

**MSc Digital Transformation  
for the Health and Care Professions  
BMDS7005**

*Evaluation Of The Role Of Digital Support Tools In  
Supporting The Mental Health And Wellbeing Of  
Welsh Ambulance Call Handlers Following  
Traumatic Or Abusive Telephone Contacts With  
Patients Or Their Families.*

Dissertation submitted in partial fulfilment of the award of  
Master of Science in Digital Transformation for the Health and Care Professions

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## Abstract

The psychological health and overall wellbeing of emergency response workers and call handlers are crucial, particularly after being involved in traumatic or abusive events or incidents. This research assesses the efficacy of digital support tools that the Welsh Ambulance Service University NHS Trust (WAST) could put in place to assist staff members, in particular, emergency call-handlers, in managing the psychological effects of these encounters. This study uses a mixed methods approach to investigate how these digital tools could be used, their perceived advantages, and their drawbacks. Quantitative data was gathered through surveys given to 999 and 111 call handling staff members, which evaluated mental health outcomes, satisfaction levels, and utilisation trends. Qualitative information was obtained through in-depth MS Teams interviews, offering a thorough grasp of user experiences and the contextual elements affecting the effectiveness of current support mechanisms.

Emergency call handlers for the Welsh Ambulance Service University NHS Trust (WAST) frequently encounter distressing and hostile calls, resulting in considerable emotional and psychological strain. This study assesses how digital support tools might assist call handlers in coping with trauma, analysing their availability, efficacy, and effects in comparison to traditional support systems like peer support and counselling. The research utilises survey responses and semi-structured interviews to delve into the experiences of call handlers, concentrating on their current coping mechanisms, the obstacles they face in using digital tools, and gender-related variations in stress responses.

This study aims to assess the existing digital support tool offering, to highlight possible shortcomings in mental health support for emergency call handlers. It also intends to propose ways to incorporate digital interventions into current well-being programmes, ensuring that call handlers can access effective and evidence-based support systems. Recognising the role of digital tools in boosting resilience and mental health among emergency responders is vital for enhancing workforce sustainability and overall job satisfaction.

The findings reveal a range of degrees of involvement with digital assistance resources, emphasising noteworthy advantages concerning accessibility and prompt assistance. On the other hand, difficulties like gaps in technology, variations in individual coping strategies, and the requirement for supplementary conventional support systems were also noted. The study's conclusions include suggestions for improving the digital support offer, making sure it satisfies the variety of demands of WAST call handlers, and developing an encouraging workplace culture that places a high priority on mental health. The purpose of this study is to potentially assist WAST and other emergency service organisations in developing policies and implementing useful interventions

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## Abbreviations

| Abbreviation | Description                                                        |
|--------------|--------------------------------------------------------------------|
| CAM          | Contrast Avoidance Model                                           |
| CBT          | Cognitive Behavioural Therapy                                      |
| CISD         | Critical Incident Stress Debriefing                                |
| EMD          | Emergency Medical Dispatcher                                       |
| EMS          | Emergency Medical Service                                          |
| GAD          | Generalised Anxiety Disorder                                       |
| PRISMA       | Preferred Reporting Items for Systematic Reviews and Meta-Analyses |
| PTG          | Post Traumatic Growth                                              |
| PTSD         | Post Traumatic Stress Disorder                                     |
| REST         | Resilience and Emotional Support Teams                             |
| TAM          | Technology Acceptance Model                                        |
| TRiM         | Trauma Risk Management                                             |

|        |                                              |
|--------|----------------------------------------------|
| TTF    | Task-Technology Fit                          |
| WAST   | Welsh Ambulance Service NHS University Trust |
| DI     | Digital Interventions                        |
| STS    | Secondary Traumatic Stress                   |
| PSS    | Perceived Stress Scale                       |
| MBI-SF | Maslach Burnout Inventory-Short Form         |
| MS     | Microsoft                                    |
| REAP   | Resource Escalation Action Plan              |
| REC    | Research Ethics Committee                    |
| HRA    | Health Research Authority                    |
| UWTSD  | University of Wales Trinity Saint David      |
| EAP    | Employee Assistance Programme                |
| IGA    | Improvement Gap Analysis                     |
| IPA    | Importance Performance Analysis              |

## Declaration

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

I confirm this essay is my own original work and does not include text created by a generative artificial intelligence tool.

Signed: *K.L. Abbott*

Date: 24th April 2025

## **Chapter 1: Introduction**

### **1.1 Background and context**

Call handlers within emergency ambulance services are often the first point of contact in critical and distressing situations. Exposure to repeated traumatic and abusive calls can lead to high levels of stress, anxiety, and emotional exhaustion. Despite the availability of traditional support mechanisms, including peer debriefing and counselling, there remains a gap in the provision of digital mental health tools tailored for call handlers. Digital support tools, such as mobile applications, online counselling, and guided self-help resources, have emerged as potential interventions for managing workplace stress. However, their adoption within emergency response settings remains limited. Occupational stress and repeated exposure to traumatic incidents contribute significantly to burnout and poor mental health outcomes among EMS professionals, increasing absenteeism and workforce shortages. Addressing these challenges proactively is essential to maintaining a healthy, resilient EMS workforce (Wright, King and Randolph, 2023).

This study examines the effectiveness of digital mental health tools in supporting Welsh Ambulance Service NHS University Trust (WAST) call handlers, investigating the extent to which these tools are currently utilised and the perceived barriers to their use. Emergency Medical Service (EMS) professionals are particularly vulnerable to anxiety, depression, Post Traumatic Stress Disorder (PTSD), and suicide, according to a study published in the Emergency Medicine Journal (Coxon *et al.*, 2016) suggest that 22% of emergency ambulance personnel exhibit symptoms of PTSD, highlighting the significant mental health challenges faced by EMS staff in the UK. This study underscores the urgent need for targeted mental health interventions and support systems within the EMS community (Lawn *et al.*, 2020). These mental health conditions exacerbate moral injury and burnout, which raise absenteeism and lower productivity. Resolving these issues as soon as possible can lessen these detrimental effects. This study adds to the field of emergency service management and occupational health by assessing the efficacy of digital technologies. Policymakers and healthcare administrators hoping to put into practice efficient mental health support plans in emergency medical situations may find great value in the findings. WAST currently have a high turnover rate within the call centres, and it is important to establish reasons for this in an order to improve working conditions, employee satisfaction and retention rates.

The NHS Confederation's case study named "Supporting call handlers' mental health at a time of crisis" outlines a programme by the Indiana Division of Mental Health and Addiction's Resilience and Emotional Support Teams (REST) aimed at assisting overwhelmed telephone line workers during the COVID-19 pandemic. This focused, virtual initiative provided staff with the resilience needed to manage a

significant surge in calls related to COVID-19 and helped retain personnel in an essential public service (Richardson, 2022).

This programme highlights the significance of organisational culture in tackling mental health issues among call handlers. By cultivating a supportive atmosphere and introducing easily accessible interventions, organisations can successfully encourage the use of mental health support resources among their employees.

These insights indicate that both organisational culture and individual characteristics significantly influence the acceptance and success of digital mental health interventions. Addressing these factors is essential for overcoming hesitancy and achieving effective implementation.

By evaluating the policies and frameworks currently in place, such as the Blue Light Programme, this research aims to identify gaps in mental health support for emergency call handlers. The Blue Light Programme, initiated by Mind, focuses on reducing stigma, promoting wellbeing, and providing training and resources specifically for emergency service workers, including 999 call handlers (Mind, 2017). In the Blue Light Programme Legacy Report, Mind highlights the significant impact of the programme on emergency service staff and volunteers, noting improvements in organisational support for mental health, increased awareness of available resources, and a reduction in stigma (Mind Mental Health Charity, 2023). However, despite these positive changes, the report also acknowledges that poor mental health remains an issue within the emergency services. The number of staff and volunteers reporting good or very good mental health has decreased from 53% in 2015 to 45% in 2019, while those reporting poor mental health have increased from 14% to 21% (Mind Mental Health Charity, 2023).

These findings suggest that while initiatives like the Blue Light Programme have made strides in supporting mental health among emergency service workers, there are still gaps that need to be addressed, particularly for roles such as 999 call handlers. Integrating digital interventions into existing well-being initiatives could provide more accessible and tailored support, enhancing resilience and job satisfaction among these critical personnel.

The study also seeks to provide recommendations for integrating digital interventions into existing well-being initiatives, ensuring that call handlers have access to effective, evidence-based support systems. Understanding how digital tools can enhance resilience and mental well-being among emergency responders is crucial for improving workforce sustainability and overall job satisfaction.

EMS employees, especially ambulance services, are frequently the first to arrive to stressful occurrences. These workers frequently deal with stressful conditions that might have a big psychological impact. Mental health issues like PTSD, anxiety, despair, and exhaustion can result from exposure to stressful events such violent crimes, catastrophic accidents, or unexpected patient deaths (Alexander and Klein, 2001).

More people are becoming aware of the necessity of providing EMS workers with quality mental health care in recent years. Conventional means of assistance, like therapy and critical incident stress debriefing (CISD), are frequently employed. Their efficacy has been called into question, too, as some research suggests that they have little influence on long-term psychological effects (Roberts *et al.*, 2019). Digital support technologies have surfaced as a viable substitute in reaction to these difficulties, providing the possibility of instantaneous, scalable, and accessible mental health interventions.

Digital support tools are intended to offer quick access to psychological resources and help. Examples of these tools include smartphone applications, online counselling platforms, and virtual peer support networks. The study "Integrating Technology Acceptance Model and Task-technology Fit into Blended E-learning System" by (Ma, Chao and Cheng, 2013) highlights the importance of perceived usefulness, ease of use, and task-technology fit in enhancing user satisfaction and behavioural intention to use technology. These principles can be applied to digital support tools for emergency call handlers. By ensuring that these tools are perceived as useful and easy to use, and that they fit well with the specific tasks and needs of call handlers, the tools can significantly improve user satisfaction and engagement. This, in turn, can lead to better mental health outcomes for emergency call handlers, demonstrating the effectiveness of integrating Technology Acceptance Model (TAM) and Task-Technology Fit (TTF) into the design and implementation of digital support systems. These technologies can provide a range of features, including direct access to expert support, mental health monitoring, and real-time stress management approaches. Increased accessibility, less stigma, and the possibility of ongoing support have all been linked to the use of digital tools in mental health care (Firth *et al.*, 2017).

Recognising the potential advantages of digital support tools, the WAST could put in place a number of initiatives to improve staff mental health. To ascertain whether these strategies are useful in lessening the psychological effects of traumatic or abusive events, a thorough assessment is necessary. By analysing Welsh Ambulance staff members' use of digital support resources after experiencing distressing occurrences, this evaluation aims to close this gap. According to Al Dweik *et al.*, digital technology offers scalable, real-time interventions for mental health promotion and treatment, highlighting opportunities for improving access to care and utilising real-world interaction data for symptom monitoring (Al Dweik *et al.*, 2024).

This evaluation attempts to provide a comprehensive insight into the advantages and restrictions of digital support tools in this environment by integrating quantitative data from surveys and qualitative insights from interviews. The results could influence practice and policy going forward, helping to create more potent mental health support plans for emergency medical staff.



Figure 1.1 – Rich Picture

The rich picture in Figure 1.1, presents a visual representation of the challenges faced by WAST call handlers, including frequent exposure to verbal abuse and traumatic calls, which can lead to occupational stress and trauma. Current support mechanisms include accessible training designed to help manage emotional strain. However, there is a need for digital tools to enhance these support systems. Barriers such as lack of awareness and feedback gaps can hinder the effective use of potential digital tools. Recommendations for improvement focus on integrating digital support tools and strengthening organisational systems to better address the mental health needs of call handlers, emphasising compassion and emotional wellbeing to improve workforce sustainability and job satisfaction.

## 1.2 Problem statement

Although EMS personnel have been supported by traditional support mechanisms including counselling and Trauma Risk Management (TRiM) , their efficacy has been questioned. According to certain research, these therapies might not offer the necessary long-term psychological advantages (Rose and Bisson, 1998).

The development of digital tools for support has opened up new ways to give ongoing and urgent mental health care. Nonetheless, there is still a lack of study on these instruments' efficacy in the unique setting of ambulance services, especially within WAST. The purpose of this research is to assess how digital support tools are currently used and how they affect the mental health of Welsh Ambulance call-handlers after experiencing stressful events.

### **1.3 Rationale for the study**

This study's main goal is to assess how well digital support resources might lessen the psychological toll that traumatic or abusive events have on Welsh Ambulance personnel working within the 999 call-handling environments. Among the specific goals are:

1. Evaluating how much and how often WAST employees use digital support tools.
2. Assessing how satisfied users are with these technologies.
3. Assessing how digital support technologies affect mental health outcomes like stress, anxiety, and symptoms of PTSD.
4. Determining what helps and what hinders the efficient usage of digital assistance tools.
5. Making suggestions for improving the digital support offering in order to better assist emergency medical workers.

### **1.4 Aims and objectives of the research**

This research seeks to evaluate the current offerings of digital support tools to identify potential gaps in mental health assistance for emergency call handlers. It also aims to suggest methods for integrating digital interventions into existing well-being programmes, enabling call handlers to utilise effective and evidence-based support systems. Research by (Tortén Wennlund *et al.*, 2022) highlights the complex and stressful nature of managing emergency medical calls, which requires continuous information processing and creativity. Integrating digital mental health therapies can support emergency medical dispatchers by providing tools to manage stress, enhance adaptability, and maintain mental wellbeing in their high-stress roles. Acknowledging the significance of digital tools in strengthening resilience and mental health among emergency responders is essential for improving workforce sustainability and overall job satisfaction.

The objectives of this research are:

1. **Assess the Current Digital Support Tools:** Evaluate the existing digital support tools available to emergency call handlers to identify their strengths and weaknesses in providing mental health assistance.
2. **Identify Gaps in Mental Health Assistance:** Determine the areas where current digital support tools fall short in addressing the mental health needs of emergency call handlers.
3. **Propose Integration Methods:** Suggest effective methods for integrating digital interventions into existing well-being programmes to enhance their accessibility and effectiveness.
4. **Evaluate Effectiveness of Digital Interventions:** Measure the impact of digital support tools on the mental health, resilience, and job satisfaction of emergency call handlers.
5. **Explore Barriers to Access:** Investigate the challenges and barriers that prevent call handlers from using digital and workplace mental health interventions.
6. **Recommend Improvements:** Provide recommendations for improving digital and organisational support systems to better address the mental health needs of emergency call handlers.
7. **Enhance Workforce Sustainability:** Highlight the importance of digital tools in promoting resilience and mental health, thereby improving workforce sustainability and overall job satisfaction

### 1.5 Research questions

In order to accomplish these goals, the study will look into the following:

1. To what extent and under what circumstances do Welsh Ambulance Service 999 and 111 call-handlers use digital support tools?
2. What degree of pleasure do users have with these online resources?
3. What effect do these technologies have on WAST employees' mental health outcomes?
4. Which enablers and obstacles influence the use of digital assistance tools?
5. How can the infrastructure for digital support be enhanced to better serve the demands of emergency medical services staff?

## **1.6 Scope and Limitations**

This study is limited to the Welsh Ambulance Service University NHS Trust 999 and 111 call handlers and focuses on the use of digital tools for support by its staff following traumatic or abusive events. Although the in-depth study made possible by this exclusive emphasis may limit the findings' applicability to other EMS companies or geographic locations. The study also recognises some possible drawbacks, including the tendency for survey respondents to self-report and the difficulty of distinguishing the benefits of digital tools from other ongoing support systems.

## **1.7 Structure of the dissertation**

The format of the dissertation is based on the IMRAD structure, which means Introduction, Methods, Results and Discussion as this helps to structure the paper clearly and logically. The format is as follows: the study topic is introduced in Chapter 1 together with background data, the problem description, aims, goals, and research questions. The relevant literature on the usage of digital support technologies and the mental health of emergency medical workers is reviewed in Chapter 2. The data collection and analysis along with the mixed-methods approach, are described in Chapter 3. The study's quantitative and qualitative results are presented in Chapter 4. The consequences of the results are covered in Chapter 5, along with suggestions for further research and recommendations. With an overview of significant discoveries and thoughts on the research process, Chapter 6 brings the dissertation to a close.

## **Chapter 2: Literature review**

### **2.1 Introduction**

The use of digital therapies for mental health has grown in popularity because of their accessibility, low cost, and capacity to offer anonymity, which lessens stigma. These interventions are especially important in settings where employees face significant levels of psychological stress at work, such as emergency services. Digital mental health interventions can be especially helpful in high-stress workplaces like emergency services, according to research. By assisting in the management of stress, anxiety, and other mental health conditions, these interventions enhance general wellbeing and productivity at work (Berardi *et al.*, 2024). Examining research on digital interventions' efficacy in enhancing the mental health of emergency call handlers, this review of the literature will highlight important topics like stress reduction, vicarious trauma, and the use of digital technologies in mental health treatment. A review of technology-assisted and minimal contact therapies for anxiety carried out by (Newman *et al.*, 2011) suggests that self-help interventions are most effective for motivated participants.

The demanding nature of their profession, a lack of recognition, and insufficient organisational support are some of the major stressors that 999 ambulance call handlers must deal with. These factors all lead to burnout. One participant in a study by Powell *et al.*, suggested the main sources of stress for them are when it's extremely crowded, and when people are shouting while they wait to get through on 999. The stressful call environment, irregular breaks, and inadequate training procedures that disregard the emotional components of their work, all contribute to these pressures. Rigid standards are insufficient to address the human element of emergency calls, as one handler revealed: "The system is very black and white, and obviously callers and patients are not black and white." Mitigating these pressures and lowering the risk of burnout requires organisational changes, such as improved recognition and more thorough mental health training (Powell *et al.*, 2023).

Previous research suggests that gender differences play a role in how stress is managed, with women often reporting higher emotional impacts and men adopting more detached coping mechanisms. The study by Vidic (2024) investigated gender differences in response to stress, resilience, coping, and mindfulness following a relaxation and mindfulness-based intervention. The findings revealed that females experienced a greater reduction in maladaptive coping strategies compared to males. This suggests that women often report higher emotional impacts from stress and may benefit more significantly from interventions aimed at reducing stress (Vidic, 2024). Additionally, organisational culture, accessibility, and scepticism toward digital interventions contribute to the reluctance in adopting these tools. The systematic realist review published by (Peláez Zuberbuhler *et al.*, 2025) highlights various individual contextual factors that impact the effectiveness of digital interventions (DIs) in the

workplace, such as demographics, prior mental health conditions, and personal abilities. Significant mechanisms influencing DI effectiveness include frequency of use, adherence levels, and the relevance of the content, all of which can lead to positive changes in perception. The research underscores the need to analyse the interactions between these mechanisms and the cultural factors that affect DI implementation (Peláez Zuberbuhler *et al.*, 2025). Given the expanding prevalence of anxiety and depression in the workplace, employee wellness programmes for prevalent mental disorders are becoming increasingly important. According to Joyce *et al.*, common mental health conditions, especially anxiety and depression, are now the main cause of sick leave and long-term incapacity to work in most developed nations. Primary, secondary, and tertiary prevention are the three categories into which effective treatments frequently fall. For example, there is compelling evidence that cognitive behavioural therapy (CBT) can lower stress levels in individuals, but it is unclear how this approach affects more general organisational outcomes like absenteeism. The study's overall findings highlight how companies that provide structured mental health care might lessen these common workplace problems (Joyce *et al.*, 2016). According to a multicentre study done in Spain, burnout is common among emergency department nurses, who report moderate levels of job satisfaction and perceived stress. The study found that factors such as anxiety, social dysfunction, years spent working in the emergency room, gender, avoidance coping mechanisms, and lack of physical exercise were important predictors of burnout (Portero de la Cruz *et al.*, 2020). Research on web-based mental health interventions in workplace settings shows significant variation in methodology, yet generally indicates high employee acceptability, especially when interventions are simple, tailored, and use non-stigmatising language (Scheutzow, Attoe and Harwood, 2022).

## 2.2 Search strategy

A structured literature search was conducted using various search engines including PubMed, Google Scholar, UWTSD library databases, and grey literature sources to identify relevant studies. The search strategy utilised Boolean Operators to refine results, using terms such as ("emergency call handlers" OR "999 operators") AND ("mental health" OR "stress" OR "burnout") AND ("digital interventions" OR "support tools") (call handlers AND trauma OR abuse). To ensure relevance, only studies published after 2004 and written in English were included. Studies focusing exclusively on emergency dispatchers were excluded to maintain specificity to ambulance call handlers.

## 2.3 Result and analysis

The literature search identified 90 studies meeting the inclusion criteria, as represented in the PRISMA flowchart (Figure 2.1).

### 2.3.1 PRISMA Flowchart

According to (Moher *et al.*, 2009) a popular guideline intended to improve the consistency and transparency of systematic reviews and meta-analyses is the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework. It offers an organised method for recording the steps involved in finding, vetting, and choosing papers for inclusion, guaranteeing research rigour and reproducibility.

It provides a checklist and flow diagram to guide researchers in reporting the rationale, methods, results, and conclusions of their studies, promoting clarity and reproducibility. By following PRISMA guidelines, researchers can systematically identify, select, and appraise relevant studies, ensuring the reliability and validity of their findings (Sohrabi *et al.*, 2021).

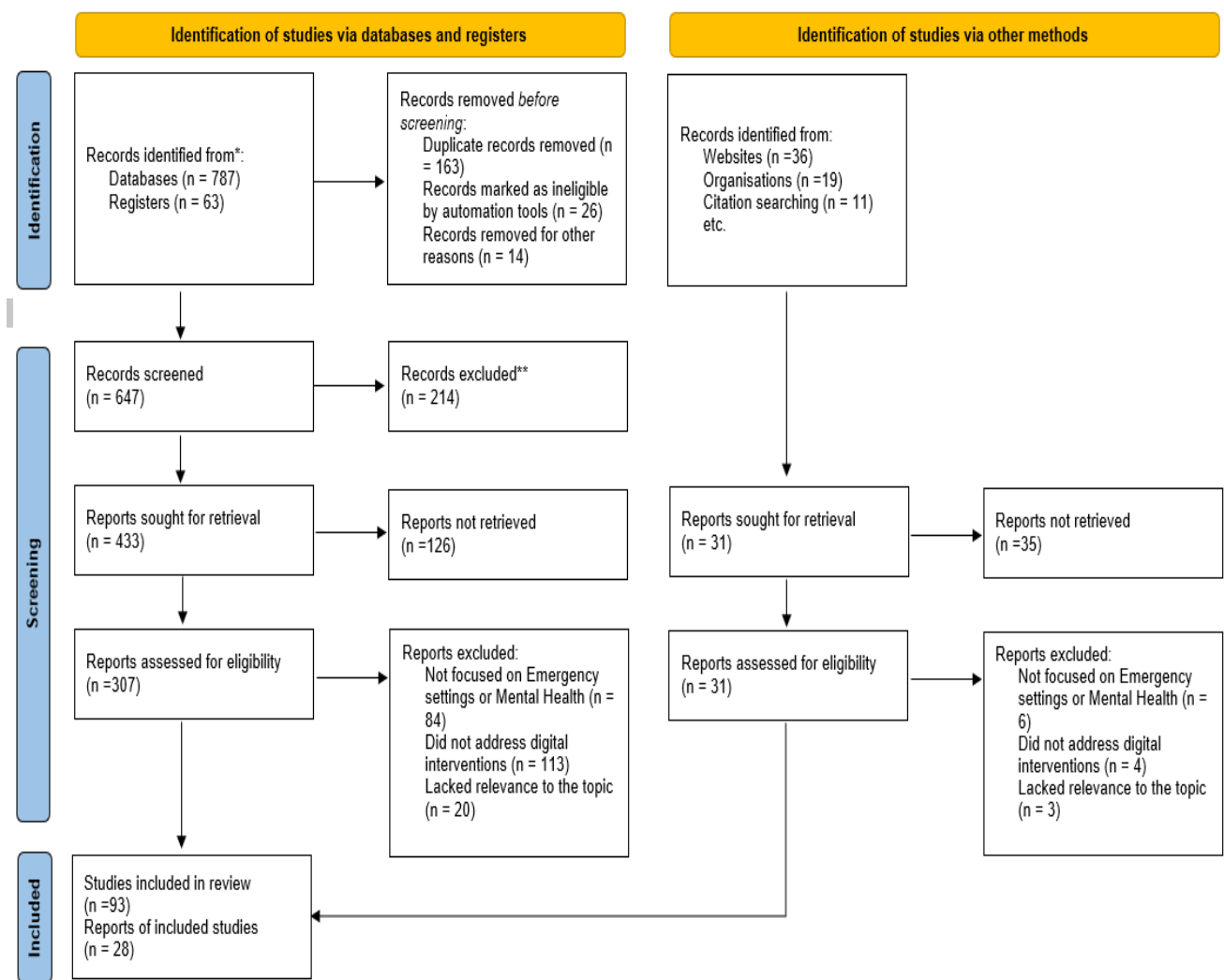


Figure2.1 PRISMA flowchart. Adapted from (Sohrabi et al., 2021)

## 2.3.2 Thematic Map

The thematic map visually represents the relationships between themes, illustrating how broad categories such as 'Emotional Toll of Work,' 'Effectiveness of Support Systems,' and 'Perceptions of Digital Tools' are interconnect. This diagram provides a structured overview, highlighting the psychological and structural factors influencing call handlers' well-being and support accessibility (Fig. 2.2).

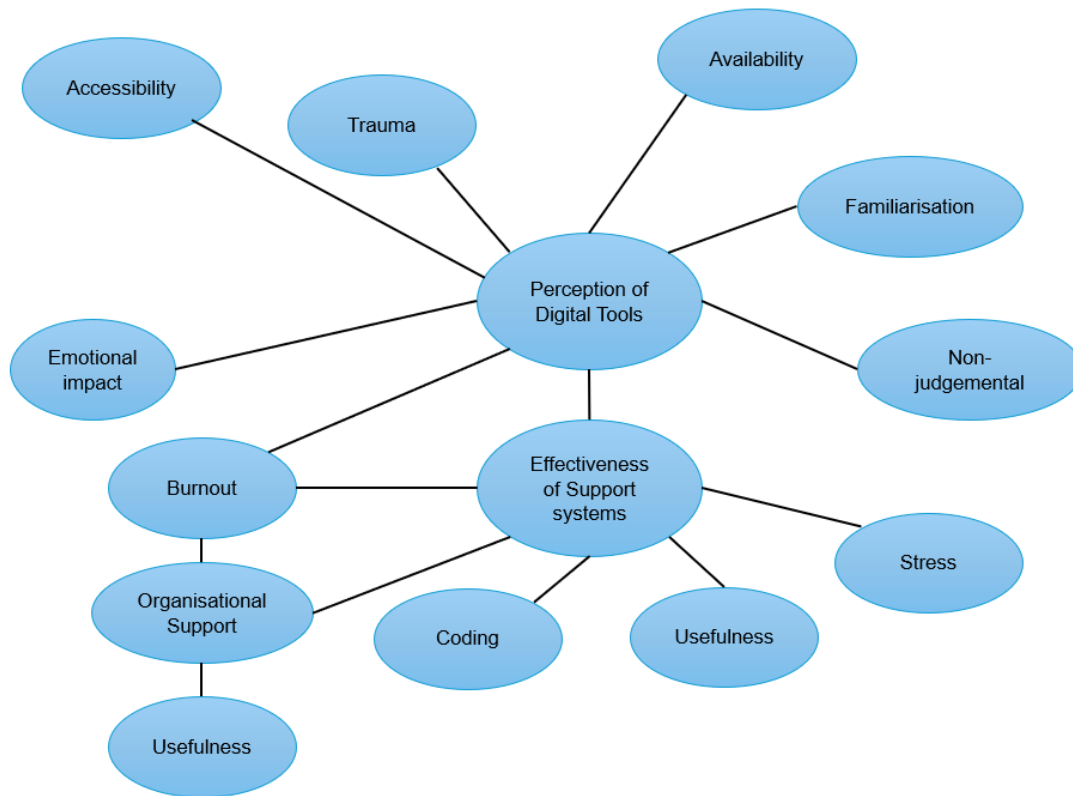


Figure .22 Thematic map to visualise relationships between themes. Adapted from [Click or tap here to enter text.](#)

This approach allowed for the integration of participants' lived experiences with quantitative findings from the survey. For example, the theme "digital tools as flexible support" aligned with survey responses that rated digital tools as moderately effective (average rating: 3.65). Thematic analysis provided deeper insight into why call handlers viewed these tools as beneficial yet noted barriers like trust and access.

## 2.4 Discussion

### 2.4.1 Popularity and Impact of Digital Mental Health Interventions

The popularity of digital mental health interventions can be attributed to its affordability for large audiences. They offer a level of confidentiality that allows employees to seek treatment without the fear of condemnation. According to Armaou *et al.*, digital interventions are favoured because they can reach a larger audience and lessen stigma, which makes them a good choice for businesses looking to promote employee well-being. Because they are more affordable, digital interventions have the potential to reach more people and provide more anonymity and stigma reduction than traditional face-to-face interventions, digital interventions are gaining popularity for improving mental health in organisations (Armaou, Konstantinidis and Blake, 2019).

Online mental health promotion interventions have been effective in enhancing the well-being of nurses and allied health professionals (Bolier *et al.*, 2014).

According to (Gray, Davies and Snowden, 2020) a randomised control treatment trial in a large UK government organisation found that low-intensity psychological interventions and stigma reduction programs can decrease mental health-related stigma, enhance help-seeking behaviours, and improve workplace productivity by reducing absenteeism and presenteeism. According to a meta-analysis that was published Carolan *et al.*, digital mental health interventions can significantly increase workers' psychological well-being, as indicated by decreases in stress and depression, and improve their productivity at work. The research highlighted the significance of using digital interventions to address a variety of occupational outcomes (Carolan, Harris and Cavanagh, 2017). Their effectiveness increases when paired with secondary communication channels like SMS and emails, which encourages more adherence and engagement. Carolan *et al.*, found that “interventions offering guidance and utilising secondary modalities such as emails and text messages achieved greater engagement and adherence.” Concerns exist, therefore, regarding the empirical basis of many digital tools for mental health (Carolan and de Visser, 2018). Krisher *et al.*, emphasise that although these tools have potential, it is crucial to critically assess them because many of them are sold without enough proof of their efficacy. They noted, “Many digital mental health tools, including apps, wearables, and chatbots, have shown promise but are often marketed with very limited or no evidence of effectiveness,” (Krisher *et al.*, 2024).

#### 2.4.2 Stress in Emergency Call Handlers

Emergency call handlers endure a great deal of stress at work, especially those who operate in high-stress settings like ambulance dispatch centres. Coxon *et al.*, studied the experiences of NHS ambulance dispatch personnel in the UK. Three primary themes emerged from the study: the underappreciation of dispatch labour, the demanding nature of their jobs, and the necessity of developing more effective stress-reduction techniques. The study's conclusion was that emergency operations workers might benefit from immediate mental health interventions offered by digital tools, which could help lower staff turnover and sick leave. To lower the risk of sick leave and avoid work-related weariness, Emergency Operations Centre dispatch employees need more assistance at work, including skills training to encourage post-shift recovery (Coxon *et al.*, 2016).

In a similar vein, Maina *et al.*, investigated the physiological impacts of stress and discovered that raised blood pressure was linked to call handlers' high job strain and effort-reward imbalance. This physiological reaction to stress emphasises the necessity of comprehensive support networks that attend to emergency personnel's physical and mental well-being. The authors concluded, elevated ambulatory blood pressure is linked to high occupational strain and effort-reward mismatch,

underscoring the necessity of call handlers using efficient stress management techniques (Maina *et al.*, 2011).

Unmanageable workloads are frequently associated with work-related suicides, particularly in high-pressure positions. (Johnston *et al.*, 2022) conducted a systematic review of protocol to explore the organisational support available for ambulance employees and the barriers to accessing such support, highlighting the critical role of organisational factors in employee well-being. Additionally, according to (Saldanha *et al.*, 2025), EMS clinicians experience high rates of suicidal ideation and suicide planning, with burnout and chronic workplace stress identified as significant contributing factors to these mental health challenges. These findings underscore the importance of effective workload management and organisational support in preventing mental health deterioration among emergency service workers. A study by (Waters and Palmer, 2022) found that excessive workloads, in addition to other stressors like bullying at work and exposure to violence, are a major contributing factor to these suicides. According to heavy workloads were a significant contributing factor to suicide in 50% of the cases they examined emphasising how important it is to manage effectively workload to stop mental health from declining. Waters *et al.*, report that "In 6 of the cases studied (50%), an unmanageable workload was identified as a contributory factor in the suicide and was identified as the main causal factor in 3 (25%) of the cases. The study urges organisational change to create more encouraging workplaces in order to lower these avoidable suicides." indicate that web-based digital mental health interventions positively impact burnout, mental health, and occupational outcomes among healthcare professionals, with significant improvements observed in multiple randomised controlled trials (Aye *et al.*, 2024).

Compared to other working people, emergency services professionals are more likely to experience mental health issues. Working in emergency services entails a lot of stress, long hours, and quick decisions, all of which can lead to mental exhaustion and burnout. Compared to 60% of the general workforce, over 85% of emergency services employees report having stress and poor mental health at work, according to research by the mental health charity MIND. According to a study by (Stevellink *et al.*, 2020) emergency workers were more likely to report issues including alcohol abuse and PTSD, which are frequently made worse by stress and trauma associated to their jobs. When trauma exposure and other occupational characteristics were taken into account, the association between emergency services professionals and PTSD was no longer significant, according to (Stevellink *et al.*, 2020). This emphasises how crucial it is to address the stressors and traumatic exposures specific to emergency services in order to outcomes (Stevellink *et al.*, 2020).

Workers at emergency dispatch centres frequently experience high levels of occupational stress, which can have a negative impact on their mental health. According to (Golding *et al.*, 2017) "EDC operatives experience stress as a result of their work, which appears to be related to negative psychological health outcomes". Numerous things contribute to this stress, such as being exposed to traumatic calls,

not having control over tasks, and not receiving enough organisational assistance. The study also states that "Peer support and social support from friends and family were helpful in managing work-related stress" underscoring the significance of peer and social support. These results highlight the necessity of interventions that target the psychological and practical difficulties that dispatch centre employees' encounter (Golding *et al.*, 2017).

Workplace stress can be effectively reduced by web-based mindfulness programmes, particularly for high-stress occupations like 911 telecommunicators. According to Kerr *et al.*, participants in their study had favourable opinions about the alleged advantages of mindfulness practice, such as improved empathy for callers and self-efficacy in managing stressors. In fact, participant's commitment was greatly influenced by organisational factors, such as encouragement for finishing the programme at work, while individual traits had no discernible impact on involvement. This emphasises how crucial supportive settings are for encouraging participation in digital health initiatives (Kerr *et al.*, 2019).

An article published by Adams *et al.*, explores the particular pressures that emergency medical dispatch (EMDs) encounter. This study emphasises the possibility of post-traumatic development (PTG) in these professions as well as the high levels of operational and organisational stress, such as coping with vicarious trauma and job instability. The results imply that EMDs endure extreme stress levels on par with on-scene responders, despite being indirectly involved (Adams, Shakespeare-Finch and Armstrong, 2015).

(Wankhade and Patnaik, 2020) offer critical insights into the theory and rationale behind interoperability and collaboration among emergency services. They examine important themes such as trust, leadership, workforce well-being, resilience, and professional cultures, all of which significantly impact the success of interoperability and governance agendas. While the book addresses workforce well-being and resilience, it does not provide specific details on mental health issues among emergency workers.

#### *2.4.3 Vicarious Trauma and the Psychological Toll of Emergency Work*

An important worry for emergency call handlers is vicarious trauma. People who are indirectly exposed to trauma through their jobs experience vicarious trauma, also referred to as secondary traumatic stress. This entails the emotional and psychological toll that listening to and helping people in difficult circumstances takes on emergency call handlers. This repeated exposure over time may result in symptoms like anxiety, depression, and PTSD that are comparable to those of the trauma survivors themselves (mResilience, 2023).

Vicarious trauma has several important components, such as:

- ❖ Emotional Shifts: Call handlers might experience feelings of helplessness, emotional numbness, or overwhelm.
- ❖ Cognitive Shifts: They may start to think negatively or become unduly fixated on the traumatic information that callers have shared.
- ❖ Irritability, social disengagement, and trouble separating work and personal life are examples of behavioural symptoms.

Emergency call handlers' mental health and wellbeing depend on addressing vicarious trauma so they can keep helping people in need. Willis *et al.* conducted a systematic study of the mental health concerns experienced by emergency call takers, finding that extended exposure to stressful events can lead to mental health issues ranging from mild anxiety to PTSD. These problems are made worse by a lack of managerial support, which makes it harder for call handlers to manage their stress at work. According to (Willis *et al.*, 2020) "Call-takers reported a range of stress responses to job-related traumas from mild anxiety and depression to severe conditions such as post-traumatic stress disorder (PTSD)." The study also found that many call takers attribute work-related stress to difficulties in their personal lives, including marital separation and health problems. They further note, Additionally, some callers blamed unaddressed work-related stressors for marriage separation and relationship issues, such as inadequate parenting, health issues, and financial hardships (Willis *et al.*, 2020).

To further understand the emotional regulation strategies of emergency call handlers, this dissertation also briefly explores the Contrast Avoidance Model (CAM), which provides valuable insights into how individuals manage their emotional states to avoid sudden negative shifts. The CAM is reviewed in Przeworski *et al.* paper "According to this paradigm, which was first discussed by people who suffer from Generalised Anxiety Disorder (GAD) or other anxiety symptoms employ concern as a coping mechanism to prevent their feelings from becoming more intensely negative. According to recent research, those who are prone to worry are more likely to maintain low levels of anxiety rather than take the chance of experiencing abrupt negative emotional shifts because they expect unpleasant emotional contrasts (Mendoza *et al.*, 2024). The importance of CAM in directing therapeutic approaches for anxiety and related illnesses is highlighted in this article (Przeworski and Newman, 2024).

Adams *et al.*, study also examined emergency medical dispatchers' experiences, finding that although they are not on the scene physically, they can nevertheless experience vicarious trauma. Feelings of powerlessness combined with this exposure to traumatic events might cause long-term psychological discomfort. Findings revealed that although EMDs are not physically present at incidents, they can still suffer from vicarious trauma due to regular exposure to traumatic events, this in part can be caused by a sense of powerlessness and helplessness. The study underlined the necessity of interventions that deal with the emotional strain of the job as well as operational stress (Adams, Shakespeare-Finch and Armstrong, 2015).

#### 2.4.4 Role of Digital Tools in Managing Mental Health

One potentially effective way to manage the stress and trauma that emergency call takers endure is to include digital tools into mental health care. Digital platforms have the ability to offer real-time mental health assessments and interventions, especially in high-stress settings (Bucci, Schwannauer and Berry, 2019). They suggest that in an effort to address the scope and magnitude of the global mental health epidemic, technology advancements and solutions are being explored. In a manner that has not yet been possible with in-person or paper-based techniques of assessment, digital platforms enable people to self-monitor and self-manage. Through the provision of self-monitoring and mental health management tools, these platforms may lessen the likelihood of both vicarious trauma and burnout among employees (Bucci, Schwannauer and Berry, 2019).

In their systematic review, Eichberger *et al.*, discovered that digital mental health interventions present viable opportunities to enhance emergency services personnel's well-being. They emphasised the potential of digital tools to enhance the mental health of emergency services personnel, concluding, that the use of digital tools in mental health support presents encouraging opportunities to improve emergency services workers' well-being, particularly in high-stress situation (Eichberger, Derks and Zacher, 2021). Similarly, (Newman et al., 2011). noted that "technology offers a unique opportunity to deliver timely and accessible support, especially in high-stress environments," when it comes to managing mental health difficulties. Emphasising the possibility of technology to give timely and accessible help, particularly in high-stress circumstances like emergency call centres.

The potential of digital treatments to reduce workplace stress and support mental health is becoming more widely acknowledged. This strategy is demonstrated by the EMPOWER initiative (Diano, Sica and Ponticorvo, 2023) which provides algorithm-driven, tailored material to meet the needs of both individuals and organisations. To offer individualised advice, it assesses users' psychological and physical problems, work functioning, and psychosocial risk factors. An employer portal and a public portion are also included in the intervention to help direct workplace-level stress-reduction tactics. The importance of combining organisational health policies with individual well-being is demonstrated by this dual-focus design. The EMPOWER digital intervention integrates personalised support for individual employees while providing organisations with recommendations to mitigate psychosocial risks, demonstrating a tailored approach to workplace mental health (Diano, Sica and Ponticorvo, 2023).

#### 2.4.5 Challenges and Future Directions

Even while digital therapies for mental health have showed potential, difficulties still exist. Despite the fact that these tools are appreciated for their anonymity, flexibility, and ease of use, Carolan *et al.*, point out that employees frequently find it difficult to prioritise mental health interventions during working hours. The study noted, some barriers to the use of digital therapies were lack of time and an inability to prioritise these tools, this highlights the importance of ensuing tools are both efficient and easily available in order to improve use (Carolan and de Visser, 2018).

Looking forward, future directions should focus on addressing these structural and cultural barriers. Research could explore how digital therapies might be embedded more naturally into daily workflows, perhaps through micro-interventions which fit easily into a person's day removing time as a barrier, app-based tools, or employer-led initiatives. There is also scope for the development of more personalised tools that adapt to an individual's schedule, usage patterns, and preferences. Additionally, the ethical considerations of data privacy and user consent will need ongoing attention as digital tools become more sophisticated.

Ultimately, while digital therapies hold great promise, their success will depend on designing interventions that acknowledge and adapt to real-world workplace demands, and on fostering environments that prioritise mental wellbeing alongside productivity.

#### 2.4.6 Post-Traumatic Growth's (PTG) Function in High-Stress Positions

Recent studies on post-traumatic growth (PTG) show that some emergency professionals grow personally and become more resilient as a result of their experiences, even in the face of extreme stress . (Finstad et al., 2021) investigated the beneficial aspects associated with the Covid-19 pandemic, in particular coping mechanisms, resilience and PTG among healthcare professionals. The review highlights the role psychological resilience plays in mitigating the impacts and levels of depression, anxiety and burnout linked to traumatic experiences. The potential for PTG is increased by elements including peer support, supportive work environments, and training in adaptive coping mechanisms. This implies that corporate expenditures in mental health services could promote both stress recovery and constructive personal growth, which would ultimately be advantageous to both (Li *et al.*, 2024)ir employers. (Li *et al.*, 2024) also shows that moderate levels of PTG were observed among healthcare workers during the COVID-19 pandemic, with significant improvements in interpersonal relationships, life philosophy, and personal competence, indicating that these professionals can grow personally and become more resilient even in the face of extreme stress (Jennings, 2000).

## 2.5 Conclusion

Research suggests that digital mental health therapies have great promise for enhancing emergency call handlers' well-being. From enhanced engagement through additional communication channels to anonymity and stigma reduction, these tools provide a number of advantages. Digital therapies offer a number of benefits such as increased accessibility, cost effectiveness and they are flexible, all of which make them an attractive and popular alternative. Nonetheless, it is vital to keep assessing their efficacy to make sure they offer the required assistance for this demanding profession. As digital health technologies advance, they present a more practical means of controlling emergency personnel' mental health, so long as workplace processes carefully include them.

The mental health of nurses and other healthcare workers has improved with the use of digital technologies, according to encouraging findings. "Personal mental well-being solutions significantly improved nurses' and healthcare professionals' mental well-being," according to (Ilola *et al.*, 2024) interventions including online programs and mobile applications helped to reduce stress and burnout. However, the meta-analysis found "little to no effect on professionals' work engagement", casting doubt on the efficacy of work-related digital interventions. This implies that although individual digital technologies can be useful in promoting mental health, more investigation is required to maximise work-related solutions for healthcare settings.

Stress at work has a significant negative influence on mental health, according to (Özbay and Bülbül, 2025) particularly for EMD and other emergency care occupations. According to studies, ongoing exposure to trauma and crises can lead to anxiety, burnout, and vicarious trauma, which can impair one's personal wellbeing as well as one's ability to function at work. Organisational support networks, resilience training, and interventions based on CBT have shown effective in reducing these impacts.

The effectiveness of digital therapies, such online stress management and mindfulness courses, in enhancing mental health in high-stress professions is becoming more widely acknowledged. According to the (Peláez Zuberbuhler *et al.*, 2025), these interventions enhance accessibility for shift-based workers like Emergency Medical Dispatchers (EMDs) while also reducing stigma by providing anonymity. Research continuously demonstrates that these types of therapies can lessen the symptoms of sadness and anxiety, which has important ramifications for helping workers in high-stress situations. Future studies, however, might look more closely at tailored digital tactics to boost effectiveness and engagement. According to (Almuqrin *et al.*, 2025), smartphone apps offer a potentially cost-effective, available, and accessible solution for monitoring, supporting, and treating mental health conditions, demonstrating effectiveness and acceptability across a wide range of mental health disorders.

## **Chapter 3: Research methodology**

### **3.1 Overview of Methodology**

A mixed-methods approach is used in this study to give a thorough assessment of digital assistance aids. Employees of WAST received a structured questionnaire from which quantitative data were extracted. The surveys will evaluate the context and frequency of tool usage, employee satisfaction, and mental health outcomes using validated measures for PTSD, anxiety, and depression. In addition, semi-structured interviews with a varied sample of WAST call handlers will collect qualitative data in order to investigate individual experiences, contextual issues, and recommendations for enhancement. Research by (Almalki, 2016) shows that the integration of quantitative and qualitative data in mixed methods research can yield positive benefits, providing a greater depth and breadth of information that is not possible using singular approaches in isolation. In order to provide a thorough grasp of the call handlers' experiences and the effect of secondary traumatic stress (STS) on their mental health, this study uses a mixed-methods approach, combining quantitative surveys and qualitative interviews. Combining the two approaches enables a more thorough investigation of these experiences, revealing statistical insights while encapsulating the individual effects and coping strategies of STS patients. Using tools like the PSS-10, GAD-7, and MBI-SF, a quantitative survey (Appendix A) was used to collect information on stress, anxiety, and burnout, giving quantifiable information about how common certain circumstances are among call handlers.

Semi-structured interviews (Appendix B) were used in the qualitative component to delve deeper into coping mechanisms and individual experiences.

The choice to employ a mixed-methods strategy for this study stems from its capacity to integrate the advantages of both qualitative and quantitative approaches, providing a thorough comprehension of the research issue. As discussed by Plano Clark *et al.*, combining numerical data with in-depth insights, mixed methods allow researchers to tackle challenging topics and improve the findings' robustness and richness (Plano Clark, 2017). This method is especially appropriate for a study investigating the opinions of Welsh Ambulance Service University NHS Trust (WAST) call handlers on digital support tools since it enables the recording of both general patterns and specific individual experiences.

According to Gibson, triangulation integrates several approaches to study the same issue, improving the findings' richness and dependability. Because it confirms and elaborates findings, this methodology is especially pertinent to mixed-methods research, guaranteeing that both quantitative and qualitative data contribute to a more thorough and in-depth understanding of complicated situations (Gibson, 2017). To learn why awareness is poor or which particular technologies participants find appealing, for instance, quantitative results showing low awareness of digital tools can be further investigated qualitatively. When dealing with complicated topics like mental

health support in high-pressure professions, where statistics alone cannot adequately capture participants' lived experiences, this integration is very helpful.

The study's goals, which included understanding the state of digital support tools and investigating call handlers' opinions regarding their possible application, are effectively served by the mixed-methods technique. While qualitative data offers the depth necessary to identify particular barriers, facilitators, and contextual factors, quantitative data offers the breadth necessary to evaluate patterns throughout the workforce.

In conclusion, this study justifies a mixed-methods approach since it blends the thoroughness of qualitative investigation with the precision of quantitative analysis. This methodological decision guarantees that the study records the rich, context-specific facts as well as the generalisable patterns required to offer insightful and useful suggestions for enhancing support for WAST call handlers. This research can address the "what" and the "why" of the issue by using a combination of methodologies, providing a thorough viewpoint that neither approach could provide on its own.

## **3.2 Qualitative methods**

### *3.2.1 Data collection*

Depending on participant availability and interests, interviews took place over Microsoft Teams. With participant approval, audio recordings of the sessions were made to guarantee precise transcription and analysis. A comprehensive examination of the participant's experiences and coping strategies was possible over the 15-30-minute duration of each session. In accordance with best practices for sensitive mental health research, all transcripts were anonymised and safely preserved to ensure confidentiality, once the results were collated the transcripts were destroyed.

### *3.2.2 Data collection: Interview design*

To learn more about the lived experiences of call handlers handling upsetting calls and how these impact their mental health, semi-structured interviews were performed. The discussion was guided by an interview guide that covers subjects like coping mechanisms, organisational support perceptions, and stress and anxiety cause.

Due to the semi-structured format's flexibility, the interviewer could go more deeply into participants' answers to elicit more information. This method guarantees that the information gathered is rich and pertinent, illuminating the subjective effects of stress and anxiety that may be difficult for quantitative measurements to properly convey.

### 3.2.3 Interviews – Participants selection criteria

Participants for the interviews were selected through purposive sampling, focusing on call handlers who have managed distressing calls. Selection criteria included handling at least one upsetting call in the past year, current employment status as a call handler, and willingness to participate in a recorded interview. Eligibility was determined through self-reporting during the recruitment process, where potential participants confirmed that they met the predefined criteria. This approach ensured that the data collected was relevant and aligned with the study's objectives. By focusing on those who directly experience distressing interactions, the research can yield insights specific to those most affected by occupational stress and burnout. Sample size was determined by data saturation, with approximately 15-20 participants anticipated, ensuring comprehensive perspectives on the impact of anxiety, stress, and burnout within this specific context.

Welsh Ambulance Service 999 and 111 call handlers who have personally had stressful phone encounters were chosen for this study using purposive sampling. The length of service, the frequency of traumatic or abusive call exposure, and the candidates' self-reported stress or trauma levels are examples of selection criteria.

The saturation point, or the point at which more data gathering yields no new insights, were used to calculate the sample size. As discussed by (Vasileiou *et al.*, 2018) these kinds of qualitative research usually involve 15–30 individuals in order to guarantee a wide variety of experiences and an adequate amount of data.

In selecting stakeholders for the interviews, several criteria were considered to ensure the relevance and depth of the data collected (Table 3.1).

Table 3.1 Criteria for data collection via interviews

| Criteria                            | Inclusion Criteria                                                                                                                                      | Exclusion Criteria                                                                                     |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Employment Status</b>            | Participants must be current call handlers for the Welsh Ambulance Service.                                                                             | Employees not in call-handling roles                                                                   |
| <b>Willingness and Availability</b> | Participants must be open to participating in the study and available for interviews or other data collection methods.                                  | Declined participation or withdrew consent or Unavailable during the interview/ data collection period |
| <b>Expertise</b>                    | Participants with experience handling stressful calls provide valuable insights into the impact on mental health and the role of digital support tools. | Participants that have not experienced traumatic or abusive calls                                      |
| <b>Relevance</b>                    | Participants must have a direct connection to the research issue to ensure the data collected is pertinent.                                             | Participants who do not have a direct connection with the research issue                               |

### 3.3 Quantitative methods

#### 3.3.1 Data Collection

To increase participation, a survey was disseminated electronically using the Welsh Ambulance Service's internal communication channels and email (Appendix C). A poster was produced outlining the purpose of the survey and providing contact details for any queries or concerns (Appendix D). An online format reduces the possibility of answer biases associated with workplace observation by allowing call handlers to complete the survey anonymously at their convenience. Over the course of eight weeks, regular reminders were sent out to promote participation. To promote candid answers and interaction, the survey invitation explicitly stated privacy and confidentiality guarantees. To preserve participant privacy, identifiable information was eliminated from collected survey replies before they are safely stored.

#### 3.3.2 Data collection: Survey Design

Three proven methods for measuring stress, anxiety, and burnout in Welsh Ambulance Service call handlers were incorporated into the survey instrument. Respondents' perceptions of control, unpredictability, and excessive stress are reflected in the Perceived Stress Scale (PSS-10), which gauges perceived stress levels during the previous month. According to (Cohen, 1994) this is the most utilised psychological instrument for measuring the perception of stress. A popular instrument for assessing generalised anxiety symptoms, the Generalised Anxiety Disorder Scale (GAD-7) measures the frequency of symptoms like tension, concern, and restlessness. (Spitzer *et al.*, 2006) discuss the development and validation of the GAD-7 scale and its reliability, validity and practical application. Lastly, burnout is measured on three dimensions by the Maslach Burnout Inventory-Short Form (MBI-SF): personal accomplishment, depersonalisation, and emotional weariness. Respondents were able to identify the frequency of each symptom using a 5-point Likert scale in the survey. The (MBI-SF) is a widely used tool for assessing burnout across various professions, providing a concise yet comprehensive measure of emotional exhaustion, depersonalisation, and personal accomplishment (Wang *et al.*, 2024). Together, these metrics offer a thorough understanding of mental health by evaluating stress, anxiety, and burnout—all of which are especially pertinent in high-stress professions like answering emergency calls.

### *3.3.3 Participants*

Call takers who work for the Welsh Ambulance Service and frequently handle emergency calls, many of which involve high-stress situations, are among the study's target demographic. Participants were chosen according to their availability and recent experience with difficult calls in order to obtain a representative sample. In order to collect a variety of experiences across various demographics, years of service, and occupational responsibilities, convenience sampling will enable broad representation within this community. By including a wide range of call handlers, it was easier to identify broad patterns and connections between mental health issues and work obligations, which will assist determine organisational support requirements and possible solutions.

### *3.3.4 Sampling techniques*

Purposive sampling was used to choose study participants, with a particular emphasis on call takers who work for the Welsh Ambulance Service Trust (WAST). Since this study focusses on people with particular traits, namely, those who have firsthand experience handling abusive or traumatic phone interactions - purposive sampling is suitable. This method guarantees that the information gathered is closely related to the goals of the study.

In order to optimise involvement and guarantee a wide variety of viewpoints, a voluntary response sampling technique will also be utilised. All qualified call handlers will receive survey invites through internal communication channels or organisational email, enabling them to self-select based on their interest in taking part.

In order to ensure adequate representation for insightful quantitative analysis, the survey's sample size will try to include as many call handlers as possible given time and resource restrictions. Criterion sampling was used to choose a smaller fraction of survey respondents for the interviews in order to guarantee a range of demographics, professional backgrounds, and exposure to difficult calls, all of which will yield valuable qualitative insights. This two-pronged strategy guarantees the acquisition of data in both breadth and depth (Cresswell, Williams and Sheikh, 2020).

### *3.3.5 Analysis of Quantitative Data*

To summarise important themes, such as the frequency of particular opinions on digital assistance tools and perceived difficulties in adopting them, the survey results were examined using descriptive statistics. Descriptive statistics help you understand survey results by showing the average responses, how spread out the answers are, and how often each answer was given. They make it easier to see

patterns and trends in the data. By following certain steps: collecting data, finding the mean (average), median (middle value) and mode (most common response), assessing variability, counting how often each response occurs, using tables or charts to visualise it helps with identifying any patterns, themes or trends. These steps help with summarising and understanding survey results.

### **3.4 Justification of the research methodology and method**

The study's selected research methodology blends quantitative and qualitative techniques to offer a thorough grasp of the opinions of call handlers for the WAST on digital assistance tools. This mixed-methods strategy makes sense since it enables the researcher to collect more in-depth, nuanced perspectives through interviews and obtain broad, numerical insights through surveys. While qualitative data from interviews will offer fuller context and explanations for those trends, quantitative data from surveys will make it easier to analyse trends and commonalities.

The use of online surveys guarantees participant anonymity, which promotes candid input, and enables data gathering from a larger sample size, which improves the findings' generalisability. Understanding the general attitude and expectations of WAST call handlers depends on this. Conversely, interviews allow for a more thorough examination of certain themes, experiences, and difficulties that may not be well conveyed in a formal survey format. Combining these approaches gives the research the depth and resilience it needs to successfully address the study's goals.

The validation framework created by (Leech *et al.*, 2010) is intended to aid researchers in assessing mixed research studies by offering a thorough approach to construct validation. This framework merges aspects from both quantitative and qualitative research methodologies to guarantee a cohesive approach to validity in mixed methods research. The core component centres on the theoretical and conceptual foundations of the study, ensuring that constructs are well-defined and rooted in pertinent theories and literature. This foundational aspect is vital for validating the constructs being assessed. The framework encompasses elements of construct validation from both quantitative and qualitative research. In quantitative studies, conventional validity criteria such as content validity, criterion-related validity, and construct validity are highlighted to ensure that measurement tools effectively capture the intended constructs. In qualitative research, the framework highlights credibility, transferability, dependability, and confirmability to guarantee that the qualitative data and interpretations are reliable and accurately reflect participants' viewpoints. For mixed methods research, the framework integrates these components to ensure that constructs are valid across various methods and perspectives.

The validation framework developed by (Leech *et al.*, 2010) can be contrasted with other validation models in various ways, underscoring its distinctive contributions and similarities with established models. Conventional quantitative validation frameworks, such as those formulated (Cronbach and Meehl, 1955) prioritise construct validity through elements like content validity, criterion-related validity, and construct validity itself. While Leech *et al.* incorporate these traditional aspects, they expand them to encompass mixed methods research, thereby ensuring that constructs are validated across both quantitative and qualitative datasets. The addition of qualitative validation criteria alongside quantitative ones offers a more comprehensive perspective.

(Young and Harris, 2016) discuss advanced model validation and calibration techniques, emphasising the importance of verified and up-to-date models for reliable system planning and operation. Their framework focuses on the technical aspects of validation and calibration. Compared to Leech *et al.* (2010), who assess validation in mixed research studies, Young and Harris emphasise a more structured and quantitative validation process. While both frameworks prioritise rigorous validation, Leech *et al.* integrate both quantitative and qualitative elements, ensuring that constructs are practically relevant and ethically applied across different research contexts. This distinction highlights the adaptability of the Leech *et al.* framework for mixed-methods research, where both empirical rigor and contextual relevance are crucial.

To conclude, the validation framework presented by (Leech *et al.*, 2010), is notable for its integrative and all-encompassing approach, fusing elements from quantitative, qualitative, and mixed methods validation frameworks. Its distinct contributions include a focused attention on inferential consistency, utilisation/historical elements, and consequential aspects, ensuring that constructs maintain validity across methods while also being practically significant and ethically sound. This positions it as a crucial resource for researchers engaged in mixed methods studies, facilitating a seamless approach to construct validation that tackles the challenges of merging quantitative and qualitative information.

When employing mixed methods, which blend qualitative and quantitative approaches, the diagram shows how to verify the validity of your research procedures and findings. It outlines the essential procedures to guarantee that the study is well-designed, the data is reliable, and the conclusions are logical (Fig. 3.1).

## Validation Framework: Elements of Construct Validation

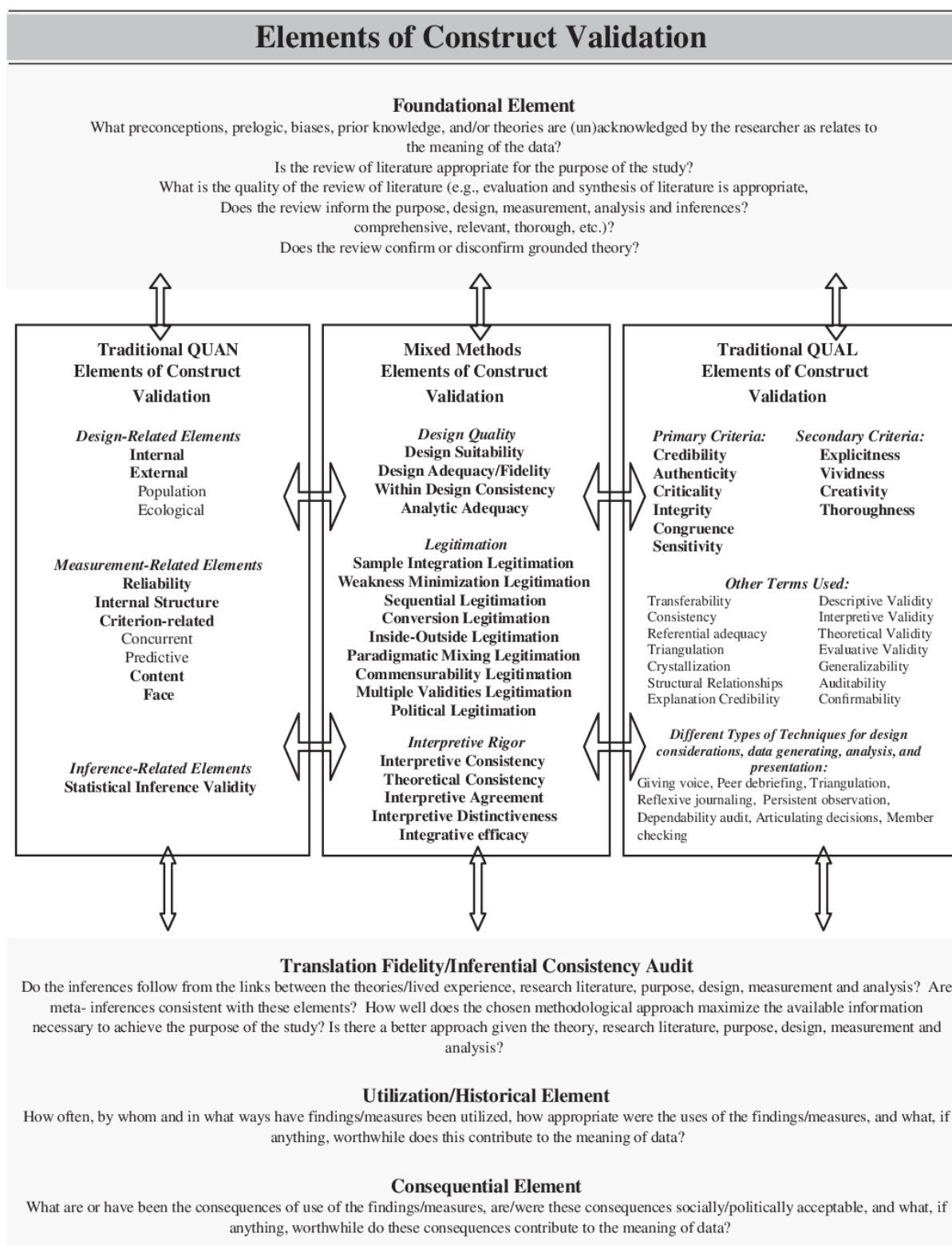


Figure3.1 : Validation framework: elements of construct validation (Leech et al., 2010).

## 3.5 Data analysis techniques

### 3.5.1 *Why Use Thematic Analysis?*

Thematic analysis was employed to analyse the qualitative data collected from semi-structured interviews. This method is well-suited for identifying, analysing, and reporting patterns (themes) within qualitative datasets (Braun and Clarke, 2006). Thematic analysis provides flexibility while maintaining a structured approach to understanding complex narratives, making it ideal for exploring the emotional and professional experiences of WAST call handlers. Exploring recurrent themes through thematic analysis of interview data provides a deeper comprehension of the background of the survey's numerical trends. According to Braun *et al.*, semi-structured interviews and other qualitative techniques offer deeper, more complex insights into the attitudes and experiences of participants, which enhance the quantitative results. This is especially helpful for comprehending subjective elements like call handlers' emotional difficulties or perceived obstacles to implementing digital tools (Braun and Clarke, 2006).

Thematic analysis was chosen for this study due to its flexibility in identifying patterns in qualitative data, making it well suited to exploring the experiences of WAST call handlers. Given the emotionally demanding aspects of their work, this method allows for an in-depth understanding of their current coping mechanisms, the impact of these types of calls and perceptions of current available support. Thematic analysis is also effective for psychological and organisational research as it captures both common trends and variations in individuals' mental health experiences in the workplace. In highlighting the way in which call handlers engage with or resist current digital interventions the analysis provides valuable insights into improving support mechanisms and ultimately the mental health of WAST employees.

### 3.5.2 *Why use MS Forms for Analysis?*

MS Forms provides a simplified process for the collection and initial interpretation of data, providing ready-made visualisations such as pie charts and scatterplots. Whilst it is more limited than more advanced software, this approach aligns with the exploratory nature of this study and allows for simple, clear presentation of trends and key insights.

Sandelowski highlights the importance of combining data collection techniques in order to gain a comprehensive understanding of research concerns in the discussion of the integration of qualitative and quantitative approaches in mixed-method studies. It is evident from Sandelowski's research that mixed-method approaches can increase the validity and reliability of study findings by utilising both types of data. Some scholars have criticised her technique for not adequately addressing the challenges of methodological triangulation in mixed-method studies,

despite the fact that the study provides useful information on merging the two approaches (Sandelowski, 2000).

Microsoft Forms (MS Forms) (Microsoft Corporation, 2016) was used to collect and analyse the quantitative data results. MS Forms offers built-in functionality for collating and summarising responses, including descriptive statistics, visual diagrams such as charts and graphs and basic trend analysis. Although MS Forms is not as sophisticated as some statistical software it does offer an intuitive interface and automated insights that are appropriate for smaller datasets. (Cresswell, Williams and Sheikh, 2020) discusses the use of surveys and other quantitative approaches which offer quantifiable information on variables including stress levels, digital tool awareness, and openness to embracing new technology. This element is crucial for spotting broad trends and patterns among a bigger sample of participants, which improves the findings' generalisability. For example, correlations between demographic characteristics (such as years of experience) and openness to digital tools can be found by statistical analysis of survey data. The thematic analysis aimed to uncover rich, qualitative insights into the lived experiences of call handlers, particularly in relation to their mental health and use of digital support tools. The goal was to explore how they perceive and manage stress, including the impact of secondary traumatic stress (STS), and to understand the personal, cultural, and organisational factors that influence their help-seeking behaviours. The analysis sought to reveal attitudes towards digital interventions—such as mental health apps and online counselling—the perceived barriers to accessing them (e.g., lack of time, trust, or awareness), and the types of support call handlers felt were most effective or desirable. By identifying these underlying themes, the study aimed to inform more tailored, accessible, and acceptable mental health support strategies within the workplace.

### **3.6 Limitations of the study**

The sample for this research consists of 111 & 999 WAST call handlers, accounting for around 11% of the overall workforce. While this offers a concentrated view of the population, it brings certain limitations regarding generalisability. The limited sample size may not reflect the complete range of experiences and coping strategies among all call handlers, especially concerning demographic diversity, geographic distribution, or length of service.

Additionally, study participation might be influenced by self-selection bias, where individuals with a specific interest in mental health or personal encounters with trauma may be more willing to take part. This could lead to findings that lean towards those who are either more engaged or more impacted by stress and trauma, possibly overlooking the perspectives of less affected or disinterested call handlers.

Despite the niche population being examined, the sample size remains considerable. The findings can offer meaningful, context-specific insights into the

mental health difficulties and coping mechanisms employed by WAST call handlers. Moreover, concentrating on one organisation guarantees a uniform work setting and a common organisational culture among participants, thereby improving the internal validity of the results.

The study also discusses ethical issues because individuals may become distressed if they talk about painful experiences. This was mitigated by offering signposting to psychological assistance and making participation optional with the chance to withdraw without repercussions. The welfare of participants and informed consent was given first priority. Finally, the study explicitly defined the context-specific character of the findings and recommend future research directions for broader application, even though the results may not be generalisable beyond the specific context of WAST dispatchers. By addressing these issues, the study hoped to maintain ethical norms and methodological rigor while providing insightful information about how digital support tools could improve the mental health and general wellbeing of call handlers for Welsh Ambulance.

### 3.7 Project Planning & Management

Effective project planning is crucial for successfully achieving completion of research and reporting. The below timeline outlines each of the phases of the project, from obtaining ethical approval to collating and finalising results. Given the nature of the project careful considerations were given to participant engagement, data analysis and stakeholder engagement.

Throughout the project, various challenges could have arisen, including participant recruitment issues and data collection issues. To mitigate these a proactive approach, such as relationship building with potential interviewees and the use of mixed methods for data collection were incorporated into the timeline (Table 3.2).

The timeline also presents an adaptive approach to managing projects, regular reviews of survey responses allowed for adjustments to be made in the form of communication. By remaining proactive and adaptive this allowed the project to proceed relatively smoothly.

*Table 3.2: The timeline for the key research activities and milestones, expected challenges and mitigation strategies.*

| Month      | Task                                                                                                                                                                    | Potential Challenges & Management Strategies                                                                                                                            |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sept - Oct | Obtain ethical approval, develop MS Forms surveys and interview packs. Spend time at various WAST call centres to build relationships and scope participant engagement. | Ethical approval delays—submit early and maintain communication with the ethics board. Low engagement—build trust through in-person visits and stakeholder involvement. |

|                  |                                                                                                                                                |                                                                                                                                                                                                                                                                                |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nov - Dec</b> | Distribute questionnaires, arrange and conduct interviews with participants. Monitor response rates and adjust recruitment strategy if needed. | Low response rate—use follow-up emails, incentives, and targeted reminders. Scheduling conflicts—offer flexible interview slots (including remote options).                                                                                                                    |
| <b>Jan - Feb</b> | Analyse qualitative and quantitative data. Identify patterns, gaps, and potential biases in responses.                                         | Managing large data sets—use MS Forms to organise responses and apply thematic analysis to identify key patterns in qualitative data. For quantitative responses, use Excel to track and summarise trends. Bias in responses—triangulate findings using multiple data sources. |
| <b>Mar - Apr</b> | Triangulate findings, draft results, and develop presentations. Begin gathering feedback from stakeholders.                                    | Conflicting findings—use mixed-method validation. Tight deadlines—set internal review checkpoints for drafts.                                                                                                                                                                  |
| <b>May</b>       | Collate results, finalise reporting, and reflect on project execution for future recommendations.                                              | Ensure findings are actionable—consult stakeholders for practical application. Identify lessons learned for future studies.                                                                                                                                                    |

To effectively manage the research timeline, a Gantt chart was created (Fig. 3.2). This visual representation ensures structured progress, highlights key milestones, and allows for adjustments when necessary.

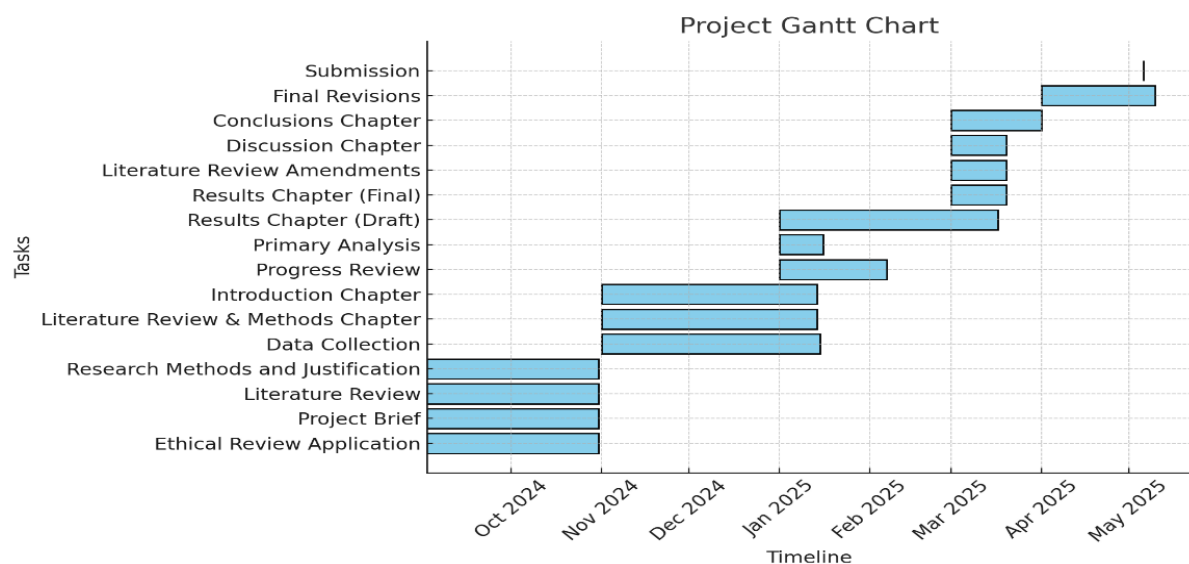


Figure 3.21 Gantt chart to outline key milestones (Microsoft Corporation, 1985)

During the project period from September to October, significant challenges were faced due to work commitments and Resource Escalation Action Plan (REAP) levels within WAST (the system used to indicate periods and levels of pressure experienced by WAST), which limited in-person time at the WAST call centres. This

impacted the ability to build relationships with participants and scope potential participants effectively.

To address these challenges, the approach was adapted by sending the surveys out twice due to poor response levels. This ensured that sufficient data was collected for analysis. Additionally, some tasks were rescheduled, and activities were prioritised to fit work commitments. Interviews were conducted online via MS Teams to accommodate the geographical spread of WAST call handlers across Wales.

Despite these challenges, sending the surveys out twice improved response rates, allowing the necessary data to be gathered. This experience highlighted the importance of planning for potential delays and using multiple methods to engage participants. Conducting interviews via MS Teams provided several advantages over in-person interviews, particularly given the geographical spread of WAST across Wales. The online format increased accessibility and convenience, allowing participants to join from any location without the need for travel. This was especially beneficial for those in remote or rural areas, ensuring inclusivity in the research process. Additionally, virtual interviews offered greater flexibility in scheduling, enabling participants to select a time that suited them. The use of MS Teams also helped reduce costs associated with venue hire and travel while providing an efficient method for data collection, as the platform allows for secure recording (with consent) to aid transcription and analysis. Furthermore, engaging in interviews from a familiar environment may have enhanced participant comfort, particularly when discussing sensitive topics, contributing to more open and honest responses.

### **3.8 Ethical considerations**

Ethical approval for any research carried out in the UK is usually obtained through the researchers University or an NHS Research Ethics Committee (RECs) that is linked to the Health Research Authority (HRA), this ensures participants are safeguarded and that the research process maintains its integrity (Health Research Authority, 2023). This research followed the ethical guidelines established by University of Wales Trinity St David (UWTSD) and obtained positive ethical approval before data collection began (Appendix E). To guarantee informed consent, participants received an information sheet that outlined the study's aim, potential risks, and their right to withdraw at any time without any consequences. Given the sensitive nature of the study, investigating the emotional effects of call-handling jobs, priority was given to ethical considerations related to participant welfare. To reduce any distress, participants were made aware that they could pause or skip any questions during the interviews. Moreover, links to mental health resources (e.g., Health Assured) were provided at the conclusion of surveys and interviews for those needing additional support.

Confidentiality and data protection were maintained in line with GDPR regulations. Identifying information was eliminated, and all data were securely stored and password protected. While digital tools such as MS Forms facilitated data collection, access was limited to the researcher to protect privacy. Being mindful that personal perspectives could influence the interpretation of data was important, therefore a structured coding framework to ensure analysis consistency was used.

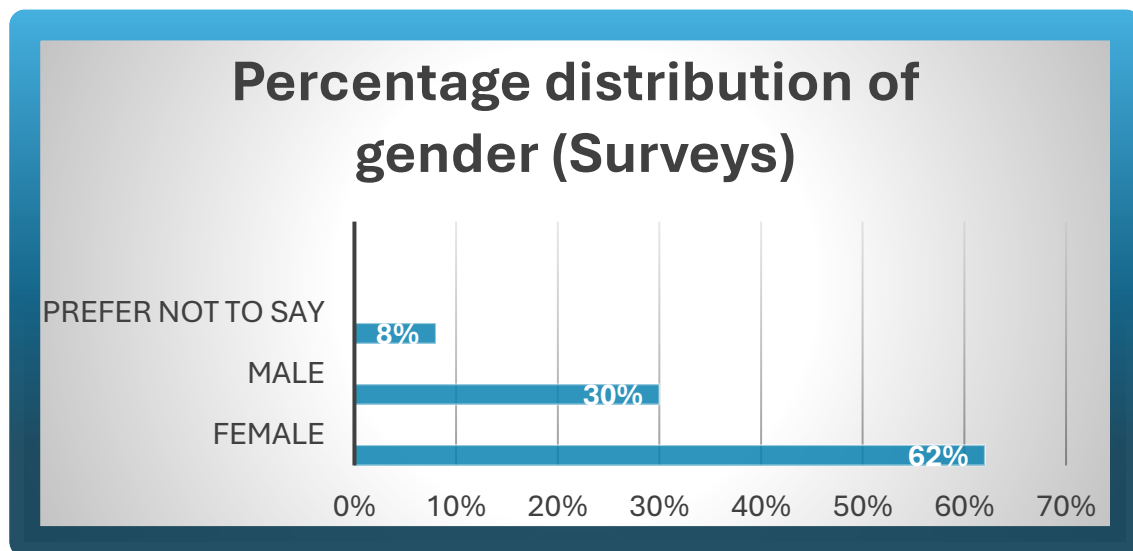
To ensure the data was reliable it was regularly reviewed, and original responses were compared with any emerging themes which ensured they linked with participants' experience rather than personal assumptions. Even with these precautions, some ethical difficulties were encountered. A few participants voiced apprehensions about openly discussing workplace stress, fearing possible consequences. To mitigate this, anonymity was stressed throughout the recruitment process, and participants were assured that their responses would not be connected to identifiable information. Future research could enhance ethical protections by utilising anonymous interview platforms or by providing a debriefing session to enable participants to process their experiences in a supportive setting.

## Chapter 4: Results

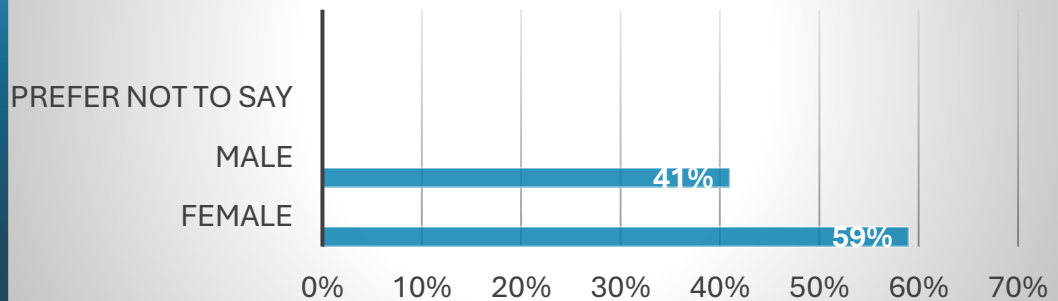
### 4.1 Introduction - Characteristics of participants

This section provides an overview of the participants involved in the study, including demographic details such as gender, years of experience, and exposure to traumatic calls. Based on survey responses, a notable percentage of participants have worked in high-stress environments for extended periods, with significant differences between men and women regarding stress perception and coping strategies. This contextualises the findings and lays the groundwork for thematic analysis.

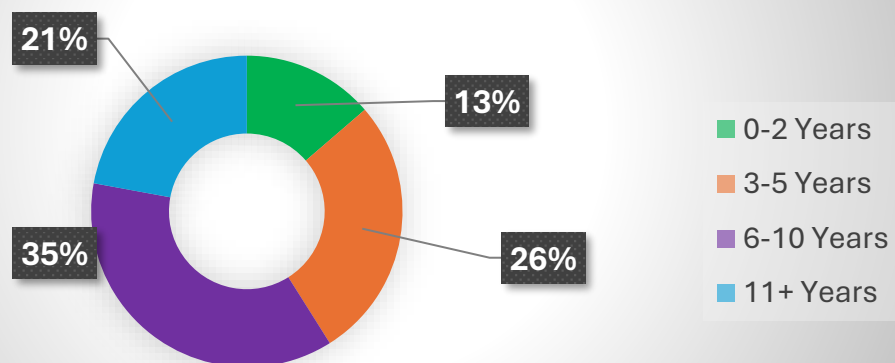
A total of 300 WAST 111/999 call handlers across the three regions, North Wales, Central & West and South-East were invited to complete anonymous surveys and interviews. The overall response rate was 20.67%. Surveys were completed between November to December 2024 initially with a repeat request sent during January 2025 due to low uptake. Respondents were 31% male, 63% female and 6% preferred not to say (Fig. 4.1).



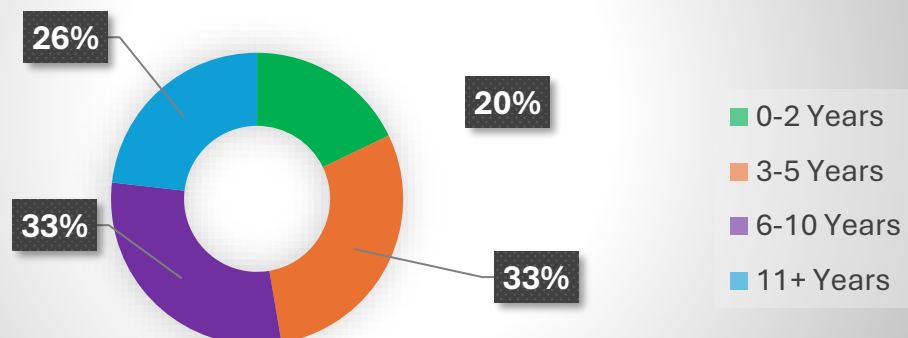
## Percentage distribution of gender (Interviews)



## Years of experience as a Call Handler (Surveys)



## Years of experience as a Call Handler (Interviews)



## 4.2 Overview of Thematic Analysis

Thematic analysis was employed as the primary method for analysing the qualitative data collected during this study. Following the widely recognised six-phase framework outlined by Braun and Clarke (2006), this approach enabled a systematic identification, analysis, and interpretation of key patterns within the data. Thematic analysis was used to identify key patterns and themes from participant responses. The data was coded and categorised into six primary themes, reflecting the challenges, coping mechanisms, and potential improvements related to managing trauma and mental health support (Table 4.1).

The first phase involved **familiarisation with the data**, which included transcribing interviews verbatim (if applicable), reading through the transcripts multiple times, and making preliminary notes. This immersive process allowed for an in-depth understanding of the content and tone of the data.

In the second phase, **initial codes were generated** manually and iteratively. Coding was conducted line-by-line, with attention paid to both semantic (explicit) and latent (underlying) meanings. These codes were collated across the dataset to highlight recurring points of interest related to the research questions.

The third phase involved **searching for themes** by organising the codes into potential themes and sub-themes. At this stage, visual representations such as thematic maps were used to explore relationships between codes and to begin grouping them under broader conceptual categories.

The fourth phase focused on **reviewing themes**, during which the initial themes were refined and, in some cases, merged, separated, or discarded. This process ensured internal coherence within themes and distinctiveness between them. Data extracts were revisited to confirm that themes accurately captured the content and meaning.

In the fifth phase, **defining and naming themes**, the essence of each theme was clearly articulated, and concise definitions were developed to capture their scope and relevance to the overall research aims. This helped in creating a coherent narrative that linked the themes together meaningfully.

Finally, in the sixth phase, **producing the report**, selected extracts were integrated into the findings section, accompanied by analytic commentary that contextualised the themes within the broader literature and research questions. The thematic analysis provided a flexible yet rigorous approach to understanding participants' experiences and perceptions in depth.

Table 4.1: Coding Scheme and quotations

| Theme                                               | Sub-Theme                                        | Quotations from interviews                                                                                                                     |
|-----------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Emotional Impact of Calls</b>                    | Short-Term Effects: Anxiety                      | "A child in cardiac arrest deeply affected me; I had nightmares for weeks"                                                                     |
| <b>Emotional Impact of Calls</b>                    | Short-Term Effects: Stress                       | "An abusive caller threatening violence left me anxious all day."                                                                              |
| <b>Emotional Impact of Calls</b>                    | Long-Term Effects: Burnout                       | "Short-term: stress, upset and anxiety for the next call; Long-term: burnout and anxiety."                                                     |
| <b>Support Systems</b>                              | Peer Support: Colleagues                         | "Colleagues are a primary source of support, providing empathy and understanding."                                                             |
| <b>Support Systems</b>                              | Wellbeing Teams and Counselling: Wellbeing Team  | "The wellbeing team are really helpful and can refer on which I haven't felt the need for yet."                                                |
| <b>Awareness and Use of Digital Tools</b>           | Awareness: Knowledge of Digital Tools            | "Yes, meditation apps like Calm."                                                                                                              |
| <b>Awareness and Use of Digital Tools</b>           | Usage: Experience with Digital Tools             | "Yes, my experience wasn't that great as the tool wasn't very personal."                                                                       |
| <b>Perceived Benefits of Digital Tools</b>          | Accessibility: On-Demand Support                 | "Absolutely, after spending a whole shift on the phone it would be easier to use an app than have to talk through my concerns over the phone." |
| <b>Perceived Benefits of Digital Tools</b>          | Anonymity and Privacy: Reduced Stigma            | "Digital tools offer anonymity, which can reduce stigma and make users feel more comfortable seeking help."                                    |
| <b>Barriers to Using Digital Tools</b>              | Lack of Time: During Work Hours                  | "Lack of time and stigma. During work hours would be a no go."                                                                                 |
| <b>Barriers to Using Digital Tools</b>              | Preference for In-Person Support: Personal Touch | "I prefer to talk things through with someone, but I can imagine them being helpful to someone if they want instant support."                  |
| <b>Comfort with Employer-Provided Digital Tools</b> | Comfort Levels: Willingness to Use               | "I'd possibly have a try of them just to see if they are helpful."                                                                             |

#### 4.2.1 Theme 1: Emotional Impact of Traumatic Calls

Participants described the psychological toll of handling distressing calls, particularly those involving abuse, self-harm, or child-related incidents. Many reported symptoms of secondary trauma, anxiety, and difficulty detaching from work stress after shifts. Female participants often described feeling emotionally drained, while male participants were more likely to report suppressing emotions (Table 4.2).

Table 4.2: Coding scheme and examples of emotional impact on call handlers

| Participant Role | Direct Quote                                                                                                                                                                                                                                   | Coding                                                                                                                                                                                                   |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 999 Call-handler | "Short-term, these calls leave me feeling mentally and emotionally drained. It's tough when you can sense the caller's fear and uncertainty, and all you can do is provide advice rather than immediate solutions. Long-term, these situations | <ul style="list-style-type: none"> <li>Emotional Impact: Mentally and emotionally drained</li> <li>Frustration: Frustration and helplessness</li> <li>Coping Mechanisms: Reminding oneself of</li> </ul> |

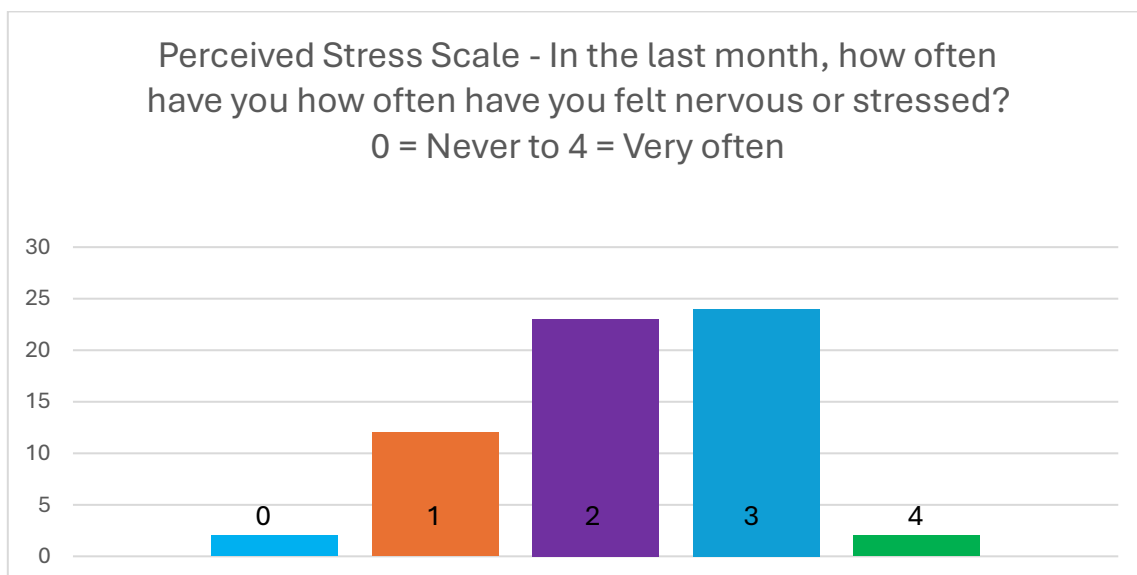
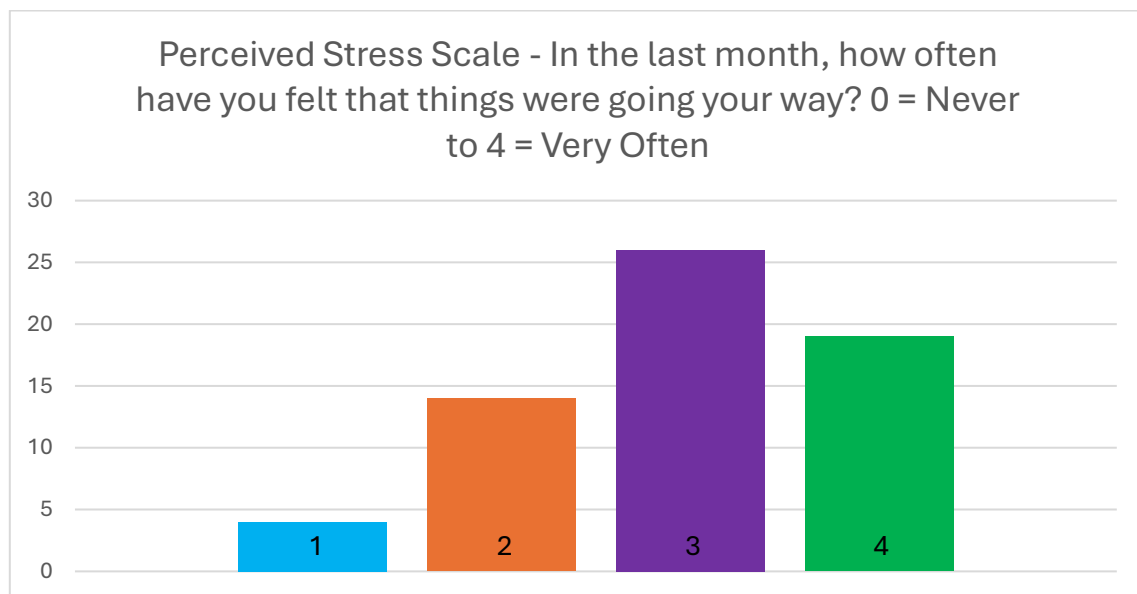
|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                 |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | can build up a sense of frustration and helplessness, as you often don't know how things turn out. While I try to remind myself that I've done everything I can, it can sometimes feel like I'm not making a big enough difference, which is hard to shake off after a shift"                                                                                                                                                                        | doing everything possible                                                                                                                                                                                                                       |
| 999 Call-handler | In the short term, calls like this leave me feeling jittery and anxious. The unpredictability of the situation makes it hard to relax afterward. Long-term, I can feel the emotional toll of constantly dealing with people in crisis. It can lead to feelings of burnout, as I get mentally and emotionally fatigued. I start to feel disconnected from the human side of the job, and it becomes more of a routine than a meaningful interaction." | <ul style="list-style-type: none"> <li>• Emotional Impact: Jittery, anxious, emotional toll</li> <li>• Frustration: Burnout, mental and emotional fatigue</li> <li>• Coping Mechanisms: Disconnection from the human side of the job</li> </ul> |
| 111 Call-handler | "I can get frustrated and annoyed as sometimes it's difficult to not take it personally. It's also difficult that we can only do what we can do but for an ill/upset patient that isn't always enough "                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>• Emotional Impact: Frustrated, annoyed</li> <li>• Frustration: Taking it personally, feeling inadequate</li> <li>• Coping Mechanisms: Acceptance of limitations</li> </ul>                              |
| 999 Call-handler | "These calls really annoy me because they are just wasting valuable resource and putting others at risk. I don't dwell on them though or I would just get really angry. "                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>• Emotional Impact: Annoyed</li> <li>• Frustration: Wasting resources, putting others at risk</li> <li>• Coping Mechanisms: Not dwelling on it to avoid anger</li> </ul>                                 |
| 111 Call-handler | "I felt helpless at the time, upset, frustrated and angry. Long term I just feel angry that there are such horrible people in the world. "                                                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>• Emotional Impact: Helpless, upset, frustrated, angry</li> <li>• Frustration: Anger towards people</li> <li>• Coping Mechanisms: Long-term anger</li> </ul>                                             |

This theme captures the profound emotional effects that traumatic and abusive calls have on call handlers. Respondents described feeling overwhelmed, anxious, and emotionally drained immediately after handling such calls. For instance, one respondent recounted a particularly harrowing call involving a child in cardiac arrest, which led to vivid nightmares and trouble sleeping for weeks.

These figures illustrate the mental health status of 62 respondents using three established psychological measures: the Perceived Stress Scale (PSS-10), the Generalized Anxiety Disorder scale (GAD-7), and the Maslach Burnout Inventory – Short Form. The PSS-10 responses indicate that many individuals frequently felt upset

or stressed in the past month, with a notable number(Waters and Palmer, 2022) reporting high levels of nervousness. However, responses regarding feeling in control of life situations were more evenly distributed, suggesting that while stress levels are high, there may still be a sense of balance for some.

The GAD-7 results reveal that symptoms of anxiety—such as persistent nervousness and difficulty controlling worry—are present at moderate to high frequencies among respondents. Similarly, the burnout assessment shows that emotional exhaustion and feelings of burnout from work are common, with a significant portion of individuals experiencing these symptoms several times a week or daily. Together, these findings underscore the widespread impact of stress, anxiety, and burnout within this group, pointing to the importance of accessible mental health resources and support systems.



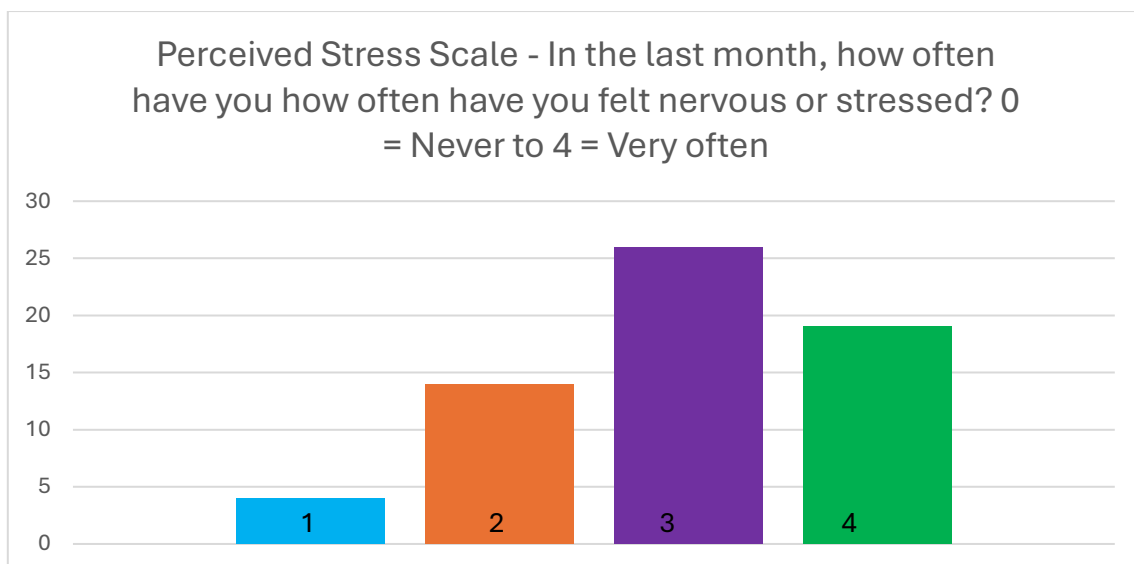
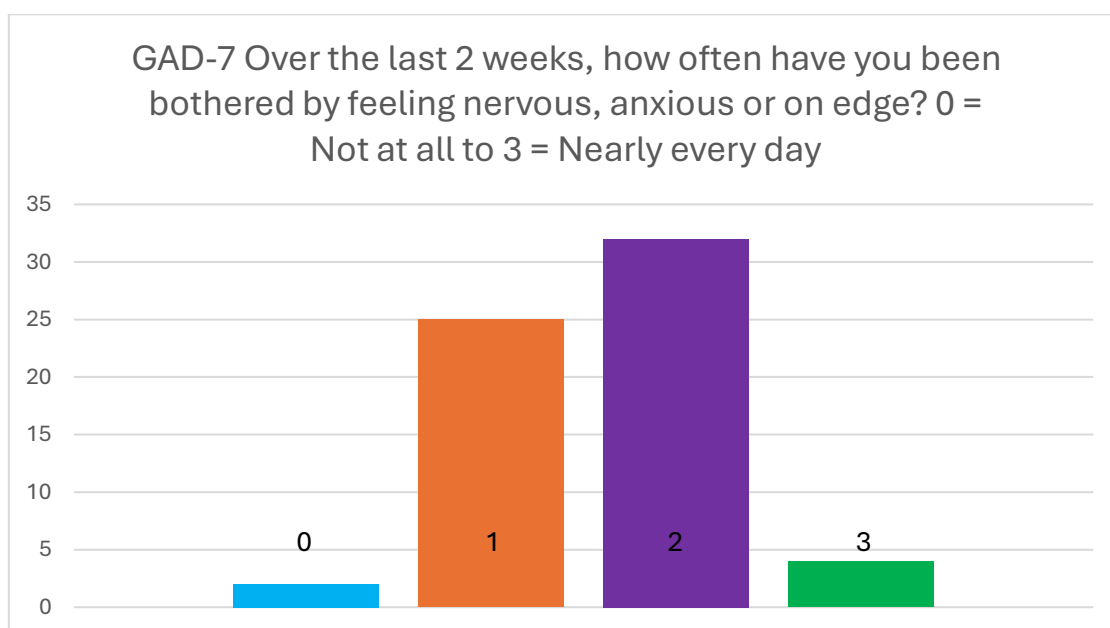


Figure 4.2: Visuals based on responses from surveys for PSS



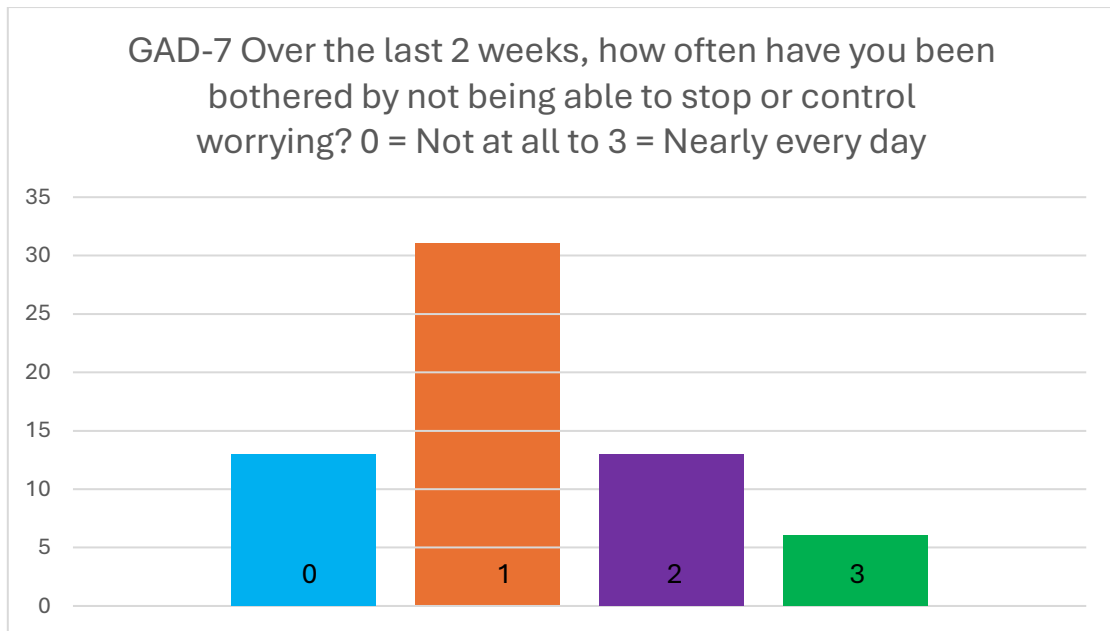
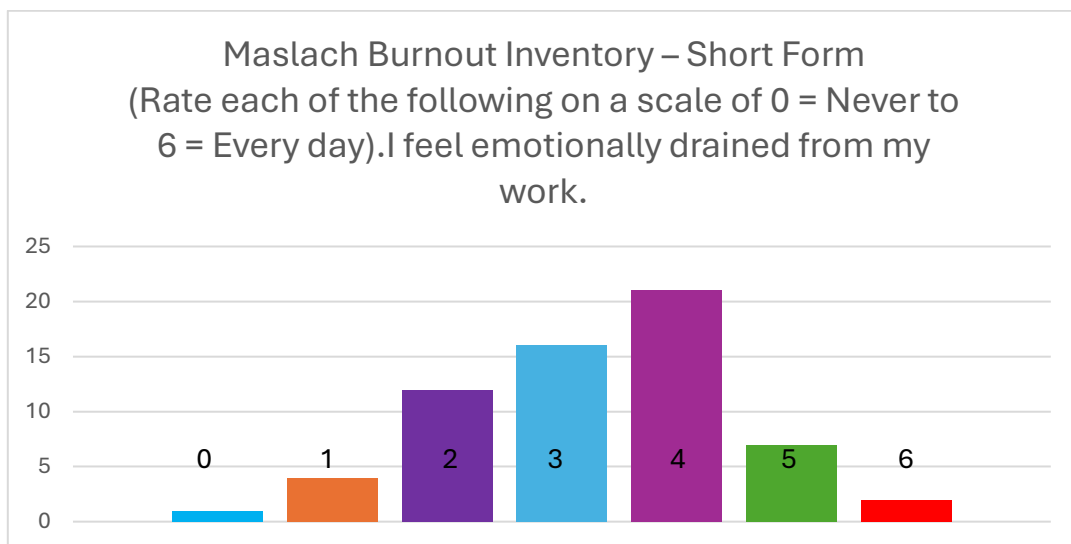


Figure 4.3: Visuals based on responses from surveys for GAD-7



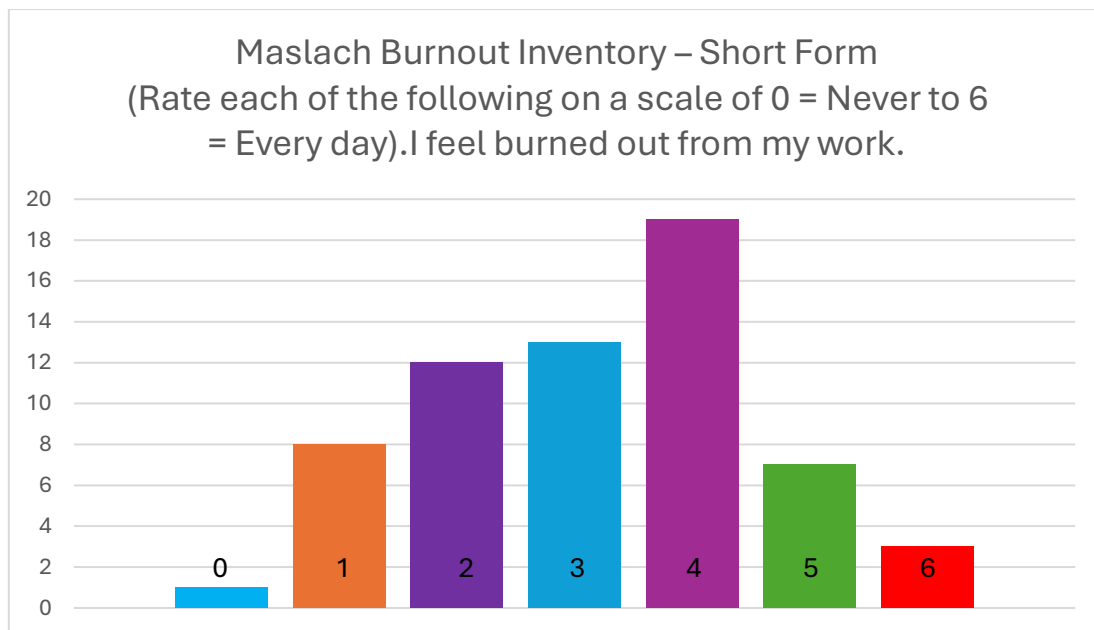


Figure 4.5: Visual based on responses from surveys

#### 4.3.2 Theme 2: Support Systems

Respondents highlighted the role of peer support, managerial assistance, and Employee Assistance Programs (EAP) in coping with trauma. While some reported positive experiences with existing mental health services, others felt support was inconsistent or inaccessible. Interviewees emphasised the need for more proactive mental health check-ins.

This theme explores the support systems available to call handlers and their effectiveness. Common support systems mentioned include peer support, wellbeing teams, and services like Health Assured and TRiM. Colleagues were frequently highlighted as a valuable source of support due to their shared experiences.

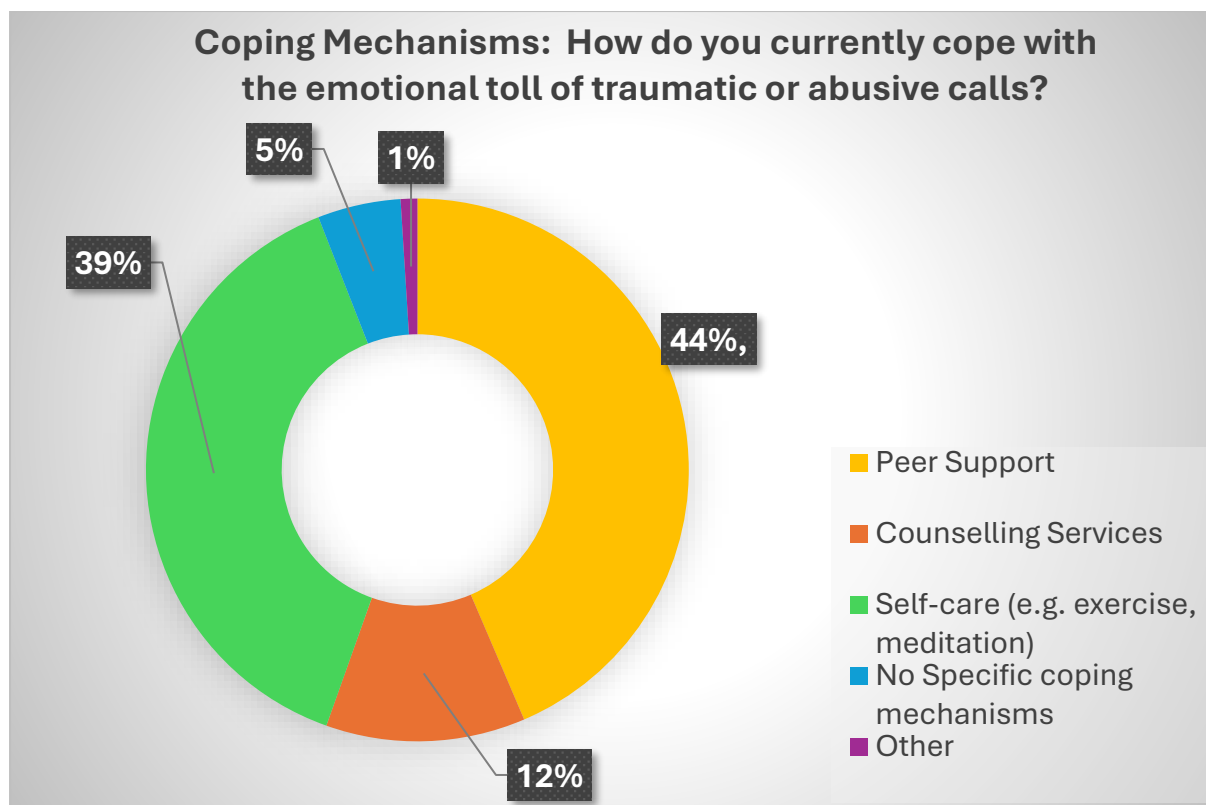


Figure 4.6: Visual based on responses from surveys regarding current coping mechanisms and their effectiveness

#### 4.3.3 Theme 3: Digital Tools for Mental Health

Many participants expressed interest in digital support tools, such as mobile apps for mindfulness, self-help resources, and AI-powered chat services. However, awareness and usage were low. Those who had used digital tools found them useful for stress management but preferred a combination of digital and human support.

This theme examines the awareness, usage, and perceived benefits of digital tools for mental health among call handlers. Many respondents were aware of digital tools like meditation apps (e.g., Calm, Headspace) and mental health platforms (e.g., Silvercloud). However, usage varied, with some having positive experiences and others finding them impersonal.

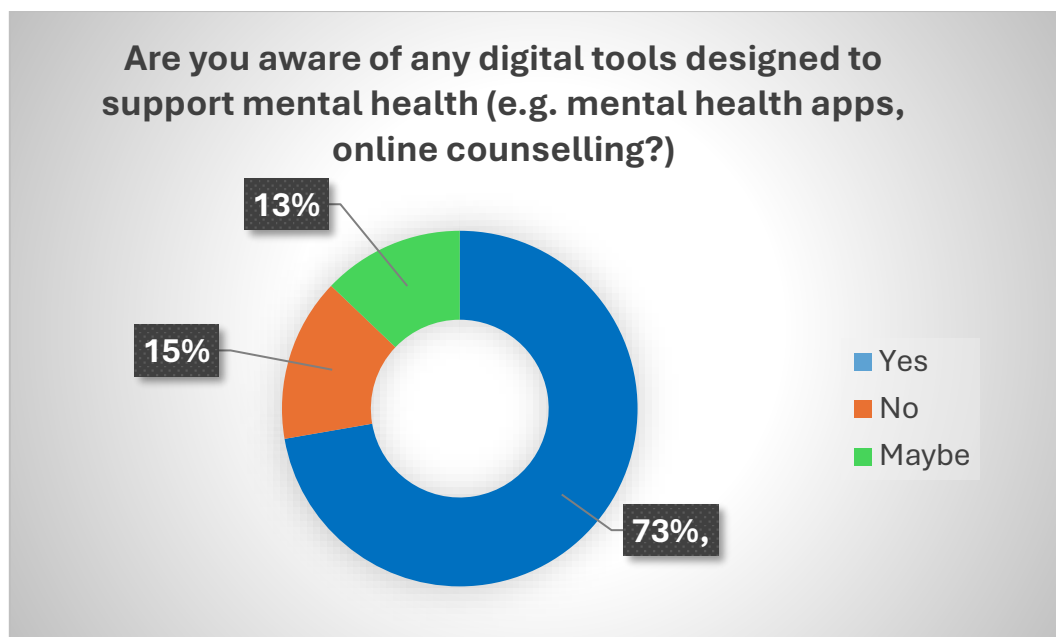


Figure 4.7: Visuals based on responses from surveys regarding awareness, use and types of digital tools

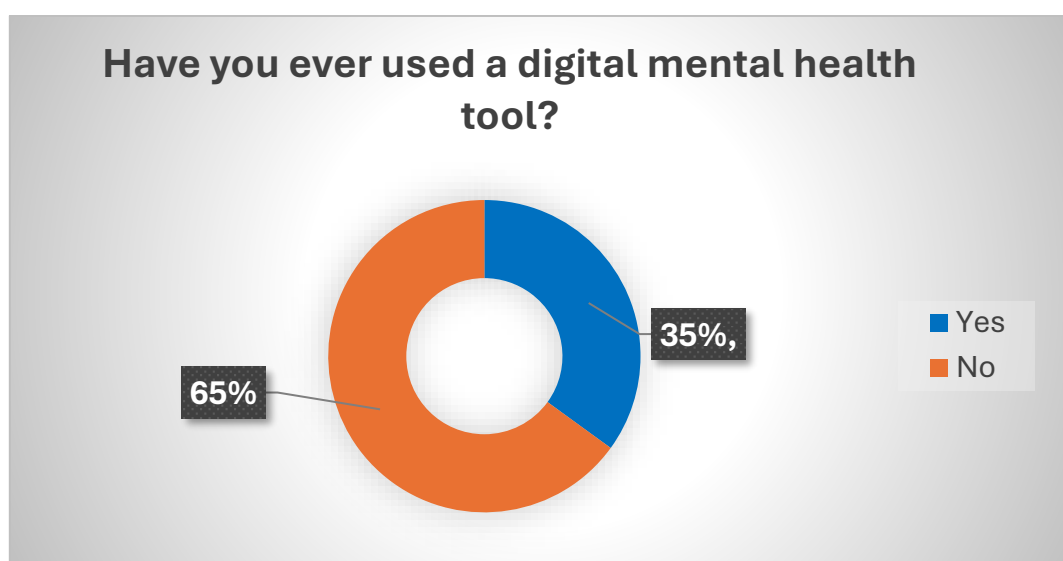


Figure 4.8: Visuals based on responses from surveys regarding awareness, use and types of digital tools

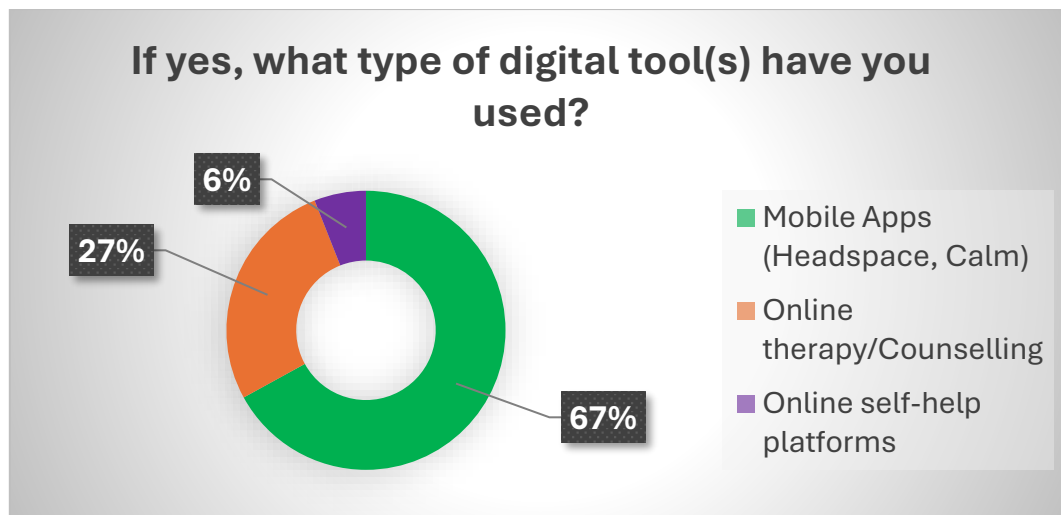


Figure 4.9: Visuals based on responses from surveys regarding awareness, use and types of digital tools

Figure 4.6 highlights a clear gap between awareness and usage of digital mental health tools among respondents. While 72% reported being aware of such tools, only 35% had actually used them, suggesting that awareness does not necessarily translate into engagement. A further 14% were not aware of any tools, and 12% were unsure, indicating opportunities for clearer communication and education. The data suggests that although digital tools are recognised by most, barriers such as time constraints, lack of trust, or personal preferences may be limiting their practical uptake in the workplace.

#### 4.3.4 Theme 4: Barriers to Using Digital Tools

Common barriers included lack of time, scepticism about effectiveness, and reluctance to engage with technology for mental health purposes. Some feared that using digital tools would not be viewed as a legitimate coping strategy compared to traditional face-to-face support.

This theme highlights key barriers to the adoption and effective use of digital tools for mental health support among participants. As shown in Figure 4.7, the most significant barrier identified was a lack of time, selected by 42% of respondents. This underscores the ongoing challenge many call handlers face in attempting to prioritise self-care while managing demanding workloads and unpredictable call patterns.

Equally, 21% of respondents cited a lack of access to digital tools as a barrier, indicating that availability and ease of access still pose challenges in some work settings. Another 21% indicated a preference for in-person support, suggesting that digital options are not always viewed as suitable substitutes for traditional, face-to-face interventions, particularly in emotionally charged or high-stress scenarios.

Lack of trust in digital tools was selected by 12% of participants. This highlights a perceived credibility gap, where some staff may question the effectiveness or security of digital mental health solutions. Finally, 1% of responses fell under the 'Other' category, indicating a small number of participants had alternative concerns or unique barriers not captured by the main options.

Together, these findings suggest that improving awareness, trust, and usability of digital tools—as well as integrating them more seamlessly into the daily workflow—could significantly enhance uptake. Targeted education, endorsement by leadership, and real-time access mechanisms may be key to overcoming these challenges.

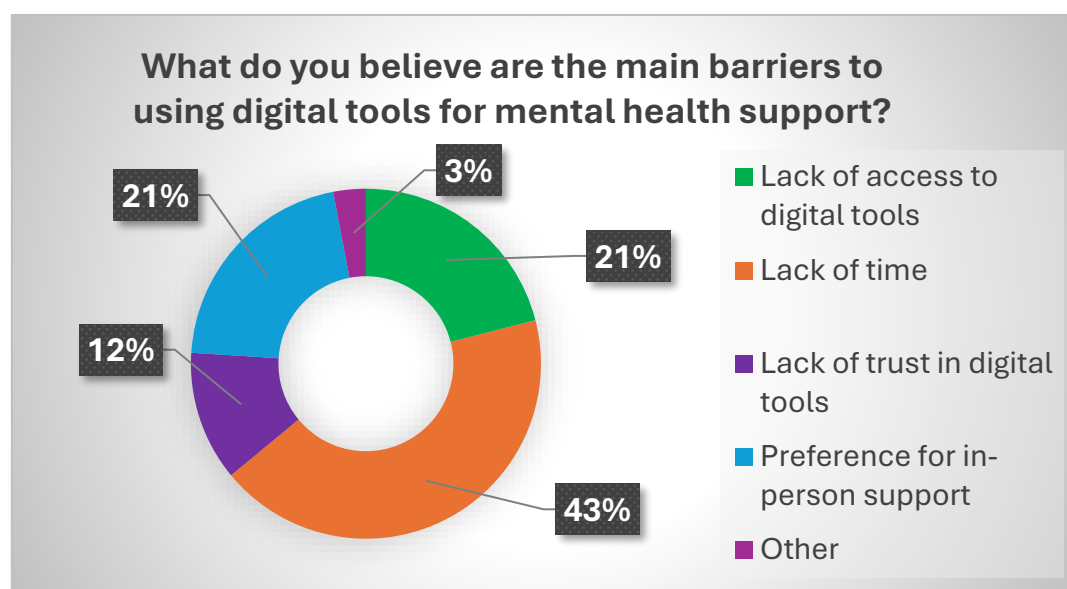


Figure 4.3.1: Visual based on responses from surveys regarding barriers to use of digital support tools

## 4.4 Suggestions for Improvement

Participants suggested several enhancements, including improved access to digital support, mandatory mental health breaks, and workplace culture shifts to normalise discussions about psychological well-being. A recurring recommendation was for WAST to integrate digital tools into formal support structures.

This theme captures the suggestions provided by respondents for improving mental health support. Respondents suggested that digital tools should be integrated with existing support systems to provide a more holistic approach to mental health. Tailored tools specific to the types of traumas experienced by call handlers were recommended (Table 4.3).

Table 4.3: Sub-Themes Table

| Sub-Theme Name                      | Description                                                                                    | Keywords                                                                |
|-------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| <b>Short-term Effects</b>           | Immediate emotional responses such as helplessness, anxiety, and difficulty concentrating.     | Helplessness, anxiety, replaying calls, trouble sleeping                |
| <b>Long-term Effects</b>            | Prolonged emotional impact leading to burnout, numbness, and detachment from work.             | Burnout, emotional fatigue, detachment, reluctance to work              |
| <b>Available Support</b>            | Various support systems, including peer support, wellbeing teams, and external services.       | Peer support, wellbeing teams, external services (Health Assured, TRiM) |
| <b>Effectiveness</b>                | The perceived usefulness of support varies; some find it helpful, others feel it lacks impact. | Personalised support, hesitancy, variability, emotional drain           |
| <b>Awareness and Usage</b>          | Awareness of digital tools exists, but their usage varies; some find them impersonal.          | Digital tools, awareness, engagement, impersonal                        |
| <b>Perceived Benefits</b>           | Digital tools offer accessibility and anonymity, making support available outside work hours.  | Anonymity, accessibility, convenience                                   |
| <b>Time and Access</b>              | Lack of time during shifts and insufficient training on using digital tools as barriers.       | Time constraints, training, awareness                                   |
| <b>Trust and Confidentiality</b>    | Concerns about employer-provided digital tools regarding security and confidentiality.         | Trust, security, confidentiality, employer tools                        |
| <b>Integration of Digital Tools</b> | Suggestions for integrating digital tools with existing support systems.                       | Holistic approach, integration, digital support                         |
| <b>Training and Awareness</b>       | More resilience-building training and awareness of available digital tools.                    | Resilience, training, awareness                                         |
| <b>Accessibility</b>                | Digital tools should be user-friendly, confidential, and accessible during work hours.         | User-friendly, confidentiality, work-hour access                        |

## 4.4 Conclusion

The thematic analysis revealed significant insights into the emotional impact of traumatic calls, the effectiveness of support systems, and the potential role of digital tools in supporting mental health. The findings highlight the need for a more integrated and holistic approach to mental health support, with a focus on accessibility, personalisation, and immediate support. Implementing the recommendations can

enhance the mental health support for call handlers and help them manage the emotional demands of their work more effectively.

The emotional impact of handling traumatic or abusive calls is profound and multifaceted. Call handlers frequently reported experiencing short-term effects such as anxiety, stress, and emotional drain. For instance, one respondent noted, "A child in cardiac arrest deeply affected me; I had nightmares for weeks." These immediate reactions often evolve into long-term consequences, including burnout, emotional fatigue, and frustration. Another respondent shared, "Short-term: stress, upset and anxiety for the next call; Long-term: burnout and anxiety." These findings highlight the significant emotional toll that call handlers endure, necessitating robust support systems to mitigate these effects.

Support systems play a crucial role in helping call handlers manage the emotional toll of their work. Peer support from colleagues and team members is highly valued, as it provides empathy and understanding. One respondent mentioned, "Colleagues are a primary source of support, providing empathy and understanding." Additionally, wellbeing teams, TRiM, and counselling services are available, though their effectiveness varies. "The wellbeing team are really helpful and can refer on which I haven't felt the need for yet," noted one respondent. These support mechanisms are essential for maintaining the mental health and well-being of call handlers.

Awareness and usage of digital mental health tools among call handlers are mixed. Some respondents are aware of tools like Calm and Headspace, while others are not. "Yes, meditation apps like Calm," one respondent noted. Usage of these tools is limited, with some finding them less personal and effective compared to traditional support. "Yes, my experience wasn't that great as the tool wasn't very personal," shared another respondent. This indicates a need for increased awareness and improved digital tools to better support call handlers.

Digital mental health tools offer several perceived benefits, including accessibility and anonymity. These tools are seen as more accessible and convenient, especially for quick, on-demand support. "Absolutely, after spending a whole shift on the phone it would be easier to use an app than have to talk through my concerns over the phone," noted one respondent. Additionally, digital tools provide anonymity, reducing stigma and making users feel more comfortable seeking help. "They would be more confidential, accessible whenever suited the person," shared another respondent. These benefits highlight the potential of digital tools to complement traditional support mechanisms.

Despite their benefits, several barriers prevent call handlers from using digital mental health tools. Lack of time during work hours is a common obstacle. "Lack of time and stigma. During work hours would be a no go," noted one respondent. Additionally, many call handlers prefer in-person support for its personal touch and effectiveness. "I prefer to talk things through with someone, but I can imagine them

being helpful to someone if they want instant support," shared another respondent. Trust issues, including concerns about confidentiality and effectiveness, also hinder the adoption of digital tools. "Not sure if my information would be safe and confidential," mentioned one respondent. Addressing these barriers is crucial for enhancing the adoption and effectiveness of digital mental health tools.

Comfort levels with using employer-provided digital tools vary among call handlers. Some are willing to use these tools, while others have concerns about privacy and confidentiality. "I'd possibly have a try of them just to see if they are helpful," noted one respondent. Trust in employer-provided tools is also a significant factor. "Trust - staff might not trust an app provided by the organisation," shared another respondent. These insights underscore the importance of building trust and ensuring privacy to encourage the use of digital mental health tools.

A notable theme is the preference for informal peer support over formal resources, with colleagues serving as a primary emotional outlet. Whilst some research such as that featured in the Journal of Paramedic Practice by (Mildenhall, 2012) highlights the value of peer support as an important coping mechanism. This evaluation suggests that it can sometimes be inconsistent and unstructured, digital support tools offer flexibility and some structure that some may find more beneficial. Some staff also manage stress through personal coping mechanisms like exercise. While the availability of face-to-face support is appreciated, there is a recognition that signposting to external services can sometimes feel insufficient. Overall, while the existing support systems are valued, there may be opportunities to enhance accessibility and ensure more consistent experiences across the board.

## **Chapter 5: Discussion**

### **5.1 Introduction**

The research examined the emotional effects of dealing with traumatic and abusive calls on call handlers and assessed the potential of digital mental health resources to enhance their well-being. Results show that call handlers endure considerable emotional distress both in the short and long term, including sensations of being mentally and emotionally exhausted, highly disturbed, and anxious. Typical coping strategies comprise peer support, counselling services, and self-care practices such as exercise and meditation, although their effectiveness can differ from one person to another. A notable portion of participants are familiar with digital mental health resources, and some have tried mobile applications such as Headspace and Calm, which received moderate effectiveness ratings. Digital tools are generally perceived to be as effective or even more beneficial than conventional support methods like face-to-face counselling, though several participants highlighted the significance of human connection. The primary obstacles to utilising digital resources include time constraints, accessibility issues, and trust concerns, with some individuals preferring face-to-face assistance. Many participants feel that digital resources could aid them in better handling the emotional challenges of their work, and a significant majority expressed that they would be inclined to use these tools if offered by their employer.

### **5.2 Interpretation of Results in the Context of the Literature**

The results of this research correspond with the current literature regarding the emotional consequences of high-stress jobs and the efficacy of digital mental health resources. Earlier studies have underscored the considerable emotional burden faced by call handlers and the necessity for adequate support systems (Jennings, 2000). Digital resources, such as mental health mobile applications, have demonstrated their ability to offer convenient and adaptable support options (Tontini and Dagostin Picolo, 2010). The findings of this study reinforce the idea that digital resources can enhance traditional support systems by providing immediate and ongoing access to mental health assistance. This is especially advantageous for call handlers who may lack the time or opportunity for in-person support. The moderate effectiveness rating of these digital tools indicates that, while beneficial, there is still potential for their design and implementation to be improved.

The findings highlight the significant emotional burden that call handlers face. The short-term effects of traumatic calls can disrupt daily functioning, while the long-term effects can lead to serious mental health issues like burnout. This underscores the need for effective support systems to help call handlers manage their emotional

well-being. Previous studies have documented similar findings, noting that call handlers are at high risk for emotional distress and burnout due to the nature of their work. Our findings support this literature and further emphasise the importance of addressing the mental health needs of call handlers. The emotional impact of traumatic calls suggests that call handlers require robust support systems to manage their mental health. Organisations should consider providing immediate and ongoing support, including access to mental health professionals and peer support groups.

Based on the findings, a recommendation would be integrating digital mental health tools with existing support systems to provide more accessible and immediate support. Additionally, training on resilience-building and stress management should be provided to help call handlers cope with the emotional demands of their work. The availability of support systems is crucial for managing the emotional impact of traumatic calls. However, the effectiveness of these systems can vary, and there is a need for more personalised and immediate support options. Digital tools can complement existing support systems by providing accessible and anonymous support. However, they should not replace face-to-face interactions entirely, as some users may find them impersonal.

The literature suggests that peer support and professional counselling are effective in managing work-related stress. Our findings align with this but also highlight the need for more immediate and personalised support. Organisations should ensure that support systems are not only available but also effective in addressing the specific needs of call handlers. This may involve providing more personalised support and ensuring that help is readily accessible. The literature also suggests that digital mental health tools can be effective in providing support, particularly for those who prefer not to seek face-to-face help. Our findings support this but also highlight the need for these tools to be integrated with other support systems. It is also suggested that time constraints and concerns about confidentiality are common barriers to using digital mental health tools. The findings of this evaluation align with this and emphasise the need for addressing these barriers.

The findings on the prevalence of burnout among EMS personnel align with the results of (Aye *et al.*, 2024) who found that digital mental health interventions can significantly reduce burnout in healthcare workers. However, while the meta-analysis by (Andersson *et al.*, 2014) highlights the effectiveness of internet-based treatments for depression, it may not fully capture the unique stressors faced by EMS personnel. This suggests a need for further research tailored to the EMS context.

Addressing the barriers to using digital tools is essential for their effective implementation. This may involve providing more training, ensuring confidentiality, and making these tools easily accessible during work hours. The suggestions for improvement highlight the need for a more integrated and holistic approach to mental health support. Ensuring that digital tools are accessible, user-friendly, and tailored to the specific needs of call handlers is crucial. Implementing the suggestions for

improvement can enhance the effectiveness of mental health support for call handlers. This may involve integrating digital tools with existing support systems, providing more training, and ensuring accessibility.

The recommendation would be enhancing the effectiveness of support systems by providing more personalised and immediate support options. This could include regular mental health check-ins and better tools for managing stress and anxiety. Another recommendation would be integrating digital tools with existing support systems to provide a more holistic approach to mental health. Tailored tools specific to the types of trauma experienced by call handlers should be developed. Addressing the barriers to using digital tools by providing more training, ensuring confidentiality, and making these tools easily accessible during work hours will help in maximising their effectiveness and usage.

### **5.3 Addressing Challenges and Barriers**

The study identified numerous challenges and obstacles to the use of digital mental health resources. A key impediment was time limitations, especially during work hours. To tackle this, organisations should make sure digital tools are available beyond regular work hours and offer training on effective time management techniques. Another significant barrier was restricted access to digital tools, prompting organisations to invest in ensuring reliable access, potentially through company-issued devices or secure online platforms. Some participants conveyed scepticism about the effectiveness of digital tools and indicated a preference for face-to-face assistance. Fostering trust through clear communication regarding the advantages and drawbacks of digital tools, along with combining them with conventional support methods, could help overcome this hurdle.

### **5.4 Lessons learned and future implications**

The research emphasises the importance of a well-rounded support system that incorporates both digital and traditional forms of assistance. This strategy can meet the varied preferences and requirements of call handlers. Digital resources ought to be adaptable and customisable to suit individual needs and schedules, offering choices between self-guided and interactive assistance. Continuous input from call handlers is essential for the ongoing refinement of digital resources, aiding in the identification of improvement areas and ensuring the tools remain useful and pertinent. Future studies should look into how digital tools can be synchronised with traditional support systems to discover optimal methods for delivering comprehensive mental health assistance. Research should also examine the sustained effectiveness of digital mental health resources in aiding call handlers and other professions with high stress

levels. The creation of innovative strategies, like virtual reality training programs, can further improve the support available to call handlers by replicating real-life situations and equipping them for the emotional difficulties they might encounter.

By tackling these issues and applying the insights gained, organisations can enhance the mental health support offered to call handlers and boost their overall well-being. The positive outcomes of online mental health interventions suggest that similar programmes could be beneficial for EMS personnel, providing accessible support to manage occupational stress (Bolier *et al.*, 2014) Implementing such interventions could enhance the well-being of EMS staff and improve service delivery.

## 5.5 Recommendations from participants

The recommendations from respondents highlight a strong emphasis on the need for digital support staff to be provided to WAST call-handlers to support their wellbeing. A number of respondents suggested providing digital support tools that are accessible during and outside work hours, offering tailored resources for trauma-related concerns, and ensuring a safe and open communication environment would be beneficial. Another recommendation suggested was training improvements, topics such as resilience building and virtual reality simulations for high-pressure situations might improve development and staff wellbeing. Whilst most respondents acknowledged that current support systems did provide some assistance there was the desire for enhanced accessibility and better integration of digital tools along with more realistic training scenarios in order to better prepare call-handlers for the challenges they face. Responses were collated and summarised using MS Excel (Microsoft Corporation, 2016)

Table 5.1: Table summarising key recommendations from participants

| Ref | Name      | Responses                                                                                                                                                           |
|-----|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Anonymous | Provide digital apps, more training on resilience building                                                                                                          |
| 2   | Anonymous | Regular mental health check-ins. Better tools to use in our own time                                                                                                |
| 3   | Anonymous | Offer tailored tools that are specific to the types of trauma that we experience. Provide digital tools to access out of hours.                                     |
| 4   | Anonymous | I think WAST do quite a lot to support us but definitely think moving with the times and introducing digital tools would be good and make accessing support easier  |
| 5   | Anonymous | Not sure really, I suppose allowing people time out to access tools rather than having to use our own time.                                                         |
| 6   | Anonymous | Encouraging and allowing open and honest discussions                                                                                                                |
| 7   | Anonymous | Providing apps that we can access during work hour or in our own time. I think WAST do a pretty ok job with the offering we currently have but they could do better |
| 8   | Anonymous | Not sure really                                                                                                                                                     |
| 9   | Anonymous | I think we have fairly good support, but digital tools would mean we wouldn't have to be on the phone to someone which is how we spend most of our day              |

|    |           |                                                                                                                                                                                                                                                            |
|----|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10 | Anonymous | Provide apps that staff feel comfortable and confident in using. Make staff feel safe to speak up and admit when they need support. On the whole I do think WAST do an ok job with this                                                                    |
| 11 | Anonymous | For some I suppose introducing digital tools would help, for me, I think it's about keeping communication lines open, providing safe spaces to share feelings and things like that.                                                                        |
| 12 | Anonymous | To be honest, I think they do ok with it, we have lots of places we can go for support. Digital tools may be a good idea for when you are sat at home going over things in your head and want to speak with someone quickly                                |
| 13 | Anonymous | I think they could maybe develop virtual reality training programmes that simulate high-pressure scenarios and teach effective coping strategies for stressful situations in a controlled environment. This would help staff to learn to manage stress etc |
| 14 | Anonymous | Maybe by providing digital tools would be a really good way.                                                                                                                                                                                               |
| 15 | Anonymous | Better training and maybe include more realistic scenarios to better prepare staff                                                                                                                                                                         |

## 5.6 Gaps in Digital Support for WAST Call Handlers

The findings of this study indicate a significant gap in the provision of digital tools to support WAST call handlers following traumatic or abusive calls. Currently, reliance on traditional support mechanisms, such as verbal debriefs and peer support, leaves a void in addressing the immediate and confidential needs of staff. These findings align with existing literature highlighting the importance of digital interventions in supporting mental health within high-stress environments.

To better understand these gaps and their implications, a gap analysis was conducted, comparing the current state of support with the desired state as identified through best practices in similar settings (e.g., other healthcare or emergency service organisations). Table 5.2 below summarises the key gaps and recommendations.

Gap analysis serves as a strategic method to pinpoint the differences between an organisation's present condition and its envisioned future condition. This approach consists of four main steps: recognising current requirements, defining the optimal future state, identifying current gaps, and executing strategies to close these gaps. (Kim and Ji, 2018).

Table 5.2 GAP Analysis of Current vs. Desired State of Emotional Support and Incident Management for Emergency Call Handlers

| Category                 | Current State                           | Desired State                                                              | Gap                                             | Recommendations                                                                                                                                            |
|--------------------------|-----------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Emotional Support</b> | Verbal debriefs or peer support are the | Digital tools providing immediate and confidential access to mental health | Lack of on-demand, personalised digital support | Pilot digital tools, such as mental health apps (e.g., Headspace or Trauma Recovery apps), to provide immediate emotional support. Research indicates that |

|                                 |                                                                                   |                                                                                                         |                                                                                          |                                                                                                                                                                                                                                                                                         |
|---------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 | primary methods.                                                                  | resources (e.g., apps).                                                                                 | after traumatic or abusive calls.                                                        | mental health apps can effectively reduce symptoms related to anxiety and depression. (Diano, Sica and Ponticorvo, 2023)                                                                                                                                                                |
| <b>Incident Reporting</b>       | Manual reporting systems, if any, for logging traumatic or abusive incidents.     | Integrated digital systems for easy, confidential incident reporting and linking to support resources.  | Manual processes are time-consuming and may discourage reporting of sensitive incidents. | Explore digital incident reporting platforms (e.g., Wellbeing Hub or similar systems) to streamline reporting and offer direct access to support. The integration of electronic incident reporting systems has been shown to improve reporting acceptance.(Haller <i>et al.</i> , 2007) |
| <b>Analytics &amp; Trends</b>   | Limited or no data on the frequency and impact of traumatic or abusive calls.     | Digital tools to collect, analyse, and visualise data trends on staff well-being and incident patterns. | Absence of analytics to track trends and inform organisational support strategies.       | Implement tools with analytics capabilities to monitor well-being trends and inform targeted interventions. The National Emergency Response Information System (NERIS) aims to provide real-time data analytics to enhance preparedness and response capabilities. Need to update this  |
| <b>Training &amp; Awareness</b> | Minimal awareness of how digital tools can support mental health and well-being.  | Regular training and guidance on using digital tools for emotional resilience.                          | Lack of training and cultural resistance to adopting new technologies.                   | Provide workshops and training for call handlers on the use of digital tools, emphasising their benefits for managing emotional challenges. Studies have shown that integrating mental health expertise into emergency responses can improve outcomes. Ref needed                       |
| <b>Access to Resources</b>      | Reliance on traditional methods, with delays in accessing mental health services. | Immediate access to professional mental health support through digital platforms.                       | Delayed or restricted access to timely support after traumatic incidents.                | Invest in platforms offering 24/7 access to professional support, such as virtual therapy or counselling apps tailored for emergency call handlers. Mobile apps have been developed to support mental health responses in high-stress situations.<br><br>(Ezeonu <i>et al.</i> , 2024)  |

The analysis highlights several areas where digital interventions could enhance the support framework. Emotional support tools, such as mindfulness or trauma recovery apps, can provide immediate, on-demand care for call handlers, mitigating the long-term impact of stressful incidents. Similarly, digital incident reporting and analytics systems can offer insights into recurring patterns and inform organisational strategies to improve well-being.

Implementing these recommendations requires addressing barriers such as lack of awareness, training, and potential resistance to change. Future efforts should prioritise stakeholder engagement and pilot programmes to demonstrate the value of digital tools in this context (Tontini and Dagostin Picolo, 2010) present the Improvement Gap Analysis (IGA) as a technique to identify and prioritise improvement opportunities in service quality. Unlike traditional Importance Performance Analysis (IPA), IGA effectively differentiates between Basic and Excitement attributes, leading to more precise improvement choices and increased customer satisfaction. Addressing these gaps has the potential to significantly improve the mental health and job satisfaction of WAST call handlers. In doing so, the organisation may also benefit from reduced absenteeism, enhanced performance, and a more resilient workforce. (Jennings, 2000) describes gap analysis as a method for identifying gaps in the network of conservation land and water areas. This approach involves generating synoptic multi-scale views of the earth's surface and its biological content, which is crucial for effective management of biological resources and biodiversity conservation.

## **Chapter 6: Conclusions**

This evaluation explored the emotional impact of traumatic and abusive calls handled by WAST 999/111 call handlers, the results revealed key themes such as emotional exhaustion, the effectiveness of current support mechanisms and the possible role digital support tools could play in alleviating some of the symptoms experienced. Some participants described feelings of emotional fatigue due to the nature of the calls, this aligns with (Maslach and Leiter, 2016) burnout theory. The impact of these experiences was sometimes linked to them feeling helpless or detached and for some even the feeling that they were unsure how long they could continue in that role.

The research emphasises the considerable emotional toll that dealing with traumatic and abusive calls has on call handlers. While peer support and counselling services are standard support mechanisms, there is an increasing recognition and use of digital mental health resources. These resources are perceived as potentially advantageous, providing the accessibility and flexibility that traditional methods may lack.

Nonetheless, various obstacles to the adoption of digital tools were noted, including limited time, access challenges, and a tendency to prefer face-to-face support. Tackling these obstacles is essential for improving the uptake and effectiveness of digital mental health resources.

Although this evaluation provides valuable insights, it is vital to acknowledge its limitations. The sample size in comparison to the number employed was low and whilst appropriate for qualitative research, generalisability may be limited.

### **6.1 Recommendations**

This study has highlighted key areas where digital support tools can enhance the well-being of emergency call handlers. However, further research is needed to expand on these findings. Future studies could benefit from a larger and more diverse participant pool, incorporating various roles within WAST and other emergency services. A comparative approach between urban and rural responders may provide deeper insights into how geographical factors influence access to support resources. Additionally, incorporating a hybrid data collection method—combining online and in-person interviews—could help assess differences in engagement and data quality, while focus groups may offer further perspectives through shared discussions.

Longitudinal research could explore the long-term psychological impact of traumatic incidents, tracking responders over an extended period to assess the

sustained effectiveness of digital mental health interventions. Evaluating different digital tools, such as mental health apps or AI-driven support systems, could help identify the most effective interventions for reducing stress and burnout. Additionally, further research into organisational policies and their impact on mental health support could provide valuable insights into how emergency service providers can better integrate digital solutions into their existing frameworks.

- **Education and Awareness:** Offer training on utilising digital mental health resources to enhance awareness and comfort among call handlers.
- **Enhanced Accessibility:** Make certain that digital tools are readily available during and outside of work hours to cater to varying schedules.
- **Fusion with Traditional Support:** Merge digital tools with conventional support systems to create a holistic support framework that includes both personal interaction and digital ease.
- **Ongoing Feedback and Enhancements:** Consistently gather feedback from call handlers regarding the efficacy of digital tools and implement necessary upgrades to boost their usability and effectiveness.
- **Policy Enhancement** – Update WAST policies to explicitly recognise digital tools as legitimate mental health resources.
- **Address Gender-Specific Needs** – Develop targeted interventions that acknowledge different coping mechanisms between men and women.

By adopting these recommendations, organisations could more effectively support the mental wellbeing of call handlers, aiding them in coping with the emotional demands of their roles. Future research should explore the effectiveness of tailored digital mental health interventions for EMS personnel, considering the unique stressors and job demands of this workforce (Clark *et al.*, 2021) Additionally, studies should investigate the long-term impact of these interventions on mental health outcomes.

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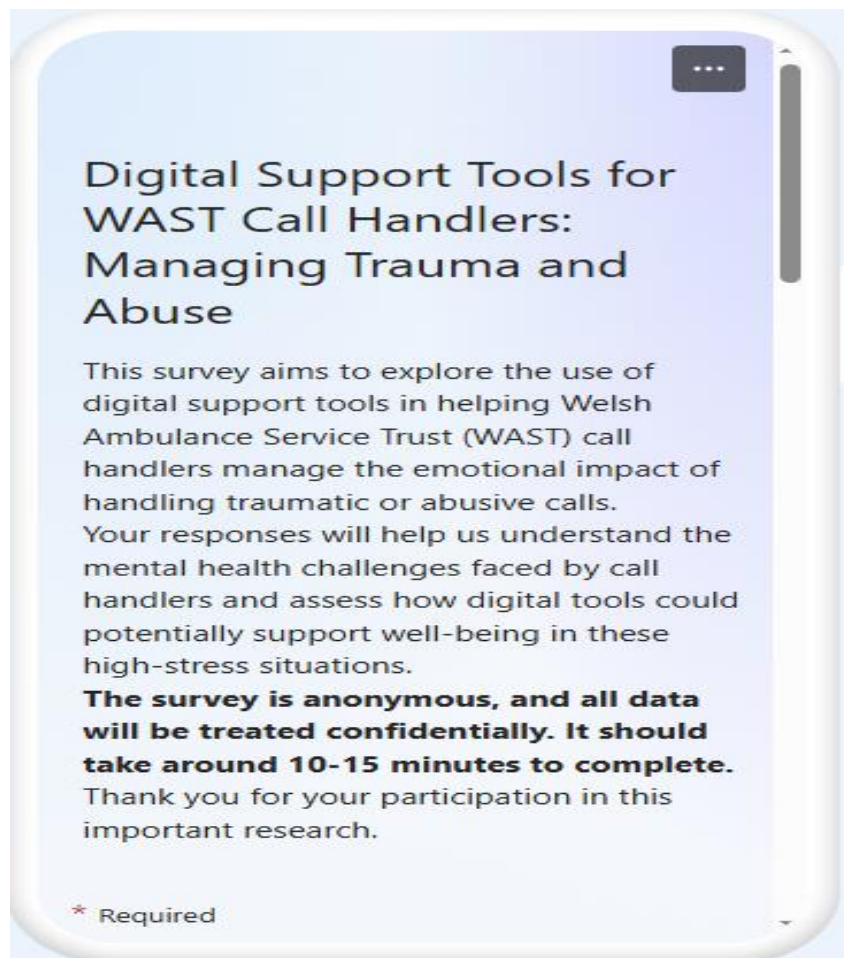
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## Appendices

### Appendix A: Survey

Front page of the survey sent to WAST call handlers, along with links to support services following participation.



The image shows a digital survey form on a light blue background. The title is 'Digital Support Tools for WAST Call Handlers: Managing Trauma and Abuse'. The text describes the survey's purpose: to explore the use of digital support tools in helping Welsh Ambulance Service Trust (WAST) call handlers manage the emotional impact of handling traumatic or abusive calls. It states that responses will help understand mental health challenges and assess how digital tools could support well-being in high-stress situations. A bolded statement reads: 'The survey is anonymous, and all data will be treated confidentially. It should take around 10-15 minutes to complete.' It concludes with 'Thank you for your participation in this important research.' At the bottom left, there is a red asterisk followed by the word 'Required'.

**Digital Support Tools for WAST Call Handlers: Managing Trauma and Abuse**

This survey aims to explore the use of digital support tools in helping Welsh Ambulance Service Trust (WAST) call handlers manage the emotional impact of handling traumatic or abusive calls. Your responses will help us understand the mental health challenges faced by call handlers and assess how digital tools could potentially support well-being in these high-stress situations.

**The survey is anonymous, and all data will be treated confidentially. It should take around 10-15 minutes to complete.**

Thank you for your participation in this important research.

\* Required

Last section of survey providing details of support provision available to staff.

Section 5

## Wellbeing Support

**Thank you for completing this survey.**

Your insights are invaluable in shaping potential strategies to better support WAST call handlers. If participating in this survey has raised any concerns or emotions, or if you feel you need additional support, please remember that WAST offers a range of well-being services available to all staff. For support, you can reach out to:

- **Wellbeing Service:** available Monday-Friday, 8am-4pm. 0300 321 4700 [wellbeing.support.service@wales.nhs.uk](mailto:wellbeing.support.service@wales.nhs.uk)
- **Health Assured (EAP):** 24/7 telephone Number 0800 028 0199 [www.healthassured.org](http://www.healthassured.org) Access to WISDOM App: Employer code: MHA171225

Your well-being matters, and support is always available. Please don't hesitate to access these resources if needed.

### A. Screenshot of survey poster

## Share your views on the use of digital support tools for call handlers at Welsh Ambulance Services University NHS Trust (WAST)

### Participants needed for research survey

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <h4>What is the purpose of the research?</h4> <p>This study is being conducted as part of an MSc in Digital Transformation for Health and Care Professionals. The research aims to explore the views of Welsh Ambulance Service Trust (WAST) call handlers on the potential role of digital support tools in aiding staff who experience traumatic or abusive calls.</p> <p>The focus is on understanding call handlers' perspectives regarding the feasibility, benefits, and potential challenges of implementing such tools within the workplace. The findings will contribute to identifying innovative ways to support staff well-being and improve workplace support structures through digital transformation.</p> | <h4>Are you eligible?</h4> <ul style="list-style-type: none"><li>• You must be 18 years or older.</li><li>• You must be employed as a call handler for the Welsh Ambulance Service Trust (WAST).</li><li>• Participation is voluntary, and responses are anonymous.</li></ul> <h4>Confidentiality</h4> <p>We are committed to protecting your privacy, and all responses provided during the study will remain strictly confidential.</p> <p>This survey is entirely anonymous, meaning no personal information will be collected, and your responses cannot be linked back to you in any way.</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



**Prifysgol Cymru**  
Y Drindod Dewi Sant  
**University of Wales**  
Trinity Saint David

**Researcher: Katherine Abbott**  
Contact: [2211949@student.uwtsd.ac.uk](mailto:2211949@student.uwtsd.ac.uk)

**If you wish to raise any concerns about the way the research is conducted, please contact the University Data Protection Officer (DPO), Mr. Paul Osborne at [foi@uwtsd.ac.uk](mailto:foi@uwtsd.ac.uk)**

## Appendix B : Interviews

Interview questions:

### Interview Questions

#### Awareness and perception of Digital Support Tools

7. Can you describe a specific traumatic or abusive call you've handled recently, and how it affected your mental health?

Enter your answer

8. How do these types of calls typically impact your emotional well-being in the short and long term?

Enter your answer

9. What support systems are currently available to you following a traumatic or abusive call (e.g., peer support, counselling)?

Enter your answer

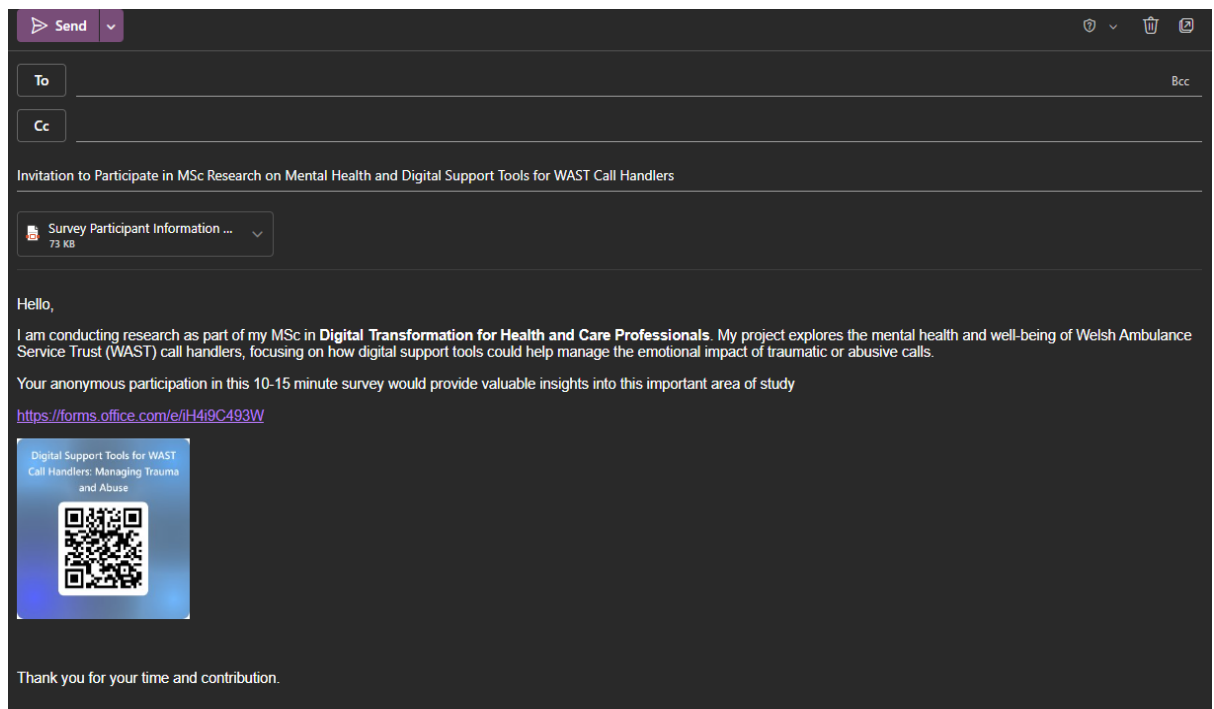
10. How effective have these systems been in helping you manage stress and anxiety?

Enter your answer

11. Are you aware of any digital tools that could support your mental health? If so, what have you heard about them?

Enter your answer

Email communication to invite participants to complete the survey or volunteer for interview.



## Appendix C: Ethical Approval From



PG2 Application for  
Ethical Approval - Kat