIONS

- UK: United Kingdom
- DMHIs: Digital mental health interventions
- VR: Virtual Reality
- COVID-19: Coronavirus Disease of 2019
- CBT: Cognitive Behavioural Therapy
- IAPT: Improving Access to Psychological Therapies
- PICO: Population, Intervention, Comparison, Outcome
- PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses
- CASP: Critical Appraisal Skills Programme
- MMAT: Mixed Method Appraisal Tool
- JBI Checklist: Joanna Briggs Institute Checklist
- DTS: Digital Transformation Stress
- ITP: IT proactive stance
- MBIs: Mindfulness-based Interventions
- MBSR: Mindfulness-based Stress Reduction
- MBCT: Mindfulness-based Cognitive Therapy
- DMBSH: Digital Mindfulness-based Self-help
- ICD-11: International Classification of Diseases
- DTS: Digital Transformation Stress
- EFT: Emotionally Focused Therapy
- ACT: Acceptance Commitment Therapy
- PS: Pre-scheduled
- JIT: Just-in-time
- DBT: Dialectical Behavioural Therapy
- ICT: Information and communication technologies
- DT: Digital Transformation
- NIHR: National Institute for Health Research
- DTSS: Digital Transformation Stress Scale

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 Introduction to the topic

The concept of work- related burnout has been defined as the degree of physical and psychological fatigue and exhaustion that is perceived by the person as related to their work (Canu et al., 2020). As per the study of Moscu et al. (2023), work-related burnout is a growing concern in modern workplaces, particularly among office workers who face increasing workloads, high performance expectations, and digital overexposure. The workload management and job control were significant predictors of employee well-being and job performance. It has been observed that within the UK, only 10% of employees in the UK feel engaged with their jobs indicating the need for interventions for reducing the issues of workplace burnout (Bhaimiya, 2024). In this context the concept of digital mental health interventions is necessary.

According to Park, Sigmon and Boeldt (2022), digital mental health interventions (DMHIs) refer to a technology-based interventions in the form of mobile apps, web-based programs, virtual reality (VR), wearable devices, or video games. It has been observed that the rise of digital mental health is effective at treating stress, depression, and anxiety in the workplace, uptake of and engagement with these interventions remains a concern (Carolan and Visser, 2018). This indicates the office environment of the UK is stressful and employees have less engagement rate which needs to be mitigated through applying DMHIs. Thus, this research has focused on the exploration of the effectiveness of DMHIs in reducing burnout among office workers in England.

1.2 Background and Current Context

Workplace burnout

The workplace burnout is considered as an occupational phenomenon that results from chronic stress in the workplace which has not been successfully managed. Burnout is also considered as an occupational related syndrome developing psychological risk for workers (Edú-Valsania, Laguía and Moriano, 2022). As per the report of Bhui et al. (2016), within the UK especially in England nearly 440,000 employees have complained about the high work-related stress, anxiety or depression in between 2015 - 2016. Within the recent context, it has been found that 24% of employees experienced work-related stress on a weekly basis in East of England (Stewart, 2020) *(see Figure 1)*. These insights revealed the chances of employee burnout within England has been increasing day by day. In this regard, Belloni, Carrino and

Meschi (2022), has mentioned that office workers in England witness unique stressors, including long working hours, high job demands, and limited autonomy, all of which contribute to burnout. These factors also increase the concerns of poor individual confidence level, anxiety, social dysfunction, and risk of clinical depression. This has initiated the needs of developing policies and intervention for employees which also have a particular focus on their mental health. As per the survey conducted by Mental Health UK (2024), nearly 91% of UK workers have reported that they experienced high or extreme levels of pressure or stress in the past year.

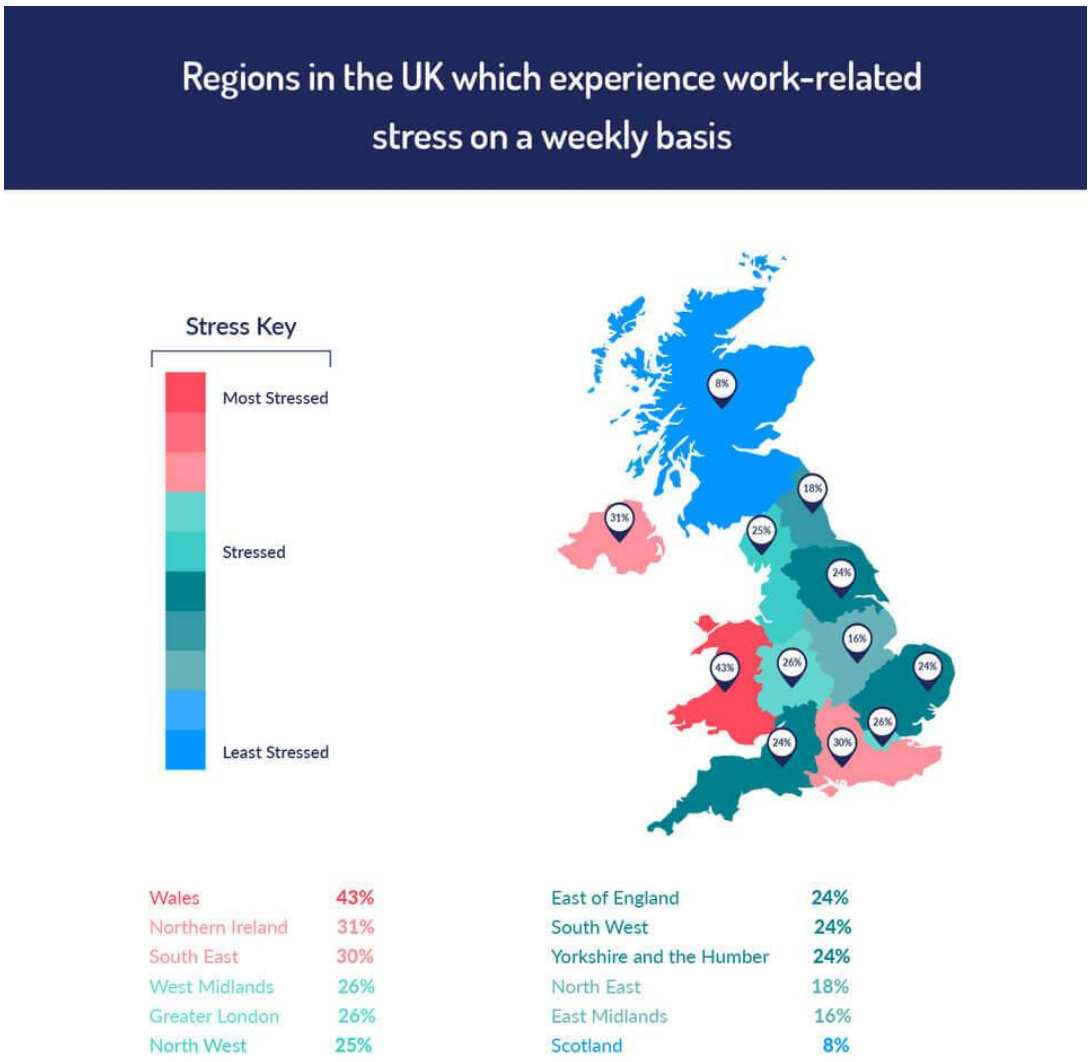

Figure 1: Employees experience work-related stress within the UK as per regions

(Source: Stewart, 2020)

According to Kangas, Pensar and Rousi (2023), the increasing rate of employee burnout due to the high rate of workplace stress has been accelerated through the shift from work from

office to remote or work from home process. Remote working has blurred the boundaries among work and non-work domains by eliminating the personal and professional life differences. This evolution during COVID-19 has posed challenges to disengaging from work and may lead to extended workdays and an unhealthy pressure to always be on-duty and available (Kangas, Pensar and Rousi, 2023). This indicates that external factors such as COVID-19 have impacted the workplace culture and working system which ultimately increase the stress level of workers along with blurring of work-life boundaries.

The report by Dugan (2023), has mentioned that more than half of workers in England have stated that it becomes more intense and 61% employees feel exhausted at the end of the working day. This indicates a worse workplace situation, and in this regard Gonzales (2024), has also stated about the organisational aspects such as high workplace burnout increases absenteeism, lower job satisfaction, and even long-term health problems, which ultimately reduce their productivity resulting in poor organisational performances.

Digital mental health Intervention

Digital mental health intervention mainly involves some activities performed through technological tools and using virtual platforms such as computers, smartphones for improving the mental health of an individual user (Gega et al., 2022). In contrast to that Cameron et al. (2024), has further stated that there are some other factors which influenced the effectiveness of the implementing digital mental health intervention such as type of technology, guidance, recruitment, tailoring, and demographics characteristics of different employees. According to van Orden et al. (2022), this digital mental health intervention enables the offerings of mental therapy for reducing workplace anxiety disorder and depressions in a personalized way, rather than traditional mental therapy usage. It has been observed that at the time of COVID-19, the utilisation of digital mental health intervention offers a safer alternative to face to face treatment by including use of digital platforms, video conferencing and other mobile communications (Philippe et al., 2021). As per the study of Cameron et al. (2024) and Lam et al. (2022), the most common type of digital intervention was cognitive behavioural therapy (CBT), Web-based blended psychoeducation, mental health intervention program, counselling and more *(Refer to Figure 2)*. All these digital mental health interventions are effective to reduce work-related burnout offering beneficial solutions for managing workplace stress and other psychological problems of employees.

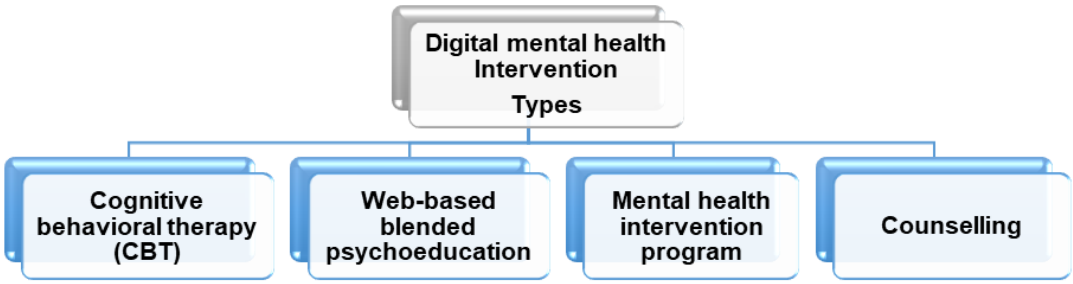

Figure 2: Types of Digital mental health intervention

As per the study of Svärdman, Sjöwall and Lindsäter (2022), online CBT is psychotherapy based on the CBT principles offered through the Internet to an individual who is accessible only remotely. The utilisation of this type of digital mental health intervention tools offers benefits for reducing workplace stress and other psychological issues of remote workers. On the other hand, Lam et al. (2022), has remarked that web-based blended psychoeducation intervention programs are beneficial in reducing workplace burnout and stress and promoting mental health literacy at the workplace. As per the report of Gagliardi (2024), 75% of employers within the UK had initiated employee assistance programs for managing employee mental health.

Thus, this study aims to systematically review existing literature to assess the impact of DMHIs, situating the findings within current research on workplace mental health strategies.

1.3 Rationale for Research or Problem Statement

The increasing prevalence of burnout among office workers, exploring digital solutions is essential. As per the report of Clark (2023), approximately 875,000 workers in the UK have reported work-related stress, depression or anxiety in 2022 and 2023 *(Refer to Figure 3)*. This highlights that the high workplace stress has initiated the concern of workplace burnout. It has been observed that the UK has been considered as a burnt-out nation, with a alarming number of people taking time off work due to poor mental health caused by stress (Llach, 2024). This has been justified as Bhaimiya (2024), mentioned that 90% of employees working in the UK organisations are quitting their jobs because of intense work pressure and lower rate of

engagement. All these statistical insights offer the existence of workplace burnout issues which need to be addressed for developing a positive workplace environment within the organisations. As per the study of Moe-Byrne et al. (2022), digital interventions have effectively improved employees' psychological wellbeing and reduced stress at the workplace. Thus, the reason behind conducting this study is to explore the effectiveness of DMHIs in workplace mental health management.

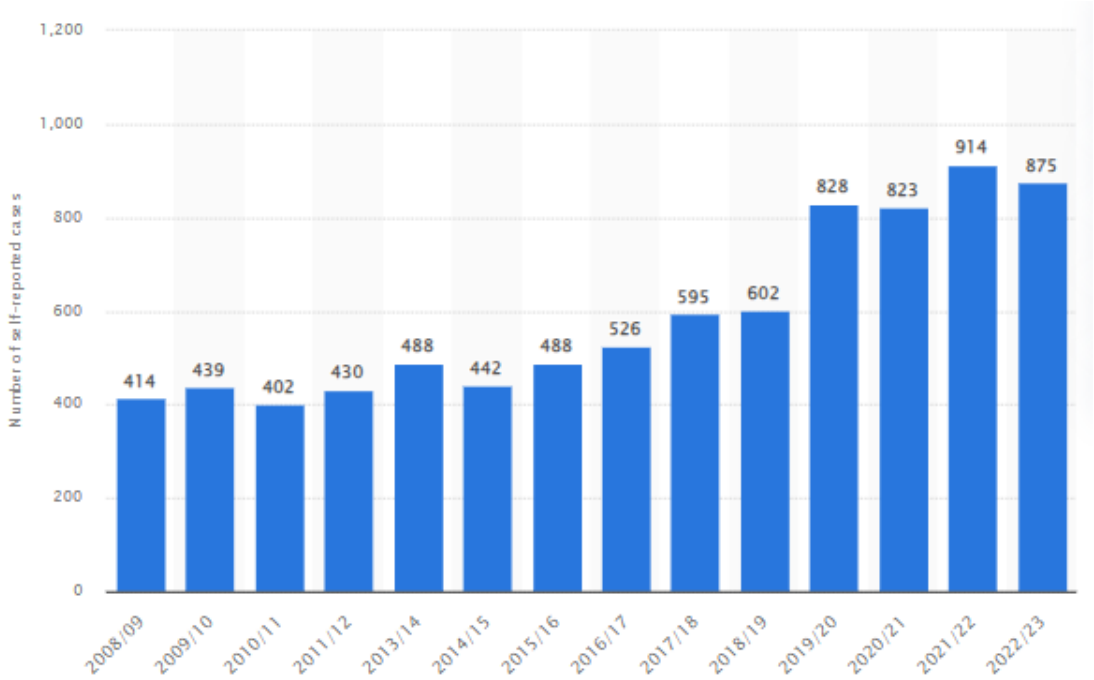

Figure 3: Number of workers reporting work-related stress in Britain 2008-2024

(Source: Clark, 2023)

1.4 Research question

What is the impact of digital mental health interventions on lowering employee burnout among England office workers who experience stress at the workplace?

1.5 Research Aim

The aim of this research is to evaluate the effectiveness of digital mental health interventions in minimising work-related pressure and reducing burnout among employees in England.

1.6 Research Objectives

- To investigate the importance of different digital mental health interventions in reducing burnout levels among England office workers in several

organisational settings.

- To identify whether particular aspects of digital interventions have the most effects on stress reduction and productivity among workers or not.
- To evaluate the advantages of incorporating digital mental health interventions within the workplace of England to improve employee satisfaction.

1.7 Chapter summary

This chapter offers the rationale behind conducting the study aiming to explore the efficacy of DMHIs on workplace burnout reduction. It has been summarised that within the UK, the majority of the employees feel work stress due to intense pressure, which initiates the risk of anxiety, depression and other psychological disorders resulting in workplace burnout. The involvement of digital mental health intervention may reduce employee burnout. The chapter two is going to critically review some academic and scholarly published works related to the study area for developing the foundation of the study.

CHAPTER 2: Literature Review

2.1 Introduction to Literature Review Chapter

One of the most crucial parts of a research project is the literature review, as it provides a written summary of significant works of literature and other reliable sources pertaining to a particular topic. It facilitates the connection between the key ideas and variables and the way they were operationalised. The study foundation is on the analysis of literary sources, which would aid in obtaining a deeper understanding regarding the effectiveness of DMHIs on workplace burnout reduction. This section will identify gaps and provide a conceptual framework for establishing the relationship between the key constructs of the research.

2.2 Literature review

2.2.1 Synopsis of Digital mental health intervention and its key features

The utility of 'Digital Mental Health' intervention has increased in recent days due to the rapid use of technologies, such as smartphone applications, Virtual Reality (VR), computer interfaces, and wearables, offer unique opportunities for improving employee mental health that often cannot be achieved in traditional face-to-face settings (Mertens and Van Gelder, 2025). As per the view of Philippe et al. (2021), interventions in digital health have potential for treating mental health issues that have been effectively used during the pandemic to improve depression, anxiety, and psychological well-being among individuals working within firms having high workloads and stress. For instance, several poly digital tools such as Wysa chatbot, is utilised by companies for offering personalised solutions to individuals addressing their psychological issues (Bond et al., 2023). The reviewed study has focused on the descriptive elaboration regarding the digital mental health intervention however limitedly aligned its effectiveness on employee well-being within organisational aspects. Therefore, digital mental health interventions offer personalised mental health care for individuals to reduce psychological issues and help them gain positive mental well-being.

2.2.2 Prevalence of Workplace Burnout Globally

According to Vankar (2023), half of the workers around the world are struggling with burnout as overall 73% of employees have high-stress levels, which leads to workplace burnout. In the UK, 71% of employees witness high workloads and stress levels and those who work within the firm operating under the hotel, food services and hospitality industry have the highest burnout rate worldwide (Dyvik, 2024)., Ibrahim et al. (2021), have stated that after COVID-19 workplace burnout within the healthcare sector was estimated in the range between 11% to

60% in hospital settings and 25% to 35% in public health settings. Thus, it has been observed that in a worldwide context, the existence of high work pressure and job stress is leading to an increasing rate of workplace burnout.

2.2.3 Role of digital interventions in mental health support among employees

As per the study of Cameron et al. (2024), digital intervention has been considered crucial because it has the potential to assess various mental health symptoms and conditions of employees such as ‘stress’, ‘anxiety’, ‘depression’ and ‘burnout’. However, the efficacy of digital health interventions was found to be influenced by demographics, recruiting, customising, guidance, and technology type. Howe et al. (2022), stressed that smart wearable devices have garnered attention for their ability to offer direct, real-time support to employees trying to change their thoughts, feelings, and behaviours. Based on the same, employees can access support at the time they feel stressed through self-guided meditation or symptom management.

On the other hand, it has been observed that organisations are recently utilising these interventions for not only offering personalised care however also making positive employee wellbeing a strategic focus for their organisations (Brassey et al., 2021). This ultimately improves employee productivity and also accelerates better organisational outcomes. As per the view of Zuberbuhler et al. (2025), digital interventions also ‘improved access to health information’, ‘community building’, ‘perception shifts around health’, and ‘improved communication among professionals’ led to better psychological conditions. These reviewed literary pieces have elaborated on the significance of digital intervention within organisational aspects but did not explore interactions between ‘mechanisms’ and ‘cultural aspects’ influencing implementation. Therefore, digital intervention has helped employees improve their psychological well-being by managing work stress and also improving overall organizational outcomes.

2.2.4 Impact of Digital mental health intervention particularly on measuring stress reduction and productivity improvements

A significant reduction in occupational stress is necessary for better employee productivity. According to Kulkarni, Chong and Lam (2023), the utilisation of digital mental health intervention significantly reduced the stress and increased motivation and productivity of employees through organisational support programs aiming to minimise emotional distress and improve psychological health. The lower rate of job stress increased the positive mental well-being of employees and helped them to focus more on their work ultimately increasing

their production rate. Similarly, Christina et al. (2023), have mentioned a specific digital intervention such as ‘EMPOWER digital interventions’ considered a multimodal intervention addressing ‘wellbeing’, ‘work stress’, ‘mental and physical health problems’, and ‘work productivity’.

On the other hand, Olawade et al. (2024), have remarked about the emerging technical tools such as Artificial Intelligence which enhances early intervention by offering personalised treatment plans for individual employees decreasing higher levels of distress, and absenteeism leading to better workflow and production. Patel et al. (2022) and Lam et al. (2022), has expressed a different viewpoint as the online Cognitive Behavioural therapy is the most effective intervention reducing employee depression and anxiety disorders. In the UK, employees avail the CBT through ‘Improving Access to Psychological Therapies’ (IAPT)’ for addressing the stigma and stress issues. However, these previous studies focused on exploring some specific intervention and its impact on stress management and increasing productivity such as EMPOWER digital interventions and Cognitive Behavioural therapy, lacking the generalised findings. Thus, based on these the Digital mental health intervention offers psychological support to reduce work stress facilitating better mental conditions improving their productivity.

2.2.5 Role of digital mental health intervention on the enhancement of employee well-being and satisfaction

Aazami et al. (2015) has stated that psychological distress and job satisfaction are related. The best predictor of ‘psychological distress’, ‘sleep disturbances’, ‘headaches, and gastrointestinal issues’ is ‘job satisfaction’. As per the study of Cameron et al. (2024), virtual therapy offers proper access of employees to mental health support by arranging stress management, and mindfulness programs. Employee mental health and well-being is found to be improved by personalising digital interventions. These digital interventions help them to reduce workplace distress and increase their job satisfaction level. Additionally, Zuberbuhler et al. (2025), has remarked digital interventions enhances ‘psychological well-being’ and ‘work efficiency’, reducing ‘stress’, ‘depression’, and ‘anxiety’, and achieving moderate treatment effects on various ‘mental health conditions’ of employees. It has been observed that compared to employees who communicated in person, those who interacted over the phone or online reported higher levels of satisfaction with their basic psychological requirements and well-being (Zuberbuhler et al., 2025). This indicates that due to its personalised features the digital intervention increases the efficacy of stress management for increasing job satisfaction.

In this context, Moe-Byrne et al. (2022), has mentioned that Digital mental health interventions in the workplace improves employee well-being and job satisfaction by offering accessible, personalised support for mental health challenges, potentially leading to increased productivity and reduced absenteeism. Majority of these reviewed studies particularly focused on the relation among employee wellbeing, job satisfaction and digital intervention which limits the development of generalised results. Therefore, digital intervention reduces psychological issues of employees offering mental support and increased their wellbeing that led to better job satisfaction.

2.2.6 Significance of implementing Digital mental health intervention for improving work culture and reducing workplace burnout

Implementation of digital mental health intervention has been considered as the most effective tools for improving employee wellbeing by reducing their job stress and other issues along with increasing job satisfaction level and productivity (Kulkarni, Chong and Lam, 2023; Zuberbuhler et al., 2025). According to Wu et al. (2021), digital mental health intervention majorly offers access to mental health support, breaking the stigma surrounding mental health discussions in workplaces. These have helped organisations to create a positive workplace culture, which fosters an inclusive and supportive nature. For instance, AI driven chatbots like Woebot as DMHI is used by simulating human speech to provide convenient care for those with depression. It also provides users with companionship and information relating to self-help. (Meadows, Hine and Suddaby, 2020). This has foster open communication within organisations promoting better workplace culture.

As per the study of Speicher and Francis (2022), inclusive and supportive workplace culture that involved transparent communication, better employee well being, satisfaction resulted in reduced employee turnover and workplace burnout. Organisation-driven interventions included efforts to increase ‘teamwork’, ‘decision making’, and ‘distribution of the workload’ facilitating a ‘supportive workplace environment’. However, these selected studies have elaborately investigated the effectiveness of some specific mental health applications, which need further in depth explorations. Therefore, implementing Digital mental health intervention is crucial for establishing positive work culture through increasing inclusivity and employee well being significantly reduce workplace burnout.

2.2.7 Influence of reduced workplace burnout on the long-term sustainability of firms and employee retention

Workplace burnout has become a critical challenge for organisations, impacting employee well-being, productivity, and overall business performance, which is reduced through digital mental health intervention application. According to Wirabuana Putra, Pono and Wahda (2023), employees experiencing lower stress levels are more motivated, engaged, and productive in their roles. This has also enhanced their emotional wellbeing, which makes them stay for longer periods within the organisation. Additionally, Peicher and Francis (2022), has mentioned that burnout is a leading cause of high employee turnover and reduction of burnout resulting in lower turnover rates and talent retention.

According to the Special Committee on Health, Productivity, and Disability Management (2009), a healthier workforce reduces medical claims, compensation costs, and productivity losses, contributing to financial sustainability. It has been observed that employers have lower health care costs and productivity losses by implementing intervention for having a productive and healthy workforce. For example, organisations take part in the Workplace Well-being Index, which is administered by Mind, a mental health organisation with headquarters in the UK, to learn more about the way staff members see workplace mental health initiatives (OECD, 2022). This reduces medical treatment costs, showing positive cost benefit ratios resulting in sustaining the longterm success. Therefore, the reduction of workplace burnout led to a mentally healthy workforce driving higher retention, improved productivity, cost efficiency, and business resilience.

2.2.8 Theoretical underpinning

Job Demands-Resources (JD-R) Model

Job Demands-Resources (JD-R) Model generally evaluates the way job demands and resources affect employee well-being (Bakker & Demerouti, 2007) ***(Refer to Figure 4).*** Based on these aspects of the model, it can be stated that the high workloads, pressure and emotional stress considered as job demand contribute to workplace burnout. On the other hand, digital mental health intervention, emotional support mitigates their stress and improves their wellbeing. Thus, the application of the theory has helped the study to investigate the way DMHIs function as job resources to counteract burnout caused by excessive job demands in office environments.

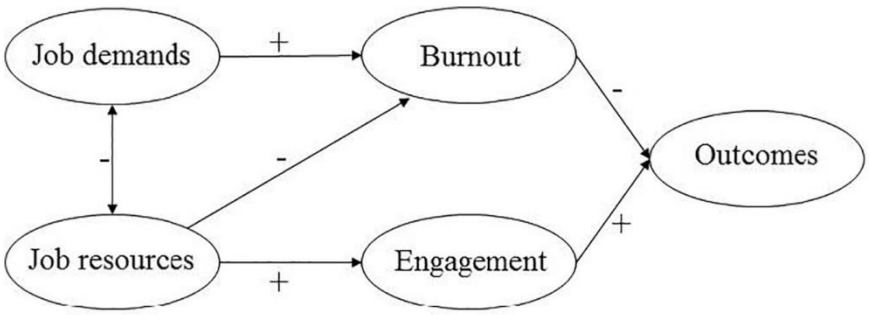

Figure 4: Job Demands-Resources (JD-R) Model

(Source: Kaiser et al., 2020)

2.2.9 Literature gap

Existing and reviewed literary pieces are majorly focused on assessing the effectiveness of digital mental health intervention on reducing workplace burnout however limitedly explored its direct impact on office workers. Previous literary sources also limitedly investigated significance of digital intervention on mental health in particular to the scenario of UK workplaces. However, this study addressed endeavour to address gaps in prior sources by assessing effectiveness of digital mental health interventions in minimising work-related pressure and reducing burnout among employees in England.

2.3 Chapter summary

It has been summarised from the above reviewed literary pieces that the inclusion of digital mental health interventions effectively increased employees job satisfaction, mental wellbeing and productivity by reducing their work stress and stigma. These reduced workplace burnouts led to having a loyal workplace and sustaining long term growth of organisation by retaining talent and reducing medical labour costs. The next chapter is going to discuss the methodological choices of the study and rationale behind the choice.

CHAPTER 3: METHODOLOGY

3.1 Chapter Overview

This chapter presents the chosen methods and the way study was designed along with justification behind those choices which ensures transparency and replicability of the study (Swarooprani, 2022). This chapter is going to highlight the methodological steps the considered study performs for conducting systematic literature review for assessing the effectiveness of digital mental health interventions in minimising work-related pressure and reducing burnout among employees in England. This section offers a comprehensive view of search strategy, databases used for searching articles, inclusion and exclusion criteria while selecting articles for garnering data along with ethical considerations.

3.2 Systematic Literature Review (SLR)

3.2.1 Definition and purpose of SLR

Systematic Literature Review is a process that allows the collection of relevant evidence on the particular topic that fits the pre-specified eligibility criteria and an answer to the formulated research questions (Mengist, Soromessa and Legese, 2020). According to Azarian et al. (2023), in order to reduce individual bias in research synthesis and increase the aspect of rigour, systematic literature reviews, or SLRs, are being used. In the context of this study, the SLR has been conducted here to identify whether particular aspects of digital interventions have the most effects on stress reduction and productivity among workers or not without involving any biases.

3.2.2 Steps for achieving comprehensive conduction of SLR

The correct execution of a systematic literature review generally involves the 10 steps and among these seven are the most important (Martinez et al., 2023). This includes formulation of a research question, developing a protocol, searching for all relevant studies, applying the selection criteria, and extraction of the data. After that, synthesising the data and finally writing and publishing a report.

Thus, this study will also follow these steps during the execution of SLR to assess the role of digital mental health intervention in reducing work stress.

3.3 Search Strategy

3.3.1 Definition of search strategy

According to Mengist, Soromessa and Legese (2020), the term search strategy refers to the process used for searching for relevant information about a specific research topic. The search strategy helps to define appropriate search strings and identify the relevant databases to collect the relevant documentation.

3.3.2 Process of a comprehensive search and time limit

At first, well-structured research questions were developed using common tools namely PICO (Population, Intervention, Comparison, Outcome) and from there, keywords have been generated for making search questions. In the next stage some specific databases have been chosen along with making selection criteria, and from there based on those relevant research studies have been searched (Tawfik et al., 2019). Tawfik et al. (2019), mentioned that PICO is usually used for systematic review and observational study for formulating research question reading interventions. This research study has used PICO as it also aimed at exploring the effect of digital mental health interventions on lowering employee burnout among England office workers who experience stress at the workplace. The study has also involved only the articles published 10 years from 2025 within the overall search results from multiple databases.

3.4 Search terms

3.4.1 Definition and importance of search terms

Search terms can be defined as the keywords, free-text synonyms and phrases used to identify relevant studies within databases and other research sources (Bramer et al., 2018). The proper execution of SLR depends upon the search terms as it guarantees to return the relevant literature to answer the research question. It was mainly developed to narrow down the searching process for ensuring it miss outs the irrelevant studies (Kuckertz and Block, 2021). In this study some keywords and synonyms have been generated after In contemplation to the PICO framework and then used for article search.

3.4.2 Importance of using synonyms in searching

According to Jia and Liu (2018), search strings is expanded using synonym and hypernym relations, to improve the paper search process. Additionally, the initial study selection is enhanced by determining relevance of a paper and research using text similarity analysis *(Figure 1)*. In this study synonyms of keywords have been used for searching appropriate studies regarding digital mental health interventions.

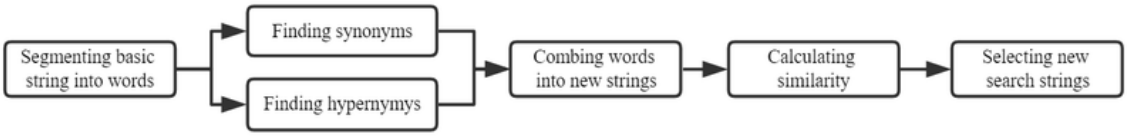

Figure 5 : The process of expanding search string through using synonyms

(Source: Jia and Liu, 2018)

3.4.3 Explanation of PICO framework and the process of using it for search

The PICO model is also frequently used as a tool for structuring clinical research questions in connection with evidence syntheses. It generally answers four questions such as population, intervention, control or comparison and outcome (Scells et al., 2017). This study used PICO as it has core relevance to digital mental health intervention and since, Scells et al. (2017), mentioned PICO led to both time and cost savings at the time compiling systematic reviews.

Table 1: PICO/PEO Framework

Population/ Problem	Population : Office worker or employees of England Problem: Work-related stress, depression or anxiety, stigma
Intervention	Digital mental health intervention (DMHI)
Context	The application of digital mental health intervention generally done by employers for reducing mental health issues among the office workers. Office workers generally have several mental problems such as work-related stress, depression or anxiety, stigma due to high workload and pressure. The application of DMHI helps to improve the mental wellbeing of workers by addressing those aforementioned issues.
Outcome	The proper use of DMHI positively will influence the mental health of workers though reducing workplace stress and other psychological issues. This will result in better employee satisfaction, motivation, productivity, retaining them within the workplace and eliminating the chances of high burnout.

Search question: What is the influence of digital mental health interventions on reducing employee burnout among England workers experiencing workplace stress, depression anxiety and sigma?

PICO	***Search using Boolean Operators***	***Combinations of keyword synonyms***	***Publishers***	***Author***
Population	Workers AND Work-related stress	Employees OR Labours	ResearchGate Tandfonline	(Nguyen et al., 2018)

	Office workers of England AND depression Office workers of England AND depression AND anxiety Employees OR stress OR anxiety Labours NOT physical health	Labours AND anxiety		(Carolan and Visser, 2018)
Intervention/issue	Digital mental health intervention AND Work-related stress	DMHI OR Digital intervention	Sagepub PubMed Frontiers	(Marsh, Vallejos and Spence, 2024)

	Digital mental health intervention NOT health intervention			(Taylor et al., 2022) (Lam et al., 2022)
Context	Digital mental health intervention AND mental wellbeing of workers Psychological issues OR anxiety Digital mental health intervention OR depression workplace stress NOT stress	Problems AND Digital mental health intervention Solutions OR Digital mental health intervention	Frontiers ACM Digital library	(Sun et al., 2022) (Weber, Lorenz and Hemmings, 2019) (Howe et al., 2022)

Outcome	DMHI AND mental health Employee satisfaction, AND DMHI and burnout Motivation OR Work pressure OR burnout Productivity AND DMHI AND metal wealth Workplace burnout NOT turnover	Mental wealth OR Psychological well being	Springer NCBI Frontiers Researchgate	Kulkarni, H., Chong, C. and Lam, M. (2023) (Makowska-Tłomak et al., 2022) (Adam et al., 2023) (Aye et al., 2024)

Table 2: Boolean search string

3.5 Key Words

3.5.1 Definition of keywords and importance of using those for searching process

As per the study of Moreno-Ortiz (2024), keywords are regarded as words and phrases that act as pointers, markers, indicators, or signposts to the contents to help to get an overview of

the whole content. The use of specific keywords is necessary for conducting SLR in order to search the appropriate and relevant articles for the study as most of the search engine involves the use of keywords (Corrin et al., 2022).

3.5.2 Main keywords used in this study for search

Office workers of England, Work-related stress, depression or anxiety, stigma, Digital mental health intervention, mental wellbeing of workers, psychological issues, employee satisfaction, motivation, productivity, retention, burnout.

3.6 Databases

3.6.1 Process of searching information

Information has been searched through the basis of topic question, breaking it down into keywords thereby using Boolean operators to complete the search process for retrieving articles from the considered databases.

3.6.2 Importance of using multiple databases

A database is an organized set of documents or information that is kept there so that individuals access it to find answers to questions. Databases must be used for performing SLR, and it has always been preferable to search articles across several databases.Several databases were used to facilitate effective searches for systematic reviews and to determine whether the published reviews' current practice is suitable (Bramer et al., 2017). Zhao (2014) has mentioned that compared to using a single database spanning a variety of relevant research subjects, employing many databases can yield more reliable findings, especially when it comes to publishing numerous articles.

3.6.3 Databases searched for conducting the particular study

This study has involved several databases precisely retrieving publications from Tandfonline, Sagepub, PubMed, Frontiers, ACM Digital library, Springer, NCBI, Frontiers and Researchgate for searching articles.

The key databases used	***Google Scholar, Springer, ACM digital library***
Publishers	***Author***

ResearchGate Tandfonline	 (Nguyen et al., 2018) (Carolan and Visser, 2018)
Sagepub PubMed Frontiers	(Marsh, Vallejos and Spence, 2024) (Taylor et al., 2022) (Lam et al., 2022)
Frontiers ACM Digital library	(Sun et al., 2022) (Weber, Lorenz and Hemmings, 2019) (Howe et al., 2022)
Springer NCBI Frontiers	Kulkarni, H., Chong, C. and Lam, M. (2023) (Makowska-Tłomak et al., 2022)

Researchgate	(Adam et al., 2023) (Aye et al., 2024)

Table 3: Databases and chosen articles

3.7 Inclusion/Exclusion Criteria

The inclusion and exclusion criteria are essential because they ensure that the research study has chosen articles which are rigorous and consistent. As per the study of Patino and Ferreira (2018); Mengist, Soromessa and Legese (2020), using the inclusion and exclusion criteria, papers that comply the inclusion criteria were chosen for additional research and content evaluations. On the basis of inclusion and exclusion criteria, research studies assess the way they affect the external validity of research results or findings. Based on these, the current study has also set an inclusion and exclusion criteria for selecting the studies for conducting SLR in order to explore the way digital mental health intervention reduces workplace stress and eliminates burnout.

3.7.1 Inclusion Criteria

- Articles have the core relevance with the research topic
- Articles published within the timeframe of 2015-2024.
- Articles have proper author affiliation.
- Articles only available in English language.
- Articles published in authentic databases such as Google Scholar, Springer, ACM digital library.

These abovementioned criteria have been determined and articles which have met those criteria were only included in this study for conducting SLR.

3.7.2 Exclusion Criteria

- Articles have no relevance with research subject areas and variables.
- Articles published before the year 2015.

- Articles not having author affiliations.
- Articles available in other languages except English.
- Articles published in inauthentic databases such as blogs, educational web portal.

The abovementioned criteria have been set as exclusion guidelines and articles that fall under these criteria were discarded here as it may hamper the reliability and credibility of the research results.

3.8 Search Results

This research study has included 12 articles for the systematic review and from those articles the results have been developed. This study has used the PRISMA flow chart for eliminating the irrelevant articles gathered from the search results *(Refer to Figure 2)*. According to Mishra and Mishra (2023), the PRISMA checklist summarizes the screening procedure, which speeds up and increases the effectiveness of systematic reviews. PRISMA criteria are also beneficial, when doing a critical evaluation of published systematic reviews. In this study the search process has offered a total of 150 articles and from them 30 articles have been initially removed for unavailability of proper author affiliation. After that, from the remaining 120 articles, 50 articles and 20 articles have been also removed for outdated data and lack of similar backgrounds and interventions respectively. From the rest of 50 articles 20 have been removed for unavailability of full text and 18 for inclusion of other languages. In this way finally 12 articles have been selected for executing SLR and explore the role of digital mental health intervention in reduction of workplace stress among workers.

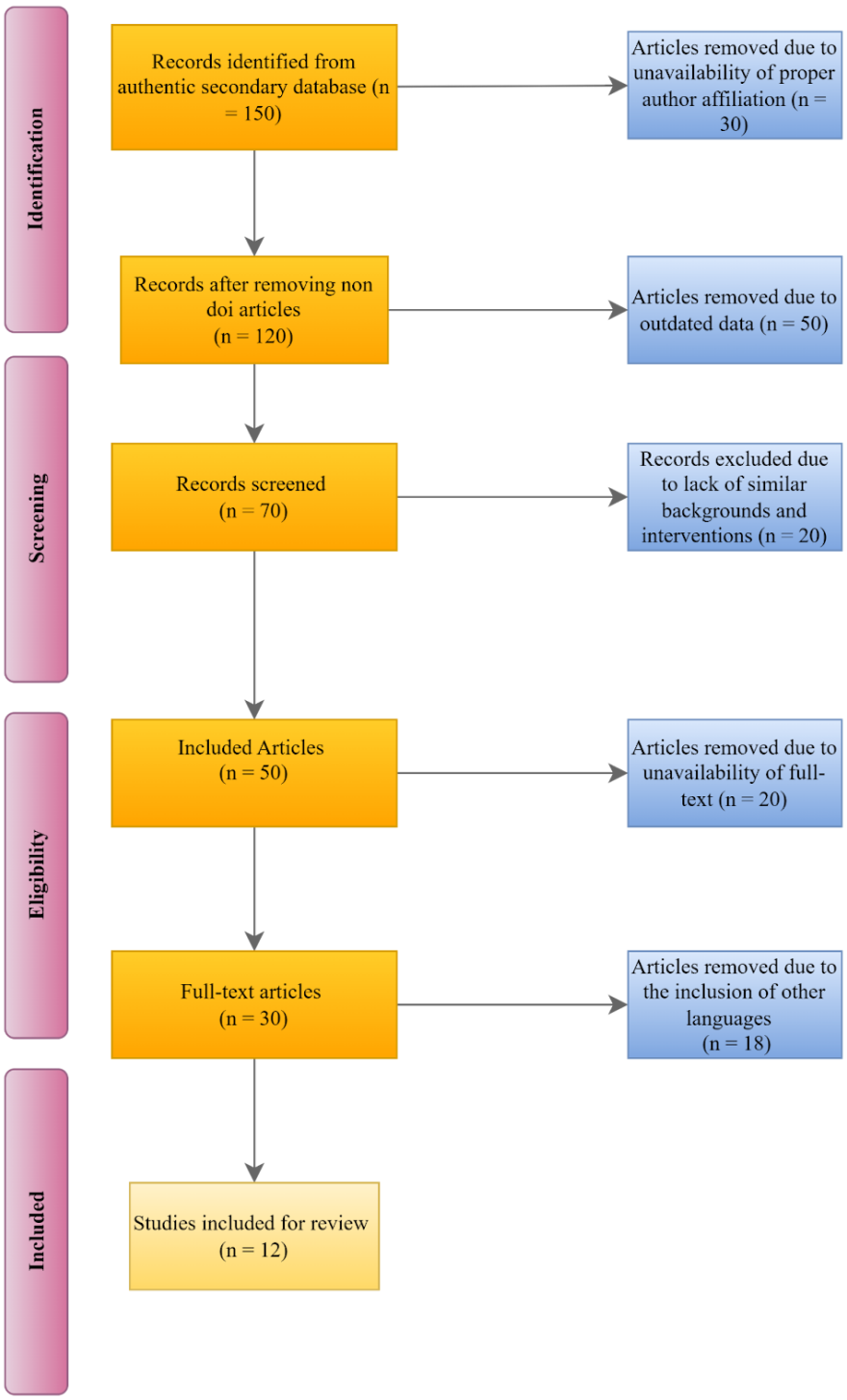

Figure 6 : PRISMA Flow Chart

3.9 Ethical Considerations

This study has conducted SLR by involving secondary qualitative data which may raise the concern of copyright and academic misconduct. The current study has adhered to all of the guidelines and specifics without alternating or manipulating the meanings of information of the

referred articles. In accordance with the requirements of the Copyright, Design, and Patent Act (1988), the information used in this study was sourced from legitimate and publicly available databases. This action was done to give the study' findings more legitimacy and to make use of accurate data supported by reputable databases and sources. The Copyrights, Design and Patent Act (1988) states that the constitutional clause enlists specific rules to prevent unauthorized reproduction of intellectual property and ideas (Government of UK, 1988). The results from the existing literature have been properly recognized with a well-organized list of references. Additionally, the authors of the information provided in this study have been acknowledged through intext citation, to maintain the integrity of the research. The chosen studies have undergone ethical approval prior to its publication in consideration of providing unique and generalisable findings using relevant data collection tools.

3.10 Chapter Summary

This systematic literature review involved selection of 12 articles from various databases. The research process has been conducted using PICO, Boolean search string and PRISMA framework. The next chapter is going to develop the findings by extracting the data from chosen articles and evaluating those.

CHAPTER 4: DATA EXTRACTION AND EVALUATION

4.1 Introduction to Chapter

The data evaluation chapter is also recognised as the data analysis chapter, which serves as the medium between methodology and findings while explaining the way data supports or opposes the research hypotheses or questions (Cheong *et al.,* 2023). The chapter involves data extraction, CASP tool for qualitative data, the JBI checklist for quantitative data, and MMAT (mixed method appraisal tool) for both to analyse and retrieve data for systematic analysis. The chapter will select 12 studies to meet the research questions regarding the role of digital mental interventions in the reduction of staff burnout due to work-related stress for office workers working in England.

4.2 Data Extraction

Data extraction is considered to be the process of retrieving information or data from diverse sources for analysis and processing of those data (Büchter, Weise and Pieper, 2020). The data extraction of table has included a total number of 12 studies including the keywords, aim, method, sampling and data analysis, country, and main findings *[See Appendix 1]*.

4.3 Brief introduction to critical appraisal and paper quality assessment

Critical appraisal within the study focuses on thorough evaluation of methodology and results to ensure the validity and reliability of the sources that have been considered for the research. The critical appraisal within is crucial for understanding the extension of arguments outlined within the research for assessing the quality of studies and papers to derive significant judgment in the appraising paper (Aveyard, Preston, and Farquhar, 2023).

On the other hand, consideration of paper quality assessment and shares in determining the quality appraisal of the research method ensures in determining the trustworthiness and usefulness of the data and sources effectively (Tran *et al.,* 2021). The inclusion of paper quality assessment contributes and understanding the reliability of the findings that have been derived from existing sources and its viability in the current research.

4.4 Critical Appraisal Tools

The study has employed both secondary qualitative and quantitative sources for deriving the findings aligning with the research question. In this context, the CASP tool is being considered

within the section for assessing the quality source, reliability and credibility of information (Long, French and Brooks, 2020). This involves questionnaires and segments within the assessment process that evaluates the trust coordinates and relevance of the results that have been published among the papers. Similarly, JBI critical appraisal is considered to assess the reliability of quantitative studies, emphasising the risk of bias and validated constructs with 10 questionnaires (Munn *et al.,* 2020). This supports in evaluating the methodological quality of the considered sources, which can address in enhancing of internal validity and ensure the trustworthiness and relevance of the published papers within the study.

Similarly, MMAT (mixed method appraisal tool) is considered for this research for assessing the quality of studies employing a mixed method approach. According to Hong et al. (2018), MMAT (mixed method appraisal tool) is reviewed to be the critical appraisal tool which has designed to evaluate the methodological quality of quantitative, quantitative along with systematic reviews. The undertaking of these appraisal tools has been significant and effective in checking and collecting the quality data from authentic sources.

4.5 Evaluation of Qualitative Studies

The study has adopted Critical Appraisal Skills Programme (CASP) to check the quality of the qualitative studies which have been selected by this research. According to Stack, Symonds and Kinsella (2021), there are two major appraisal tools for qualitative assessment which are CASP and McMaster Critical Review Form. In this account, Jundi and Sakka (2017), justified and stated that CASP tool provides a systematic, structured approach to critical appraise research. Additionally, the tool ensures a comprehensive evaluation of the results, validity, and applicability which directs to more evidence-based and informed decision-making. On the other hand, Long, French and Brooks (2020), argued that CASP tool has the potential to oversimplify along with a focus on reporting instead of study conduction.

However, Campbell et al. (2023), explained that the CASP checklist is relatively easy to use while making it accessible to a large user base. On the contrary, Wells et al. (2014), reviewed that McMaster Critical Review Form supports evaluating the rigor and the quality of the studies by assessing aspects like methodology, data collections, data interpretation and analysis. Despite these abilities of McMaster Critical Review Form, unlike CASP tool, it has the potential to form bias in interpretation while focusing on a particular research design and requires extensive expertise for effective utilisation (Ducat and Kumar, 2015). This indicates that the selection of the CASP as an appraising tool to check the quality of the qualitative studies have been highly beneficial in this research. In this research CASP tool has been used through 12 scales to check quality of the studies which are related to questions, design, recruitment,

matched control, test procedure, outcome used, bias measurements, confound factors, analysis, statistical data presented, results, and interpretation to existing evidence *[See Appendix 2]*.

These selected qualitative studies have been appraised based on these aforementioned scales. A total number of two qualitative studies have been chosen for the conduction of research. These studies have been carried out by authors namely, (Carolan and Visser, 2018) and (Adam *et al.,* 2023). The below CASP table highlights that literature of (Carolan and Visser, 2018) is found to meet almost every quality scale except confound factors, however, the article of (Adam *et al.,* 2023) has met the criteria of confound factors effectively. On the other hand, the literature of (Adam *et al.,* 2023) failed to meet criteria for recruitments which has been significantly focused by the article of (Carolan and Visser, 2018). Apart from these, both articles reported with clear focused questions, appropriate research design, outcome, and bias measurements. Beside this, the literature of (Adam *et al.,* 2023) further failed to meet test procedures, and statistical representation which has been properly fulfilled by (Carolan and Visser, 2018).

As a result, the article of (Carolan and Visser, 2018) seemed to acquire more significance with the highest score of 11 whereas the articles of (Adam *et al.,* 2023) scored 9. This further implies that the literature of (Carolan and Visser, 2018) holds the more quality data as compared to the literature of (Adam *et al.,* 2023). Thus, it can be stated that the present study has found more reliability and credibility of the (Carolan and Visser, 2018).

4.6 Evaluation of Quantitative Studies

This research has undertaken a JBI Critical Appraisal Checklist as an appraisal tool to check the quality of the quantitative studies. According to Munn et al. (2020), the JBI Critical Appraisal Checklist is considered the appraisal tool that is significant for research to evaluate the trustworthiness, relevance, and results of published literature. In further examination, Porritt, Gomersall and Lockwood (2014), explained that the JBI Checklist helps to scrutinize the various aspects of studies which are biases like measurement bias, selection bias, and reporting bias which have the potential to compromise results. The checklist recognises the strengths and weaknesses of quantitative studies and allows researchers to make more informed decisions centered on the available evidence. On the other hand, Kolaski, Logan and Ioannidis (2023); Shaheen et al. (2023), added that the JBI checklist is a standardised tool that ensures a transparent and consistent appraisal process while encouraging rigor and

reproducibility in evidence synthesis. This indicates the adoption of the JBI Critical Appraisal Checklist has been significant and beneficial for this research to qualify and quantify the studies.

In this research, a total number of 9 quantitative studies have been selected and qualified by using the JBI Critical Appraisal Checklist. These quantitative studies are (Nguyen *et al.,* 2018), (Marsh, Vallejos and Spence, 2024), (Taylor *et al.,* 2022), (Lam *et al.,* 2022), (Sun *et al.,* 2022), (Weber, Lorenz and Hemmings, 2019), (Howe *et al.,* 2022), (Kulkarni, H., Chong, C. and Lam, M., 2023), and (Makowska-Tłomak *et al.,* 2022). The overall aim of this study is to evaluate the results of website attractiveness while understanding the relationship between particular dark side effects and employee wellbeing within the digital workplace. These articles have further focused on the usefulness of an unguided digital MBSH app (Headspace) in lessening healthcare worker anxiety while examining the effectiveness of the "Workplace Web-based blended psychoeducation mental health intervention program". This literature also highlighted how mobile health intervention reduces and handles stress at work while preventing burnout in healthcare experts with the help of digital applications.

In the case of the article of (Nguyen *et al.,* 2018), the study involved primary quantitative method mode tailoring of a total of 563 samples. Among these 264 were younger adults and 299 were older adults. The research has adopted cross-sectional study design to perform the investigation throughout a shorter period. The article by (Marsh, Vallejos, and Spence, 2024) also surveyed 142 workers about their experiences with the impact of the dark side of digital working. The study has further adopted a cross-sectional study design to conduct the overall research. Correspondingly, Taylor et al. (2022), also adopted primary quantitative by sampling 2182 National Health Service staff in England through randomised controlled trials. The research has adopted a rigorous study design to perform the research. The literature (Lam *et al.,* 2022) performed primary quantitative by sampling 456 workers in specific sectors associated with high levels of work-related burnout and stress through phase III wait-listed cluster randomized controlled trial and cross-sectional study design. Besides this, a primary quantitative method has also been undertaken by Sun et al. (2022) with a sample size of 349 while using Smart PLS software along with cross-sectional study design.

Furthermore, the article of (Weber, Lorenz, and Hemmings, 2019) has also conducted a survey among 678 different European private and public businesses in England, Germany, and Northern Ireland through the survey software Qualtrics. The research has undertaken a longitudinal experimental design to perform the overall study in two experimental conditions.

The study of (Howe *et al.,* 2022) also involved a primary quantitative method by sampling 86 males and females aged between 36-45 via random sampling and a four-week longitudinal study design. Similarly, Kulkarni, H., Chong, C. and Lam, M. (2023) have preferred primary quantitative methods through a pretest-post-tests randomized experimental design among 20 employees. Moreover, the article of (Makowska-Tłomak *et al.,* 2022) has adopted primary quantitative research with a sample size of 245 women and 313 men through convenience sampling and a longitudinal study design. This implies that all the chosen 9 quantitative studies have undertaken appropriate methodology which is the primary quantitative method and ideal to use in this systematic literature research.

In this research, all 9 quantitative articles have been assessed through the review scales related to clearly defined criteria for inclusion in the sample, detailed description of the study subject and setting, exposure measurement, uses of objectives and standard criteria for measurement, confounding factors, strategies to deal with confounding factors, validity and reliability of measured outcome, and appropriate statistical analysis *[See Appendix 3]*. The below table of the JBI Checklist highlights that (Nguyen *et al.,* 2018) and (Taylor *et al.,* 2022) scored 5 while meeting all similar review criteria a detailed description of the study subject and setting, uses of objectives and standard criteria for measurement, confounding factors, strategies to deal with confounding factors. These studies have further met the validity and reliability of measured outcome criteria, however, failed to meet criteria like clearly defined criteria for inclusion in the sample, exposure measurement, and appropriate statistical analysis. Additionally, the article of (Marsh, Vallejos, and Spence, 2024) and (Sun *et al.,* 2022), both scored 7 by meeting all the review criteria except confounding factors. On the other hand, the collected article of (Lam *et al.,* 2022) scored 6 on the JBI Checklist by meeting criteria like detailed inclusion in the sample, validity, and reliability of exposure measurements, confounding factors, strategies to deal with confounding factors, validity and reliability of measured outcome, and appropriate statistical analysis.

However, the literature failed to meet the criteria like a detailed description of the study subject and setting along with uses of objectives and standard criteria for measurement. Similarly, the study of (Weber, Lorenz, and Hemmings, 2019) also scored 6, however, unlike (Lam *et al.,* 2022), it could not fulfil the criteria like strategies to deal with confounding factors and appropriate statistical analysis in the JBI Checklist. This has been a slight backdrop for this article even after meeting all the other required criteria. Regardless, this research has selected these two articles based on its other criteria which makes it more beneficial for this study to explore relevant and reliable data.

On the other hand, one of the most prominent articles evaluated through this JBI Checklist has been the article of (Howe *et al.,* 2022) which scored 7 by qualifying in all necessary criteria like detailed inclusion in the sample, validity, and reliability of exposure measurements, confounding factors, validity and reliability of measured outcome, and appropriate statistical analysis in JBI Checklist except strategies to deal with confounding factors. Apart from these, the study of (Kulkarni, H., Chong, C., and Lam, M., 2023), despite failing to address the uses of objectives and standard criteria for measurement along with strategies to deal with confounding factors, the study has scored 6 by meeting almost all the other criteria. Moreover, the article of (Makowska-Tłomak *et al.,* 2022) scored 5 for failing to meet the criteria like validity and reliability of measured outcome, confounding factors, and statistical analysis. Based on this aforementioned evaluation of the articles through the JBI Checklist, it has been observed that articles like (Marsh, Vallejos, and Spence, 2024), (Sun *et al.,* 2022), and (Howe *et al.,* 2022) have acquired high scores indicating their competitiveness in quality and reliability of data. Thus, it can be stated that though the overall research has depended on all 9 articles, these three articles are majorly evaluated and reviewed for data collection.

4.7 Evaluation of Mixed Methods Studies using any appropriate

The study has involved MMAT (mixed method appraisal tool) to accomplish the overall research by appraising the selection of mixed-methods studies. According to Keefe (2024), MMAT (mixed method appraisal tool) is designed to check the quality of systematic mixed studies. In terms of demonstrating the benefits of MMAT, Hong et al. (2018), highlighted that the tool focuses on the review of multiple methods of studies including qualitative and quantitative in a single tool which makes it unique. Additionally, Oliveira et al. (2021), explained that MMAT (mixed method appraisal tool) concentrates on the restricted numbers of primary methodological criteria and allows a more focused and efficient quality appraisal process.

On the other hand, Scott et al. (2019), argued that MMAT (mixed method appraisal tool) is a time-consuming tool that is complicated to use particularly for complex and lengthy research. However, Abad et al. (2021), demonstrated that, unlike other appraisal tools, MMAT involves particular criteria for mixed-method articles which ensures a thorough assessment of the integration of quantitative and qualitative approaches. On the contrary, Keefe (2024), argued that MMAT potential to lead to lower score studies as few questions of the research may not be applicable to particular types of mixed methods research. Despite these limitations, Hong et al. (2018), further justified and stated that MMAT involves clear and complete direction and recommendations for the utilisation while making it convenient to implement even after those critical and unfamiliar appraisals. This indicates that the involvement of MMAT (mixed method appraisal tool) seems to be ideal for this particular research to evaluate the quality of mixed-

methods studies. In this research, MMAT has been performed by undertaking specific scales related to research questions, the efficiency of collected data to meet research questions, the rationale for using mixed methods, integration of different components, divergency, and inconsistencies between qualitative and quantitative, and adherence of different components to quality criteria *[See Appendix 4]*. The articles of (Aye *et al.,* 2024) have been evaluated based on these quality scales. It has been observed from the below MMAT table, that the literature of (Aye *et al.,* 2024) has met all criteria for the quality checking excerpts divergency and inconsistencies between qualitative and quantitative and efficiency of collected data to meet research questions. Therefore, the particular study has been frequently used in this research to improve the quality and credibility of the sources.

4.8 Chapter Summary

Based on the overall evaluation chapter, it can be concluded that a data extraction table has been developed to demonstrate and validate the data sources. Additionally, the research adopted appraisal tools like CASP, JBI Appraisal Checklist, and MMAT (mixed method appraisal tool) have been adopted in this research to assess the quality of qualitative, quantitative, and mixed-methods studies. A total of 12 articles have been selected, among which 2 have been qualitative, 9 have been quantitative, and 1 has mixed-methods studies. These articles have been chosen centered on the review criteria and scales which are mostly related to the validity and reliability of the data, confounding factors, study design, ability of the collected data to address research questions, and measured outcome along with research questions.

CHAPTER 5: DATA ANALYSIS AND SYNTHESIS

5.1 Introduction to Chapter

Data analysis and synthesis involves interpretation of the gathered data to recognise the relationships and pattern between variables and then integrating derived findings to develop a coherent understanding of the research subject (Noyes *et al.,* 2019). This chapter is going to apply Braun & Clarke's six-step thematic analysis to generate code and themes to meet the research objectives.

5.2 Thematic Analysis

A thematic analysis is considered to be a technique that analyse qualitative and quantitative data by identifying the patterns and themes within the data to comprehend its significance and meaning. The technique is flexible that supports to organise and interpret data to answer to the research questions (Naeem *et al.,* 2023). The thematic analysis is significantly known as thematic synthesis while operating in a systematic literature review (Thomas and Harden, 2008). On the other hand, Kiger and Varpio (2020), stated that thematic analysis deliver context and acquired in-depth understanding of the qualitative findings while recognising and presenting the recurring patterns of data.

5.3 Data analysis tool

The research has chosen Braun & Clarke thematic analysis to conduct the analysis of the collected data with step-by-step process. In this account, Braun and Clarke (2006), stated that thematic analysis consists of six stages to code and generate themes which are familiarisation of data, generating codes, searching themes, reviewing themes, defining and naming themes, and writing up. The purpose of this Braun & Clarke thematic analysis is to recognise, analyse, and report themes with qualitative data while delivering a flexible method for exploration and interpretation (Byrne, 2021). This indicates that Braun & Clarke's thematic analysis is significant for identifying patters and generate relevant themes for research topic.

5.4 Characteristics of the identified studies

A total number of 12 studies have been selected for this research that have been conducted in different countries. Out of these 12 studies, 2 studies were from United Kingdom (Marsh, Vallejos & Spence, 2024; Taylor *et al.,* 2022), 1 study was from Amsterdam, Netherland (Nguyen *et al.,* 2018), 1 study was from Australia (Lam *et al.,* 2022), 1 study was cross-national (i.e., Germany, England, and Northern Ireland) (Weber, Lorenz & Hemmings, 2019), 1 study

was from Hong Kong (Kulkarni, Chong & Lam, 2023), 1 study was from Warsaw, Poland (Makowska-Tłomak *et al.,* 2022), and 1 study was from USA (Adam *et al.,* 2023). Moreover, 1 study was from Pakistan (Sun *et al.,* 2022) while the other 3 studies were conducted based on global perspectives (Carolan and Visser, 2018; Howe *et al.,* 2022; Aye et al., 2024).

5.5 The Six-Step Process for Generating Themes

Step 1: Familiarisation of data

Data familiarisation is evidential procedure of involving interpretation along with transcription of gathered data for the execution of the secondary qualitative research in SLR. In this research a total number of 12 articles have been chosen centred on the contribution of digital mental health intervention in the minimisation of staff burnout due to work-related stress for office workers in England to gain deep insights of the subjective area. Furthermore, the research has adopted thematic synthesise through coding and generating themes which has further directed for the collection and use of data throughout the investigation.

Step 2: Coding generation

In this stage, raw data have been extracted from the listed sources regarding the work-related stress for mental health among workers and also denoted them with three colours: “Green, Yellow and Red” according to their importance. *[Refer to Appendix 1].*

Step 3: Theme generation

The themes have been developed based on the raw data extraction from the authentic journals and also the coding of collected raw data *[Refer to Appendix 2].*

Step 4: Reviewing of the Themes

Based on the above two table of coding and theme generation, it has been observed that collection of data includes evidence-based data which further integrated with the relevance to the subject areas of the research. Additionally, the coding and theme generation table has supported to form an in-depth understanding regarding the role of different health interventions for reduction of burnout levels among workers in the organisational settings. Besides this, the coding has further directed the identification of the aspects of digital interventions hold the most effects on stress reduction and productivity among workers along with its benefits in employee satisfactions.

Step 5: Defining and naming themes

Theme 1: Different health interventions for reduction of burnout levels among workers

This theme is going to help in finding out the different types of interventions for decreasing the burnout and stress level of the workers.

Theme 2: Aspects of digital interventions hold the most effects on stress reduction and productivity among workers

This theme helps to identify different aspects of digital interventions which make the major effects on the reductio of stress level and productivity of the workers.

Theme 3: Advantages of integrating digital mental health interventions within the workplace for employee satisfaction

This specific theme helps to analyse the significance of the incorporation of digital interventions related to mental health in the workplace for increasing productivity among the workers by reducing stress level.

Step 6: Write up the themes

Theme 1: Different health interventions for reduction of burnout levels among workers

Mindfulness concerns globally bring nonjudgmental and curiosity awareness to present-moment experiences like feelings, thoughts, and physical sensations, according to their rise. In this context, Mindfulness-based interventions (MBIs) have been identified as the major intervention that contributes to handling individual stresses through cognitive therapy (Taylor *et al.,* 2022). Furthermore, access of workers to psychological treatments is deemed to be significant through the utilisation of digital mental health interventions within the workplace. These interventions are effective in improving psychological well-being along with workplace efficiency (Carolan and Visser, 2018).

Moreover, community-based like prevention, workplace, and early intervention of mental health issues are substantially important and the enhancement of the mental wellness of the working population has been the priority. In this sense, programs that are particularly designed for workers in the workplace hold great benefits regarding early recognition and intervention of mental health illness (Lam *et al.,* 2022). This indicates the major focus of healthcare organisations and organisations on mental health interventions that are able reduce burnout among workers.

Online interventions

The utilisation of online interventions is an important indicator of fostering satisfaction with digital health information which leads to favourable health-related outcomes (Nguyen *et al.,* 2018). Likewise, in comparison to traditional face-to-face interventions digital health interventions demonstrated anonymity and accessibility of the Internet which often allows individuals to access the treatment at a time and pace that is easy for them. These benefits have directed digital health interventions to be demonstrated as suitable for the workplace. These interventions are accessible through smartphones and computers (Carolan and Visser, 2018). For instance, the accessibility of WorkGuru, a Web-based stress management intervention is an "8-week modular program" that is centered on the standard of cognitive behavioral therapy (CBT), mindfulness, positive psychology, and problem-solving. The online platform involves 7 core modules along with 3 optional modules with interactive exercises, educational reading, audio, stress, a thought diary, and short animations (Carolan and Visser, 2018).

A statement highlights that "*intervention gave "flexibility to access the intervention at a time that you can fit into your work diary*." (Carolan and Visser, 2018, p. 4). This indicates that individuals are able to fit sessions according to their own timetable instead of having to fit in according to the therapists. Apart from these, 39% of the employees stated that they engaged with the interventions "well", 44% stated that they "not very well", and 17% found no login activity into the programs (Carolan and Visser, 2018). This indicates that an improvement is required in the online interventions to influence more individuals to engage with these programs to reduce burnout and stress in the workplace.

Mindfulness-based interventions (MBIs)

The National Health Service (NHS) in England found that almost 46.8% of healthcare employees are feeling unwell due to work-related stress, depression, and anxiety. In this account, the COVID-19 pandemic has further increased the level of distress and stress for healthcare employees (Taylor *et al.,* 2022). In this account, Mindfulness-based interventions (MBIs) are usually concerned with teaching mindfulness within an in-person group atmosphere via 8-week courses like "mindfulness-based stress reduction (MBSR)" and "mindfulness-based cognitive therapy (MBCT)" (Taylor *et al.,* 2022). These mindfulness practices along with teacher-led discussion as ingredients. The level of engagement with the MBIs is linked to the treatment results and the MBI mechanism of actions involves rumination, worry, mindfulness, and self-compassion (Taylor *et al.,* 2022).

On the other hand, digital mindfulness-based self-help (DMBSH) employing smartphone apps has the possibility to be specifically accessible as it does not count on the users having books or computers in their hands to engage. For instance, Headspace is a smartphone app with more than 70 million users to date globally (Taylor *et al.,* 2022). Furthermore, it has been also discovered that unguided digital MBSH while acting as a wide healthcare solution reduces the stress of healthcare workers (Taylor *et al.,* 2022). This indicates that healthcare interventions like MBIs, DMBSH, and unguided digital MBSH are the interventions that deal with possible risk factors related to work.

Psychoeducation Intervention

Burnout and stress have been the common occupational phenomena instead of medical conditions in the "International Classification of Diseases (ICD-11)" (Lam *et al.,* 2022). In this efficacy of account, interventions that are personally guided are seen to last only 6 months or less whereas interventions that are directed at the organisational level last for 12 months or longer (Lam *et al.,* 2022). This indicates that organisational intervention for reducing burnout is paramount for employees. In a similar context, it has been found that psychoeducation is considered to be an intervention with structured, systematic, and didactic insights transfer for a disease and its treatment while integrating motivational and emotional aspects to allow the patient to cope with the illness. Additionally, psychoeducation intervention has been more efficient in addressing mental health outcomes as compared to supportive therapy alone (Lam *et al.,* 2022).

On the contrary, it has been also explored that the "Headspace MBSH digital program" has been offering a range of mindfulness-based practices along with psychoeducational materials. This program is accessible through websites or apps available on the Android Play Store and Apple App Store (Taylor *et al.,* 2022). It signifies that organisations actively focusing on the development of digital psychoeducational interventions that can help organisational workers to release burnout at the workplace. Apart from these, Online psychoeducation also delivers the benefits of consistent treatments and support for individuals struggling with mental health problems even in hard times like the COVID-19 pandemic when personal connections are disrupted. In this account, The WPMHL program, workplace intervention program is a preventive measure for mental health issues and promotes uplifted mental health in the work settings. The program contains two main elements an organisational-directed consultant and an individual-directed psychoeducation course to address workplace issues (Lam *et al.,* 2022).

A statement underscores the "*effectiveness of a psychoeducation program used as an intervention strategy for mental health problems because interaction with and support from*

others are important elements of the therapeutic regime" (Lam *et al.,* 2022, p. 2). It significantly defines that psychoeducation programs use interactions and support from others as elements of their therapy to reduce stress among workers. On the other hand, programs like "The NHS Moodzone psychoeducational digital platform" offer evidence-based psychosocial advice, recommendations, and directions on the way to handle work-related burnout along with mental health issues effectively (Taylor *et al.,* 2022). The intervention is segregated into a few sections such as "What causes work stress?", "How to manage work stress?", "Learn to speak out", "Spot the signs of work stress", and "Who else can help with work stress?" (Taylor *et al.,* 2022). Each of these sections provides information and suggestions or directions relevant to the respective questions to minimise depression along with psychological distress. Thus, it can be stated that the aforementioned interventions are significant in reducing workplace stress and burnout among workers.

Theme 2: Aspects of digital interventions hold the most effects on stress reduction and productivity among workers

The increased numbers of workers depend on the digital workplace to accomplish work perfectly; however, the concern is surrounded by the well-being impacts of digital working. In this context, Fear of Missing Out has been the major factor driving employees to be more inclined to use the digitised workplace (Marsh, Vallejos, and Spence, 2024). Additionally, job demand has been another factor that holds physical, organisational, and social aspects of the job that need sustained mental and physical effort and are linked to particular psychological costs (Weber, Lorenz, and Hemmings, 2019). Furthermore, economic costs are also a significant factor for the requirements of workplace interventions that aim to minimise such losses for employers and employees both. This involves interpersonal conflict, workload, constraints at the workplace, and tensions about job insecurity which lead to absenteeism and productivity loss at the workplace (Kulkarni *et al.,* 2023).

Moreover, stressors like handling suffering patients, high workload, and other workplace-associated conflicts have been other aspects of digital workplace intervention that restrict organisations as well as employees from reducing stress and productivity among workers (Adam *et al.,* 2023). It indicates that these aforementioned aspects of digital workplace interventions are impacting the reduction of the stress and productivity of the workers.

Workers' mental health

The adoption of digital technologies is foundationally reshaping the way work happens in organisational settings while delivering greater flexibility and autonomy, however, in this case,

they potentially impact the mental well-being of employees (Marsh, Vallejos, and Spence, 2024).

Additionally, a narrative demonstrates that "*Overload and anxiety in relation to the digital workplace can contribute to employee technostress and may be detrimental to the psychological well-being of workers, despite the many benefits of the technology*" (Marsh, Vallejos and Spence, 2024, p. 2). This indicates that higher engagement with digital workplace negatively impacts the reduction of stress by causing continuous employee technostress and negatively impact mental well-being of workers leading to loss and reduction of productivity.

Furthermore, the global pandemic has further led employees to be more reliant on the digital workplace which leads to concern for the mental health of workers as dark sides digital workplace interventions. The elevation of digital workplace stress involves both the fear of missing out and an overload of information as adverse indirect effects on mental health (Marsh, Vallejos, and Spence, 2024). This indicates that aspects of the digital workplace lead employees towards information anxiety and information fatigue syndrome.

Job demands

Job demands have been one of the major aspects of digital workplace interventions that keep up with the mental and physical effects of job insecurity and interpersonal conflicts. On the other hand, job resources are demonstrated as those psychological, physical, social, and organisational aspects that foster functionality in meeting work goals, minimising job demands linked to physiological costs, and stimulating personal growth and development (Weber, Lorenz, and Hemmings, 2019). This is also identified as an aspect of digital workplace interventions that form anxiety among workers in terms of being ideal for a job. On the other hand, stress is reduced after the integration of digital workplace interventions, however, the solution is likely to negatively impact the thinking process of employees and reduce internal barriers that inhibit motivation and productivity. This not only impacts presentism but also creates conflicts in the interpersonal relationships at the workplace, whether it is with colleagues or managers (Kulkarni *et al.,* 2023). It signifies that though organisations are more likely to involve digital workplace interventions to reduce stress, high engagement with this kind of workplace leads to a loss of productivity in the long term.

Stressors

Burnout is viewed to be a work-related syndrome that includes depersonalisation, emotional exhaustion, and minimised personal accomplishments. In this account, the integration of digital workplace interventions among healthcare professionals leads to stressors like dealing with

suffering patients, high workloads, and other workplace-related problems among workers (Adam *et al.,* 2023). In 2020, the “Medscape National Physician Burnout and Suicide Report” expected that a burnout rate of nearly 43% among middle-aged physicians and women has been a more common symptom of burnout (Adam *et al.,* 2023). This indicates women while engaging highly with digital workplace interventions are more likely to experience burnout leading to lower professionalism, lower patient safety, and negative health consequences. It further leads to the loss of productivity among healthcare professionals. Therefore, it can be stated that aspects like stressors, job demands, and mental health of the worker in the context of digital workplace interventions are highlighted impacting the reduction of stress and loss of productivity.

Theme 3: Advantages of integrating digital mental health interventions within the workplace for employee satisfaction

The disruptive digital work field has become more competitive for novel digitalisation significantly overriding the traditional workplace practices with modern ones (Sun *et al.,* 2022). Similarly, it has been reported that more than 83% of American employees suffer from work-related stress, and over 50% experience stress throughout most of the day. This increases the risks of physical and mental health disorders and decreases productivity due to absenteeism (Howe *et al.,* 2022). Furthermore, to reduce the effects of Digital transformation stress (DTS), online and blended interventions have been undertaken to strengthen employee resources and self-efficacy (Makowska-Tłomak *et al.,* 2022).

Moreover, digital mental health interventions (DMHIs) also hold a significant positive impact on curing the mental health of employees struggling with work-related issues (Aye *et al.,* 2024). This highlights that mental health intervention potentially has several benefits on the physical and mental well-being of employees which ultimately increase employee satisfaction and productivity.

ITP (IT proactive stance)

Significant and effective IT practices like ITI, ITB, and ITP is necessary for facilitating the well-being of employees by reducing workplace stress. Besides this, organisations are determined to build technological capabilities in order to combat the progress of psychological vulnerabilities (Sun *et al.,* 2022).

Additionally, occupational digital mental health has a significant role-play in eradicating possible barriers to gain workplace wellness. ITP supports to detection of the psychological needs of the employees, thereby illuminating the indication of a health crisis. This further

delivers opportunities to contemporary organisations with crucial information concerning the health and well-being of employees (Sun *et al.,* 2022). This signifies that mental health interventions are helpful for organisations to be aware of employee health crises, and gain workplace wellness.

On the other hand, self-help DMHI helps organisations to assess the acceptability and attitudes of the users. In order to address employee burnout, techniques like acceptance commitment therapy (ACT), cognitive behavioural therapy (CBT), and emotionally focused therapy (EFT) have been significant through psychotherapeutic approaches (Aye *et al.,* 2024). This indicates that digital health interventions deal with emotional distress and the attitude of users towards digitalisation with a healthier approach.

Traditional psychotherapy

Intervention systems like chatbots supported individuals to browse via scheduling their calendars and catalogue of interventions in the Pre-scheduled (PS) and Just-in-time (JIT), chatbot nudged individuals to perform interventions when it detected increased levels of stress. Additionally, different mental healthcare interventions help to recognise the level of stress by asking users to rate their momentary anxiety and comments on shifts in stress levels from the intervention execution stages (Howe *et al.,* 2022).

Furthermore, elements of Dialectical Behavioral Therapy (DBT) and Cognitive Behavioral Therapy (CBT) are the two front-line psychotherapy modalities that are utilised to flexibly treat a large range of well-being and mental health concerns (Howe *et al.,* 2022). Furthermore, a few interventions involve "'Get my mind off work" (low effort) translation of the DBT, "Feel calm and present" inspired by DBT and CBT (medium effort), and "Think through my stress" (high effort) strategise from CBT and DBT. These interventions are formed to deal with workplace stress through emotional processing, writing a self-affirming statement 10 times, and assisting individuals to re-focus on the present moment (Howe *et al.,* 2022). This signifies that interventions are strategically planned by focusing on the root problems of the individuals for emotional imbalance creating stress in the work.

On the other hand, traditional psychotherapy concentrates on managing personal symptoms like relaxation from stress in the expectation of gaining broad and distal objectives by overcoming depression (Howe *et al.,* 2022). It indicates interventions help individuals to meditate through a long process to get strong emotional health.

Manage DTS (digital transformation stress)

Solution-based information and communication technologies (ICT) tend to deliver favourable outcomes for both organisations and employees; however, the process of DT (digital transformation) is causing digital transformation stress (DTS). In this narrative, a prototype of the online intervention as online training on the Moodle platform reduces the DTS and strengthens self-efficacy (Makowska-Tłomak *et al.,* 2022). A statement highlights that "*stress coping knowledge increased and that intervention exercises were useful and helpful to manage DTS and to increase their self-efficacy*" (Makowska-Tłomak *et al.,* 2022, p. 6). This means interventions through exercises have been beneficial and substantial in managing digital transformation stress. Therefore, it can be understood that interventions help companies manage work-related stresses like digital transformation stresses through emotional processing, assist individuals to re-focus on the present moment, and assess the acceptability and attitudes of the users to foster employee satisfaction.

5.6 Chapter Summary

The six stages of Braun & Clarke thematic analysis have been applied to code and generate themes for data analysis. Based on the study, it can be concluded that online intervention, Mindfulness-based interventions (MBIs) through courses like "mindfulness-based stress reduction (MBSR)" and "mindfulness-based cognitive therapy (MBCT)" are beneficial to reducing employee burnout. Additionally, Psychoeducation Intervention helps promote improved mental health in the work settings through interactions and support from others as elements of its therapy. Furthermore, aspects like stressors, job demands, and mental health of the worker of digital workplace interventions have been highlighted impacting reduction of stress and low productivity.

CHAPTER 6: DISCUSSION

6.1 Introduction to Chapter

Discussion chapter interprets and explains the importance of findings, linking to the present insights, highlighting limitations, and recommending future guidance for research. The chapter explores the meaning, significance, and relevance of the results through explanation and evaluation (Noyes *et al.,* 2019). In this research, the findings from existing literature and analysis have been evaluated to find similarities and dissimilarities regarding role of different digital mental health interventions in lessening work-related stress among the England office workers in several organisational settings. The research has further involved discussion on the advantages and disadvantages of the systematic literature review.

6.2 Discussion of Key findings

6.2.1 Investigation on the significance of different digital mental health interventions in reducing burnout levels among the workers

Major interventions to reduce occupational stress are mandatory for employees to uplift productivity. In this context, the findings from analysis of Taylor et al. (2022) state that Mindfulness-based interventions (MBIs) have been placed as the significant intervention contributing to addressing personal pressures through cognitive therapy. Correspondingly, findings from the literature of Patel *et al.,* (2022) and Lam *et al.,* (2022), represented a similar perspective as online Cognitive Behavioural therapy is the most useful intervention in lowering employee unhappiness and anxiety conditions. This means that the ability of cognitive therapy is powerful among workers to manage emotional and physical despair. For instance, SilverCloud Health England has developed SilverCloud iCBT intervention which is a cognitive behavioural therapy and has been operating within the domain of digital therapies since 2012 (Duffy *et al.,* 2023).

Particularly for the Improving Access to Psychological Therapies (IAPT) market, SilverCloud undertakes a wide number of services at the Step 2 level to treat usual mental health disorders like depression and anxiety (Duffy *et al.,* 2023). It demonstrates that organisation operating in England well understood the mental conditions of individuals working in England offices and develop cognitive behavioural therapy to treat their mental well-being. On the other hand, the results from the analysis of Carolan and Visser (2018), highlight that as compared to conventional face-to-face interventions digital health interventions indicated obscurity and

accessibility of the Internet which usually permits individuals to access the therapy at a time and pace that is easy for them. These helps have piloted digital health interventions to be illustrated as appropriate for the workplace and are accessible via smartphones and computers. On a similar note, a review of the literature of Christina et al. (2023) noted a precise digital intervention, like 'EMPOWER digital interventions' deemed a multimodal intervention managing 'work stress', 'well-being', and 'work productivity', 'mental and physical health problems'On the contrary, the findings from the analysis of Lam et al. (2022), depict that online psychoeducation also produces the usefulness of consistent treatments and help for people struggling with cognitive health problems even in tough times like the COVID-19 pandemic when personal relationships are disrupted. Likewise, the observation of Taylor et al. (2022) analysis also found that the NHS Moodzone psychoeducational digital platform" delivers evidence-based psychosocial guidance, suggestions, and advice on the way to address work-related burnout along with mental health problems effectively. This indicates that online psychoeducation has been another intervention in England for office workers suffering from mental health issues. For example, SmileOn, a healthcare-learning.com has collaborated with the Cardiff BEP-C team to design, develop, and test "Beating Bipolar", a web-based interactive educational program specifically for online psychoeducation which is funded by the National Institute for Health Research (NIHR) in England (NCMH, 2023). This sugests that organisations in England increasingly focusing the mental health of the individual especially caused due to work-related stress. Therefore, it can be understood that different organisations in England are actively working toward designing and developing different significant interventions related to cognitive behavioural therapy, digital interventions, and psychoeducation to address the mental well-being of the workers.

6.2.2 Identification of particular elements of digital interventions have the most influences on stress reduction and productivity

The risen numbers of employees rely on the digital workplace to perform work perfectly; however, the problem is encompassed by the well-being consequences of digital working. In such an aspect, the results from analysis of Marsh, Vallejos, and Spence (2024), state that the COVID-19 has led workers to be more dependent on the digital workplace which results in trouble for the mental health of staffers as dark side digital workplace interventions. The increase of digital workplace strain concerns both the overload of information and the fear of missing out as negative indirect impacts on mental health. On the contrary, according to the findings from the literature of Cameron et al. (2024), virtual therapy delivers proper access to workers to support mental health conditions by positioning mindfulness programs and stress management. Additionally, employee mental health and well-being are reported to be enhanced by personalising digital interventions that helped them to decrease workplace

despair and raise their job satisfaction level. For example, a large study of 46,000 UK workers reported that resilience and stress management, mindfulness, relaxation courses along well-being apps did not enhance employee wellbeing (Machell, 2024). Instead, management practices, flexible work schedules, performance review and job design, and staff resources have been playing a greater role in enhancing wellbeing at work (Machell, 2024). This indicates that there is a huge contradiction between the findings from the analysis and LR while it has been supported that the excessive dependence on digital workplace leads to consistent and undeniable mental trouble for employees.

Considering the application of the concept of (JD-R) Model of Bakker & Demerouti (2007), the job demands and resources can be aligned with the employee's well-being. It has been found from the literature of Speicher and Francis (2022), that a supportive and inclusive workplace culture that applies clear communication, better worker well-being, and satisfaction results in decreased employee turnover and workplace burnout. Additionally, organization-driven interventions contained measures to improve ‘decision making’, ‘distribution of the workload’, and ‘teamwork’, promoting a ‘supportive workplace environment’. Contradictorily, the results from the analysis of Weber, Lorenz, and Hemmings (2019), job demand as a major element of digital workplace interventions keeps up with the mental and physical impacts of job insecurity and interpersonal conflicts.

Furthermore, job resources are explained as those psychological, physical, social, and organisational factors that facilitate functionality in fulfilling work goals, reducing job demands connected to physiological expenses, and promoting personal growth and evolution. For instance, Cave (2023); and MHFA England (2023), supported and stated that around 55% of workers in England feel that their work is getting more demanding and intense while 61% of employees expressed that they feel exhausted at the end of their day of working creating pressure at work. This is due to a decrease in collective bargaining and labour shortages, and technology. It has significantly indicated job demand as an aspect of digital workplace interventions negatively impacts the well-being of employees by creating job insecurity and competition. Therefore, it can be stated that though digital workplace interventions are primarily benefiting business growth and competitiveness globally, however, it have been causing a continuous decline in productivity and mental health even after several mindfulness and stress management programs.

6.2.3 Evaluation of the advantages of comprising digital mental health interventions within the workplace

The performance of digital mental health intervention has been regarded as the most useful tool for enhancing employee well-being by lowering their job pressure and other problems along with rising job satisfaction and productivity. In this account, the findings from the analysis of Sun et al. (2022), state that occupational digital mental health holds an effective role-play in eliminating possible obstacles to achieving workplace wellness. Individual treatment plan (ITP) helps to detect the psychological necessities of the employees, thereby enlightening the signs of a health concern. This further provides possibilities to modern organisations with crucial facts concerning the health and well-being of workers.

Similarly, the results from the literature of Wu et al. (2021), define that digital mental health intervention significantly delivers access to mental health support, shattering the stigma encompassing mental health dialogues in workplaces. As a result, it has supported organisations to form a favourable workplace culture, which promotes an inclusive and supportive character. This indicates digital mental health interventions are benefiting England officer workers to address stress and stigma. For example, Patel et al. (2022), reported that 1/6 of workers in the UK have been facing mental health issues at work costing the country economy an estimation of £70 billion/year. In this case, digital interventions deliver low costs and convenient scalable delivery methods to execute psychological interventions within the workplace. This signifies that digital interventions also help institutions and employees to easily access psychological therapy within budget. On the other hand, the findings of the literature of Moe-Byrne et al. (2022), highlight that digital mental health interventions in the workplace enhance employee well-being and job satisfaction by delivering accessible, personalised help for mental health issues, possibly directing to improved productivity and lowered absenteeism.

On the contrary, results from the analysis of Makowska-Tłomak et al. (2022), discussed that a prototype of the online intervention acted as online training on the Moodle platform relieves the DTS (digital transformational stress) and supports self-efficacy. For example, nearly 72% of UK workers have been showing interests and engaging in learning digital skills while aligning with the digital transformation required driven by Brexit and COVID-19 (Mendix, 2021). However, this creates immense stress among employees. In order to address these stresses, Sevic, Foldnes, and Brønnick (2024), stated that a Digital Transformation Stress Scale (DTSS) is effective in measuring stress stemming from the procedure of digital transformation within the organisation. This indicates that different digital interventions regarding mental health substantially contribute to reducing or managing digital transformation stress. Hence, it can be stated that different mental health interventions addressed the stigma, enhanced productivity, lowered absenteeism, and managed digital transformation stress.

6.3 Strengths and Limitations

The research has undertaken the systematic literature review (SLR) to synthesise research through both strengths and limitations. The adaptation of SLR has helped this research to deliver a comprehensive and clear overview of the topic regarding the contribution of different digital mental health interventions in lessening work-related stress among the England office workers in several organisational settings. The adoption of this research has adopted appraisal tools like CASP, MMAT, and JBI Checklist which has supported this research to select the most relevant and credible sources for this study which further increased the high-quality and reliable data collection. The conduction of SLR has further helped this research to explore existing knowledge on particular research questions by recognising gaps and inconsistencies in the literature. On the other hand, SLR has been highly time-consuming, susceptible to bias, and resource-intensive which requires collaboration and expertise. Additionally, the conduction of frameworks like Boolean Operators, PICO, PRISMA, MMAT, JBI Checklist, and CASP along with Data extraction have been hard to perform together within a given period. Additionally, as the study has been highly dependent on selecting primary literature from secondary sources based on a location-specific research topic, hence, it has been difficult for this research to properly find the articles specific to that location.

6.4 Chapter Summary

Centered on the above discussion, it can be concluded that cognitive behavioral therapy, digital interventions, and psychoeducation interventions have been major among to reduce the work-related stress of workers working in England. On the other hand, there is a gap in the optimum outcome of several mindfulness and stress management programs due to the continuous declination of productivity and mental health. Moreover, different digital interventions concerning mental health have been benefiting organisations in addressing stigma, improving productivity, managing digital transformation stress, and minimising absenteeism.

CHAPTER 7: RECOMMENDATIONS AND CONCLUSION

7.1 Introduction to Chapter

The conclusion and recommendations chapter describes the findings, and interprets their importance, along with recommending future guidance or practical applications centered on the research. In this research, a few key findings concerning different mental health interventions contribute to the reduction of burnout and stress among workers working in England. Additionally, the research will also answer the research questions while highlighting recommendations for practice and future research. Moreover, the section is also going to emphasise the possible implications of the findings.

7.2 Implications of findings

The entire research has been centered on the role of different mental health interventions contributing to the reduction of burnout and stress among workers working in England. The research has identified a few interventions like Mindfulness-based interventions (MBIs), Psychoeducation Interventions, and online interventions, however, even after all these implementations, there is a gap in the effective application of these interventions. This is expected to impact positively the current operational strategies of healthcare institutions and other related organisations to reduce stress and burnout of workers in England by rectifying the present practices in applying these interventions. The study is further expected to favourably implicate organisational behaviours of the England working office which is yet to prioritise and demonstrate the mental health interventions within the workplace to foster customer satisfaction and productivity.

7.3 Recommendations for Practice

Based on the above-demonstrated findings, the healthcare organisation in England can implement a SMART plan for each intervention that has been undertaken to reduce work-related stress. This will help them to set targets to address and implement the existing mental health interventions steadily and sincerely. Additionally, a governmental restriction to follow at least one mental health intervention by each organisation operating in England can be prioritised by ensuring a proper outcome of these interventions. This will increase the accessibility of the employees to mental health interventions by employees. Furthermore, organisations can opt for ensuring flexible working hours, ethical management practices, performance reviews, job design, and staff resources to improve the mental conditions of the workers even with their hectic schedules. Moreover, healthcare organisations in England can further think beyond the existing mental healthcare interventions by designing and developing

something that is more personalised and will support them in addressing mental health issues according to the needs and demands of the employees instead of relying on irrelevant and unmatchable interventions.

7.4 Recommendations for Future Research

The conduction of this research has explored the role of several digital mental health interventions in minimising burnout levels among England office workers in different organisational settings. In this account, future research can focus on one specific and prominent mental health intervention to conduct the research in a more particular way. Additionally, further research can also concentrate on the global level to perform similar research. Apart from these, future research also has the scope to explore primary quantitative methods by conducting a survey among working professionals in England experiencing work-related mental illness. Moreover, future research can also focus on selecting journal articles cantered on secondary or primary data instead of only focusing majorly on primary data from secondary sources.

7.5 Conclusion

The research topic for this dissertation was, "*The Effectiveness of Digital Mental Health Intervention in Reducing Work-Related Burnout Among Office workers in England".* In this context, the research question that has been undertaken throughout the research is "*What is the impact of digital mental health interventions on lowering employee burnout among England office workers who experience stress at the workplace?*".

Based on the above analysis and discussion, it is to be concluded that Mindfulness-based interventions (MBIs) are the major intervention role-playing to manage personal tensions via cognitive therapy. Additionally, online Cognitive Behavioural therapy is the most valuable intervention in decreasing employee despair and pressure conditions. The abilities of cognitive therapy are influential among staffers to handle emotional and physical discomfort. Furthermore, online psychoeducation also delivers the efficacy of constant therapies and helps individuals stumbling with cognitive health troubles even in difficult times like the COVID-19 pandemic when private relationships are disrupted. Moreover, organisations in England raise their focus on the mental health of the individual especially induced due to work-related stress. Thus, it can be stated that different mental health interventions are significant for workers as well as organisations operating in England to reduce work-related stress.

Employee mental health and wellness are registered to be enhanced by personalising digital interventions that allow them to facilitate workplace despair and boost job satisfaction. Furthermore, a supportive and inclusive workplace culture that uses transparent communication, enhanced employee well-being, and satisfaction outcomes decreases employee turnover and workplace burnout. Moreover, job resources are described as those psychological, physical, social, and organisational aspects that promote functionality in fulfilling work objectives, decreasing job directions associated with physiological costs, and elevating personal growth and evolution. Hence, it can be stated that though there are multiple mental health interventions, yet workers in England faces numerous work-related stress.

ITP allows to detection of the psychological essentials of the workers, thereby enlightening the signals of health crisis. Additionally, digital mental health intervention particularly provides access to mental health aid, splitting the stigma surrounding mental health conversations in workplaces. Moreover, a prototype of the online intervention performed as online training on the Moodle forum reduces digital transformational stress and helps self-efficacy. Hence, it can be stated that these several mental health interventions are beneficial to reduce work-related stress and foster customer satisfaction.

This particular research has explored different dimensions of the significance of mental health interventions in reducing burnout in England, whether these interventions are effective in reducing stress and productivity or not, and the benefits of these interventions in reducing burnout and fostering customer satisfaction. In this context, the present research is significant in delivering insights on the way workers in England need the accessibility to digital mental health interventions. Additionally, the research will be further important for leaders in healthcare organisations to understand their lacking in implementing these interventions among workers and rectify these shortcomings. Moreover, it would be further significant to provide a future scholar a comprehensive knowledge on a similar research topic for further improvement.

Based on the above evaluations, it has been observed that even though healthcare organisations emphasise the several advantages of digital mental health interventions, they still lack the effective implementation of these interventions. The organisations require to prioritise its effective application to address the work-related stress to evident the effective outcomes.

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APPENDICES

Appendix 1: Data Extraction

Author	Keywords	Aim	Method	Sampling and data analysis	Country	Findings
(Nguyen *et al.,* 2018)	"Satisfaction of younger and older adults", "health services", and "comprehensibility of the website"	This study aims to test the effects of mode tailoring – when users can adjust the mode of information presentation via textual, visual, and/or audiovisual information – on evaluative outcomes that are considered important	Primary Quantitative method	A total of 563 samples were collected for mode tailored, among which 264 were younger adults and 299 were older adults.	Amsterdam, Netherland	The findings of this research demonstrate that website satisfaction has not been different for older and younger adults and positively influences the satisfaction level of comprehensibility and attractiveness of the website.

		for health websites, namely satisfaction with a) the attractiveness of the website.				
(Carolan and Visser, 2018)	“Perspectives of employees”, “facilitators and barriers”, “digital mental health interventions”, and “workplace”	The aim of this research was to get a better understanding of the facilitators and barriers to engaging with digital mental health interventions in the workplace.	Primary Qualitative method	Semi structured interviews were conducted among 18 participants who belong to occupational digital mental health intervention through randomized controlled trials.	Global	The findings of this research state that occupational digital mental health interventions play the significant role in providing health care support to employees.

(Marsh, Vallejos and Spence, 2024)	"overloaded information", "Worried About Missing Out on It", "stress", "burnout", "mental health implications", and "digital workplace"	This study aims to extend understanding of the relationships between specific dark side effects (overload, FOMO and anxiety) and employee well-being in the digital workplace.	Primary Quantitative method	A total number of 142 workers were surveyed about their experiences of the dark side of digital working effects.	United Kingdom	The findings of this research highlight the mental health of employees posed by fear of missing out on information in the digital workplace
(Taylor *et al.,* 2022)	"healthcare worker", "need for headspace", "Unguided Digital Mindfulness-Based Self-help	This study aimed to investigate the effectiveness of an unguided digital MBSH app (Headspace) in	Primary Quantitative method	The study sampled around 2182 National Health Service staff in England recruited on the web and	England, UK	The findings of this research define that unguided digital MBSH intervention (Headspace) is able to reduce the stress of healthcare workers.

	App", and "reduce healthcare worker stress"	reducing healthcare worker stress.		allocated in a 1:1 ratio to fully automated Headspace through randomised controlled trials.		
(Lam *et al.,* 2022)	"workplace intervention program". "web-based online and offline modalities", and "mental health of workers"	This study aims to examine the efficacy of the Workplace Web-based blended psychoeducation mental health intervention program.	Primary Quantitative method	The study sampled 456 employees in specific industries with high levels of work-related stress, adopting a phase III wait-listed cluster randomized controlled trial.	Australia	The findings of the study demonstrate that offline and online modalities of the web-based blended psychoeducation intervention program are capable of reducing workplace stress and burnout while promoting mental health education at the workplace.

(Sun *et al.,* 2022)	“digitalisation”, “mental health”, “mediating role”, “wellbeing at workplace”	The study aims to measure the mediating relationship of wellbeing at work between digitalization (IT infrastructure, IT business spanning, and IT proactive stance) and their effect on mental health.	Primary Quantitative method	The sample size of the study is 349 respondents. The research uses Smart PLS software to measure the relationship through bootstrapping and algorithms.	Pakistan	The findings of this research implies that there is a positive mediating role of wellbeing between mental health of employees and digitisation at workplace.
(Weber, Lorenz and Hemmings, 2019)	“stress”. “positive mental health”, and “app-based intervention”	This project aimed at validating a mobile health intervention (which is theoretically grounded	Primary Quantitative method	The sample size of this research is 678 from different European businesses in Germany, England, and	Germany, England, and Northern Ireland	The findings of this research state that mental health intervention holds no impact on the social community or physical health at work.

		in the Job Demands-Resources Model) in preventing and managing stress at work.		Northern Ireland from the private and public sectors. Data was collected online using the survey software Qualtrics.		
(Howe *et al.,* 2022)	"digital workplace", "stress-reduction intervention system"	The study aims to understand the impact of digital micro-intervention delivery timing and content on usage patterns and stress reduction throughout the workday to inform the design of	Primary Quantitative method	The study has sampled 86 participants including males and females aged from 36-45 years old through random sampling.	Global	The findings of this study involve that JIT (Just-in-Time) individuals accomplished more intervention than PS (Pre-scheduled) participants.

		effective and engaging workplace stress reduction intervention systems.				
Kulkarni, H., Chong, C. and Lam, M. (2023)	"digital intervention", "workplace behaviour", "emotional well-being", "stress", "motivation", and "productivity"	The study aims to study the efficacy and impact of bite-sized digital intervention tools on workplace stress, productivity, and motivation of employees.	Primary Quantitative method	The study used a pretest-post-tests randomized experimental design to assign 20 employees to control or intervention groups.	Hong Kong	The findings of this research state that digital intervention focuses on the reduction of productivity, stress, and motivation of employees.

(Makowska-Tłomak *et al.,* 2022)	"online intervention", "reduction of digital transformation", "stress", "employee resources", and "COVID-19"	The main aim of the study was to verify if the online blended intervention is an effective tool in decreasing stress and digital transformation stress, reducing negative attitudes toward digital transformation and burnout	Primary Quantitative method	The research has sampled 558 adults through convenience sampling, among 245 women and 313 men.	Warsaw, Poland	The findings of this research explain that blended intervention with e-stressless online training is a significant and effective program to improve the well-being of the experts impacted by ICT demands during digital transformation.
(Adam *et al.,* 2023)	"interventions to reduce stress", "prevent burnout", "healthcare professionals",	The study aims to analyse the way interventions reduce stress and prevent burnout in healthcare	Secondary Qualitative method	PubMed, Embase, PsycInfo, and Google Scholar were searched between January 24th and	USA	The findings of this states that interventions of burnout and stress require to be combined to be successful in prevention of mental illness.

	“digital applications”	professionals helped by digital applications.		28th, 2022, limited to the last 5 years which from 2017.		
(Aye *et al.,* 2024)	“self-help digital mental health intervention”, “burnout”, “mental health outcomes”, and “healthcare workers”	This review aims to synthesize evidence on DMHIs' effectiveness in reducing burnout, their acceptability by users, and implementation lessons learned.	Mixed methods through Systematic Review and Meta-Analyses	The study includes 12 RCTs on DMHIs for healthcare professionals, published before 31 May 2024.		The findings of this research demonstrate that DMHIs has a positive impact on the mental health, burnout, and occupational outcomes among healthcare professionals.

Table 4: Data Extraction table

Appendix 2: Critical Appraisal Skills Programme (CASP)

Authors	Clear Focused Question	Appropriate Design	Appropriate Recruitment	Matched Control	Clearly Described Test Procedure	Appropriate Outcomes Used	Outcome accurately measured for bias minimisation	Confounding Factors Accounted	Appropriate Analysis	Precise Statistical Data Presented	Ability to generate Results	Interpretation related to existing evidence	Total Score
(Carolan and Visser, 2018)	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**-**	**+**	**+**	**+**	**+**	**11**
(Adam *et al.*, 2023)	**+**	**+**	**-**	**+**	**-**	**+**	**+**	**+**	**+**	**-**	**+**	**+**	**9**

Table 5: CASP table

Appendix 3: JBI Checklist

Review									
Authors	Were the criteria for inclusion in the sample clearly defined?	Were the study subjects and the setting described in detail?	Was the exposure measured in a valid and reliable way?	Were objective, standard criteria used for measurement of the condition?	Were confounding factors identified?	Were strategies to deal with confounding factors stated?	Were the outcomes measured in a valid and reliable way?	Was appropriate statistical analysis used?	
(Nguyen *et al.*, 2018)	-	+	-	+	+	+	+	-	**5**
(Marsh, Vallejos and Spence, 2024)	+	+	+	+	-	+	+	+	**7**

(Taylor *et al.*, 2022)	-	+	-	+	+	+	+	-	5
(Lam *et al.*, 2022)	+	-	+	-	+	+	+	+	6
(Sun *et al.*, 2022)	+	+	+	+	-	+	+	+	7
(Weber, Lorenz and Hemmings, 2019)	+	+	+	+	+	-	+	-	6
(Howe *et al.*, 2022)	+	+	+	+	+	-	+	+	7

Kulkarni, H., Chong, C. and Lam, M. (2023)				-			-	+	**6**
(Makowska-Tłomak *et al.*, 2022)	+	+	-	+	-	+	+	-	**5**

Table 6: Checklist for quantitative study

Appendix 4: Mixed Methods Appraisal Tool (MMAT)

Review								Score
Authors	**Are there clear research questions?**	**Do the collected data allow to address the research questions?**	**Is there an adequate rationale for using a mixed-methods design to address the research question?**	**Are the different components of the study effectively integrated to answer the research question?**	**Are the outputs of the integration of qualitative and quantitative components adequately interpreted?**	**Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?**	**Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?**	
(Aye *et al.*, 2024)	+	-	+	+	+	-	+	5

Table 7: MMAT table

Appendix 5: Code generation

Objectives	Sources and author	Title	Raw data	Coding
To investigate the importance of different digital mental health interventions in reducing burnout levels among England office workers in several organisational settings	(Nguyen *et al.*, 2018) https://www.tandfonline.com/doi/full/10.1080/10810730.2017.1421729#d1e984	How Tailoring the Mode of Information Presentation Influences Younger and Older Adults' Satisfaction with Health Websites	Satisfaction with online health information is suggested to be an important indicator of appropriate use of online interventions and consequently of more positive health-related outcomes.	Satisfaction with online health information Online interventions Positive health-related outcomes
	(Carolan and Visser, 2018) https://pubmed.ncbi.nlm.nih.gov/29351900/	Employees' Perspectives on the Facilitators and Barriers to Engaging with Digital Mental Health Interventions in the Workplace: Qualitative Study	The main factors that participants identified as helping them to engage with the digital intervention were program content and design. Interesting content was one reason given for engaging with the program.	Digital intervention Program content and design Engaging with the program
	(Taylor *et al.*, 2022) https://mhealth.jmir.org/2022/8/e31744	Health Care Workers' Need for Headspace: Findings From a Multisite Definitive Randomized Controlled Trial of an Unguided Digital Mindfulness-Based Self-help App to Reduce Healthcare	Mindfulness-based interventions (MBIs) typically involve teaching mindfulness in in-person group settings through 8-week courses such as mindfulness-based cognitive therapy (MBCT) [20] and mindfulness-based	Mindfulness-based interventions (MBIs) Mindfulness-based cognitive therapy (MBCT) Mindfulness-based stress

		Worker Stress	stress reduction (MBSR).	reduction (MBSR)
	(Lam *et al.*, 2022) https://www.frontiersin.org/journals/psychiatry/articles/10.3389/fpsyt.2022.888157/full	Health Care Workers' Need for Headspace: Findings From a Multisite Definitive Randomized Controlled Trial of an Unguided Digital Mindfulness-Based Self-help App to Reduce Healthcare Worker Stress	Psychoeducation is defined as "an intervention with systematic, structured, and didactic knowledge transfer for an illness and its treatment, integrating emotional and motivational aspects to enable patients to cope with the illness and to improve its treatment adherence and efficacy.	Psychoeducation Intervention Emotional and motivational aspects Improve its treatment adherence and efficacy
To identify whether particular aspects of digital interventions have the most effects on stress reduction and productivity among workers or not	(Marsh, Vallejos and Spence, 2024) https://journals.sagepub.com/doi/10.1177/21582440241268830	Overloaded by Information or Worried About Missing Out on It: A Quantitative Study of Stress, Burnout, and Mental Health Implications in the Digital Workplace	Workers' mental health may be at risk from dark side aspects of digital working, job demands must be considered, the dark side aspects of the digital workplace may have far-reaching effects in terms of employee exhaustion.	Workers' mental health Job demands Dark side aspects of the digital workplace
	(Weber, Lorenz and Hemmings, 2019) https://pmc.ncbi.nlm.nih.gov	Improving Stress and Positive Mental Health at Work via an App-Based Intervention: A Large-Scale Multi-	Job demands describe "physical, social, or organizational aspects of the job that require sustained physical or mental effort and are	Job demands Physical, social, or organizational

	/articles/PMC6908507/	Center Randomized Control Trial	therefore associated with certain physiological and psychological costs.	Physiological and psychological costs
	(Kulkarni, H., Chong, C. and Lam, M., 2023) https://link.springer.com/chapter/10.1007/978-981-99-2613-8_6	Impact of a Digital Intervention Tool for Workplace Behavior and Emotional Wellbeing on Employees' Stress, Motivation, and Productivity	Employees report concerns related to workload, interpersonal conflicts, constraints at the workplace, and worries around job insecurity as significant factors that lead to productivity loss and absenteeism at the workplace.	Employees report Workload, interpersonal conflicts, constraints at the workplace Productivity loss and absenteeism
	(Adam *et al.,* 2023) https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2023.1231266/full	Interventions to reduce stress and prevent burnout in healthcare professionals supported by digital applications: a scoping review	Stressors such as a high workload, dealing with suffering patients, and other workplace related conflicts are among the greatest risk factors for developing burnout	Stressors High workload, dealing with suffering patients. Developing burnout
To evaluate the advantages of incorporating digital mental health interventions within the	(Sun *et al.,* 2022) https://www.frontiersin.org/journals/psychiatry/articles/10.3389/fpsyt.	The association between digitalization and mental health: The mediating role of wellbeing at work	ITP (IT proactive stance) helps detect the employees' psychological needs, thereby illuminating the signs of health crises.	ITP (IT proactive stance) Employees' psychological needs

workplace of England to improve employee satisfaction.	2022.934357/full			Illuminating the signs of health crises
	(Howe *et al.*, 2022) https://dl.acm.org/doi/fullHtml/10.1145/3491102.3502027	Design of Digital Workplace Stress-Reduction Intervention Systems: Effects of Intervention Type and Timing	These "digital micro-interventions" leverage technology affordances to provide individual components of traditional psychotherapy focused on managing proximal symptoms.	Digital micro-interventions Traditional psychotherapy Managing proximal symptoms
	(Makowska-Tłomak *et al.*, 2022) https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2022.732301/full		Coping knowledge increased and that intervention exercises were useful and helpful to manage DTS and to increase their self-efficacy.	Intervention exercises Manage DTS Increase their self-efficacy

	(Aye *et al.*, 2024) https://pmc.ncbi.nlm.nih.gov/articles/PMC11384540/	Self-help digital mental health intervention in improving burnout and mental health outcomes among healthcare workers: A narrative review	Professional support, scheduling appointments through apps, notifications feature that can be customized, and eventually monitoring of progress and feedback option would give the users the channels to personalize the digital mental health service according to their needs.	Professional support, scheduling appointments Notifications feature that can be customized. Monitoring of progress and feedback option

Table 8: Coding table

Appendix 6: Theme generation

Themes	Articles where it was extracted
Theme: Different health interventions for reduction of burnout levels among workers **Sub themes:** ● Online interventions ● Mindfulness-based interventions (MBIs) ● Psychoeducation Intervention	(Nguyen *et al.,* 2018) (Carolan and Visser, 2018) (Taylor *et al.,* 2022) (Lam *et al.,* 2022)
Theme: Aspects of digital interventions hold the most effects on stress reduction and productivity among workers **Sub-themes:** ● Workers' mental health ● Job demands ● Stressors	(Marsh, Vallejos and Spence, 2024) (Weber, Lorenz and Hemmings, 2019) (Kulkarni, H., Chong, C. and Lam, M., 2023) (Adam *et al.,* 2023)
Theme: Advantages of integrating digital mental health interventions within the workplace for employee satisfaction **Sub-themes:** ● ITP (IT proactive stance) ● Traditional psychotherapy ● Manage DTS (digital transformation stress)	(Sun *et al.,* 2022) (Howe *et al.,* 2022) (Makowska-Tłomak *et al.,* 2022) (Aye *et al.,* 2024)

Table 9: Theme generation