

The Prevalence of Postcode Stress among nurses: A systematic review and meta-analysis protocol

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ABSTRACT

Background: Postcode stress is a significant concern among nurses in high-stakes environments like emergencies and intensive care units. This stress arises from the emotional and psychological burden of performing cardiopulmonary resuscitation (CPR), especially when outcomes are unfavorable. Despite its recognized impact on nurses' mental health and patient care quality, empirical research does not quantify its prevalence and identify contributing factors. This study aims to conduct a systematic review and meta-analysis to determine the prevalence of postcode stress among nurses, providing a comprehensive understanding of this phenomenon to inform effective interventions and support mechanisms. **Methods:** A thorough search was conducted across various online databases. Studies were deemed eligible for inclusion if they examined postcode stress within nursing practice utilizing validated instruments, irrespective of the academic status, gender, country, setting, ethnicity, race, or limitations of the studies. Two reviewers independently undertook data extraction and quality assessment, following the PRISMA guidelines. **Discussion:** Post-resuscitation stress, or "postcode stress," significantly impacts critical care nurses involved in failed CPR attempts. This emotional burden can lead to moderate to severe stress levels and symptoms like post-traumatic stress disorder, affecting mental health and job satisfaction. Key factors include high-stakes settings, emotional investment in patient care, and perceived responsibility. Like structured debriefing sessions, institutional support alleviates these adverse effects, highlighting the need for supportive work environments. Positive coping strategies and regular stress assessments can enhance nurses' well-being and improve patient care outcomes.

Systematic review registration: PROSPERO CRD42025646495. This protocol follows the PRISMA-P guidelines for reporting systematic reviews.

Keywords: Postcode Stress, Cardiopulmonary Resuscitation, Code Blue, Stress, Nurse

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BACKGROUND

Postcode stress is a well-recognized issue among healthcare professionals, particularly those involved in critical situations such as cardiopulmonary resuscitation (CPR) (1, 2). While CPR is a life-saving procedure, it can exert significant mental and emotional pressure on individuals engaged in repeated resuscitation efforts (3, 4). Direct exposure to scenarios involving patient death or severe injury often leads to adverse psychological reactions, including feelings of hopelessness, guilt, and burnout. Nurses, who constitute a substantial portion of the healthcare workforce and maintain prolonged, close interactions with patients, are notably affected by this phenomenon (5-7).

Postcode stress refers to the emotional and psychological responses arising from encounters with critical resuscitation events,

encompassing complex emotions such as guilt, failure, and helplessness, especially following unsuccessful resuscitations (2). This form of stress not only impacts nurses' mental health but also has detrimental effects on the quality of care provided, job satisfaction, and clinical decision-making (8-11).

Numerous studies have highlighted the levels of postcode stress among nurses and its impact on their mental well-being. Koželj et al. found that intensive care unit nurses involved in resuscitation reported elevated levels of stress and anxiety, as well as increased symptoms of post-traumatic stress in the months following resuscitation efforts (12). Lee et al. described CPR as a demanding and exhausting task that brings about emotional and psychological strain, ultimately leading to heightened stress levels. This stress can be a precursor to compassion fatigue and other psychological

components. Additionally, nurses frequently exposed to high-stress CPR situations may experience a significant decline in coping abilities, potentially resulting in emotional exhaustion and reduced empathy, key attributes for nursing professionals (13). Consequently, increased stress associated with CPR is likely linked to a higher risk of compassion fatigue. Furthermore, separate studies by Storm et al. and Jin et al. revealed that nurses experiencing elevated work-related stress levels exhibited higher degrees of burn-out and lower job satisfaction (14, 15).

Frank Cole and colleagues developed a 14-item questionnaire in 2001, which underwent a psychometric evaluation to assess the extent of postcode stress. Following this, Jin Hee Park et al. designed and validated a Korean version of the questionnaire in 2019 (2, 16). The Post-Code Stress Scale (PCSS) comprises 14 items across five factors: stress from feelings of distress (Factor 1), stress from feelings of uncertainty (Factor 3), and stress from feelings of ethical conflict (Factor 5) represent internal stress sources, while stress from feelings of suppression (Factor 2) and stress from feelings of pressure (Factor 4) denote external stress sources. The internal consistency reliability of this questionnaire was reported with a Cronbach's alpha of 0.79 (2).

Various studies, ranging from quantitative to qualitative designs, have explored postcode stress among nurses and other healthcare providers. The present study aims to systematically review and meta-analyze the prevalence of postcode stress among nurses. By directly calculating and extensively analyzing the prevalence of postcode stress in nurses, this study seeks to bridge the current knowledge gap regarding this concept. Ultimately, it aspires to offer more precise and reliable insights into postcode stress in nurses, enhancing educational and supportive strategies within healthcare settings.

METHODS

PROTOCOL AND REGISTRATION

We adhered to the reporting guidelines specified in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Protocols 2020 (PRISMA-P) (Supplementary File). (17). Furthermore, this protocol is registered with the PROSPERO International Prospective Register of Systematic Reviews (registration number CRD42025646495). In the final review, we will adhere to the PRISMA statement. Any substantial modifications to this protocol will be reported and published alongside the review results.

STUDY SELECTION CRITERIA

TYPE OF PARTICIPANTS

This systematic review seeks to encompass all primary studies involving nursing professionals. The inclusion criteria are devoid of gender restrictions, signifying that any primary study incorporating at least one male or female participant (or both genders) will be considered for this systematic review. Considering the global scope of this study, primary studies from all geographical regions will be included. Moreover, the participants in the primary studies will not be constrained by ethnicity or race. Should primary research be conducted on any ethnic group, it will be assimilated into this secondary study. The exclusion criteria for this study are as

follows: (1) studies for which the full text is not available, and the corresponding author does not respond to a request within two weeks; and (2) studies focusing on postcode stress among nursing students.

TYPE OF STUDIES

This study will encompass descriptive, analytical, and various observational studies. These studies should either report the average postcode stress score or be capable of calculating it from their data.

TYPE OF OUTCOME MEASURE

Prevalence of postcode stress among nurses.

TYPE OF INTERVENTION

There is a tool for assessing postcode stress. We will not impose limitations on including research studies that use these tools in our systematic review and meta-analysis. We will cover all definitions related to postcode stress.

SEARCH STRATEGY

We included the search strategy obtained in the Supplementary File.

STUDY SELECTION

Google Sheets will manage references. Two reviewers will remove duplicates. Then, two reviewers will independently assess each abstract to determine whether a full-text review is needed. A third reviewer will resolve any disagreements between the two reviewers. Two reviewers will retrieve, review, and assess the full text of potentially eligible studies for final inclusion, and again, two reviewers will be consulted if necessary. All reviewers involved in the study selection and data extraction processes hold PhDs in Nursing and are full professors with extensive expertise in conducting systematic reviews and meta-analyses in the field of nursing. Following PRISMA guidelines, a flow diagram will illustrate the selection process. (Supplementary File).

DATA EXTRACTION

Two independent reviewers will undertake the stages of study selection and data extraction. A third expert will adjudicate any discrepancies. The data extraction form will encompass the first author's name, country, population (Nurses), age, sample size, gender, academic levels, total postcode stress, and subsets of postcode stress. The data extraction table is provided in the Supplementary File.

RISK OF BIAS (QUALITY) ASSESSMENT

This phase will include two independent reviewers, with a third expert resolving any discrepancies. All studies will be evaluated using the JBI (Joanna Briggs Institute) tool designed explicitly for prevalence studies. Additionally, quality analysis will be conducted through subgroup analysis based on the final score. Please refer to the Supplementary File for the appraisal tool used in this study.

DATA SYNTHESIS AND ANALYSIS

The pooled mean and its 95% confidence interval will be calculated using R packages. Heterogeneity will be assessed using I^2 statistics, with a value greater than 50% indicating signifi-

cant heterogeneity. Subgroup analysis will investigate the underlying sources of heterogeneity based on population (nurses), country, gender, academic level, and study quality. Additionally, meta-regression will be utilized to examine the impact of age.

DISCUSSION

Postcode stress, often referred to as “post-resuscitation stress,” is a critical issue faced by nurses in high-stakes environments, particularly during cardiopulmonary resuscitation (CPR) efforts. The emotional and psychological burden associated with unsuccessful resuscitation attempts can lead to significant stress and symptoms resembling post-traumatic stress disorder (PTSD) among critical care nurses. Research indicates that these professionals frequently experience moderate to severe levels of stress, which can adversely affect their mental health and job satisfaction (9, 11). The high-stress nature of resuscitation, coupled with the emotional investment in patient outcomes and the perceived responsibility for patient survival, contributes to the prevalence of postcode (9, 10).

The literature highlights that critical care nurses often report feelings of anxiety, grief, and helplessness following unsuccessful CPR attempts, which can exacerbate their stress levels (10, 11). Factors such as heavy workloads, lack of institutional support, and the emotional toll of repeated exposure to traumatic events further compound this issue (11, 18). Consequently, the cumulative impact of these experiences can lead to burnout and compassion fatigue, significantly affecting nurses’ overall well-being and their ability to provide quality patient care (9, 11).

To mitigate the effects of postcode stress, institutional support mechanisms, such as structured debriefing sessions, can be effective. Nurses who participate in these debriefings report lower stress levels compared to their counterparts who do not have access to such support (9, 19). This underscores the necessity of fostering a supportive work environment where nurses can process their experiences and emotions constructively (9, 11). Moreover, the development of coping strategies plays a crucial role in managing PTSD symptoms related to postcode stress. Negative coping behaviors, such as denial and self-blame, are significant predictors of heightened PTSD severity, while positive coping strategies can enhance resilience and reduce the psychological impact of traumatic events (11, 20).

Implementing measurement tools, such as the Post-Code Stress Scale, provides valuable insights into the extent of stress experienced by nurses post-resuscitation. Utilizing such instruments in both research and clinical practice can help identify at-risk individuals and tailor interventions accordingly (11, 19).

In conclusion, addressing postcode stress among nurses necessitates a multifaceted approach that includes institutional support, promoting positive coping strategies, and routine assessments of stress levels. By implementing these measures, healthcare organizations can enhance nurse well-being, reduce turnover, and ultimately improve patient care outcomes (9, 11, 19).

FUTURE IMPLICATIONS

Conducting this systematic review and meta-analysis will yield a comprehensive understanding of the prevalence of post-resuscitation stress among nurses. The synthesized data will guide the

development of targeted interventions and support systems to alleviate this stress, enhancing nurses’ mental health and improving the quality of patient care. Furthermore, identifying gaps in current research may direct future studies to investigate the underlying causes and effective coping strategies for post-resuscitation stress in nursing professionals.

LIMITATIONS

We acknowledge that excluding studies published in languages other than English limits our systematic review. This limitation stems from our limited access to non-English databases and local studies. To tackle this issue, we have decided to include only studies with full texts available in English. While this may restrict the comprehensiveness of our review, it allows us to ensure the quality and accessibility of the included literature.

CONFLICT OF INTERESTS

All authors have no any conflict of interest.

AVAILABILITY OF DATA AND MATERIALS

All data are available.

ABBREVIATIONS

CPR; Cardiopulmonary Resuscitation, PCSS; Post-Code Stress Scale, PTSD; Post Traumatic Stress Disorder, Prospero; Protocols in the International Prospective Register of Systematic Reviews, PRISMA-P; Preferred Reporting Items for Systematic Reviews and Meta-Analysis for Protocols 2020.

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