Health Sciences Review 18 (2026) 100252

Contents lists available at ScienceDirect

Health Sciences Review

journal homepage: www.elsevier.com/locate/hsr

Educational Review

Defining resilience for global healthcare workforce: A narrative review

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ARTICLE INFO

Keywords:
Defining resilience
Healthcare workers
COVID-19 pandemic
Socio-ecological model
Frontline
Health system

ABSTRACT

The objectives of the review were to examine commonly used definitions of resilience in the healthcare domain, analyse these definitions through the socio-ecological framework and identify the different dimensions of resilience relevant to healthcare workers. A systematic search was conducted in the MEDLINE database, and screening was performed at two levels. Data were extracted from the selected studies using Excel spreadsheets.

Definitions of resilience were extracted from 54 included studies. The highest number of studies focused on health worker resilience ($n = 35$), followed by studies on the general population and organizational well-being ($n = 19$). Based on the socio-ecological model, the definitions of resilience at micro-, meso- and macro-levels were summarized. Resilience is the ability to adapt or recover from stressors using a positive approach to achieve well-being, and positive health and social outcomes. Similarly, resilience at the meso- and macro-levels, is the ability of an individual, community or systems to adapt to or withstand hardship, and even thrive despite adversity as well as recover from stressors using a positive approach to achieve favourable health outcomes before, during, after and beyond any given event. The analysed literature was closely aligned with the broader domain of healthcare systems.

This review provides a description of resilience through different dimensions such as time of occurrence of the event, and type of exposure or response. A systems-based approach is critical for comprehending and enhancing resilience, as opposed to reductionist definitions. This approach emphasizes integrating multiple disciplines to study and describe resilience, rather than seeking a single definition.

1. Introduction

Healthcare workers (HCW) are a high-risk population for burnout, depression, and anxiety due to the demanding nature of their work [1]. HCWs face immense challenges, such as long work hours, emotional strain from witnessing suffering, and making difficult decisions with limited resources [2–4]. In 2022, the global prevalence of mental health issues was as high as 46 % among healthcare workers [5]. This significant burden underscores the challenges within any healthcare system in creating supportive environments for HCWs, as well as the difficulties they face in managing their own mental health. After all, HCWs must constantly adapt to dynamic situations and navigate challenging and complex interactions and decisions to provide quality patient care while ensuring their own well-being. Therefore, at a macro or the systems level, prioritising the development of resilience can prevent mental health challenges among HCWs, plausibly even leading to better health outcomes at a population level [6].

Resilience originates from the Latin verb *(re)silire* which means "to jump back or to recoil - to a prior stance", used in the context of a spring. The Latin verb itself is rooted in *salire,* which means "to leap". The connotation follows literally from its denotation—resilience means the ability to bounce back. Such connections portray a sense of the active and dynamic nature of resilience.

Resilience has been studied extensively in scientific literature. Toward the end of the twentieth century, resilience research was focused on individual resilience. However, in the last two decades, organizations and researchers have studied it at the community, organizational and systems levels and integrated its relationship across environmental, developmental, and other social disciplines. Resilience is a complex construct, and the definitions in use do not reflect its complex nature [7]. Resilient individuals, organizations and systems contribute to improved quality of care and other health outcomes. Enhancing

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https://doi.org/10.1016/j.hsr.2025.100252
Received 19 April 2025; Received in revised form 23 December 2025; Accepted 24 December 2025
Available online 27 December 2025

individual, organizational, and health system resilience has been a priority for national and international organizations aiming to improve health outcomes [8].

The first crucial step towards building resilience is to define and grasp its full scope. While examining the lived experiences of HCWs in the light of existing literature, significant gaps became evident. Specifically, the rationale for conducting this review is a gap we identified during The Resilience Collaborative[1] (TRC) community meetings and conversations with stakeholders. TRC held an online event in the 2024, where experts and practitioners reviewed the need for finding ways to sustain and strengthen resilience. The event highlighted the need to expand into academic and model-based discourse, seeking to integrate the complexity of human behaviour to recover or thrive, borrowing references such as elasticity or fragility of materials.

This narrative review investigates the concept of resilience and is the first in the series of upcoming evidence synthesis and implementation research. Therefore, this review focuses on understanding intersections of different contexts and constructs, leading to the conceptualization of various definitions of resilience within the health domain. We focus on the definitions of resilience according to the socio-ecological model, viewing healthcare workers as integral components of organizations and systems, while emphasizing their individuality. Our specific research questions were:

- What are the definitions of resilience commonly used in the domain of healthcare?
- What are the definitions of resilience according to the socio-ecological framework at micro, *meso* and macro levels?
- What are the different dimensions of resilience related to healthcare workers?

2. Methods

A systematic search was conducted on MEDLINE (via PubMed) to identify systematic reviews on “resilience”, “mental health”, and “well-being” published from 2000–2024. An additional Google search was conducted for articles providing definitions and recommendations on resilience. Articles were screened by two authors, and a consensus was drawn on the inclusion of systematic and other types of reviews. The inclusion criteria required the term “resilience” in the context of mental health and well-being for any population, with a specific focus on healthcare workers worldwide. We extracted definitions of resilience relevant to frontline healthcare workers from these articles. We included systematic reviews on resilience and mental health of the general population and healthcare workers, as HCWs are a subset of the general population. This review was not limited to any geographical region and included scientific studies published since 2004. Systematic reviews, rapid reviews, scoping reviews, overviews, and concept articles in English were included. Supplementary File 1 presents the PRISMA-ScR checklist for this review.

2.1. Eligibility criteria

The inclusion criteria were full-text articles on the general population worldwide, with a specific focus on healthcare workers. Healthcare includes roles involving direct contact (e.g., providing care), indirect contact (e.g., managing a care team), or potential contact (e.g., working in the same ward) with patients who have or are suspected of having, the disease of interest [9]. This includes the health workforce working in promotive, preventive, curative or rehabilitative settings, at high risk of infection or being affected by the disease, condition or related triggers.

We excluded studies conducted among informal caregivers (family carers), indigenous populations or groups, gender-diverse or transgender populations, critically or chronically ill patients, studies among children, adolescents, or youth, older adults, and studies on resilience related to climate change. Additionally, we excluded letters to the editor, short commentaries, and conference abstracts. Articles on resilience among healthcare professionals during college education were included, as students are budding healthcare workers and face challenges similar to HCWs during clinical postings within their curriculum. Conflict-affected countries were included in the context of front-line workers.

2.2. Data synthesis

Studies identified during the data extraction process as either wholly or in part concerned with the concept of resilience during COVID-19 were highlighted and listed separately to capture data on healthcare worker resilience during the pandemic. Definitions of resilience were extracted from these studies. During the review process of the listed definitions, a common theme emerged across most resilience definitions in the studies. These definitions included facing adversity or negative effects and responding by coping with or withstanding that adversity as a pre-requisite. We used color coding to group similar concepts and arranged them in a logical sequence within a figure. Finally, the definitions were derived from this figure. The definitions were extracted and recorded in an Excel spreadsheet along with the bibliographic details, which were then used for analysis. In an additional analysis, we coded the levels of the socio-ecological model (micro, *meso*, macro, and exo) and dimensions of resilience (process, capability, outcome or skill, and multi-dimensional) for each of the 54 studies. We calculated the total and average scores in an Excel spreadsheet.

3. Results

The search resulted in 618 studies, out of which we excluded 426 studies at the title and abstract screening and 139 studies at the full text screening stage. We extracted definitions of resilience from 54 studies. The study selection process is shown in Fig. 1. Most of the included systematic reviews ($n = 44$) did not have regional restrictions in the eligibility criteria, but the primary included literature was from high-income countries such as United States of America, Australia, European countries, United Kingdom, Canada, Singapore, Japan, Italy, New Zealand, Spain, Israel, Kuwait; upper-middle countries such as South Africa and China. Very few studies ($n = 4$) in the review provided evidence from low- and lower-middle income countries such as India, Uganda and other African nations.

3.1. Definitions of resilience

Resilience is a complex concept to operationalise [10–12]. The definitions vary with the context and types of resilience, some of which include, individual or personal resilience, moral resilience, emotional resilience, psychological resilience, family resilience, community resilience, organizational resilience, workplace resilience, and health system resilience.

This concept analysis (Fig. 2) is a comprehensive map for resilience at multiple levels namely individual, family, community, organizational, and system levels. The major themes in this analysis were: “ability”, “to adapt” or “bounce-back”, “from stressors” and “using a positive approach to achieve positive health outcomes”. The major categories in concept analysis suggest that resilience can be a trait, an attribute, or a skill that can be learned. Resilience is not the absence of adversity, but the ability to adapt and thrive despite it. Resilient individuals, communities, organizations, and systems share the common ability to “bounce back”, which is a key feature of resilience according to our analysis. We summarize the definitions for resilience in Table 1.

The resilience definitions used in the included studies are presented in a tabular format in Supplementary File 2.

[1] https://trc.community

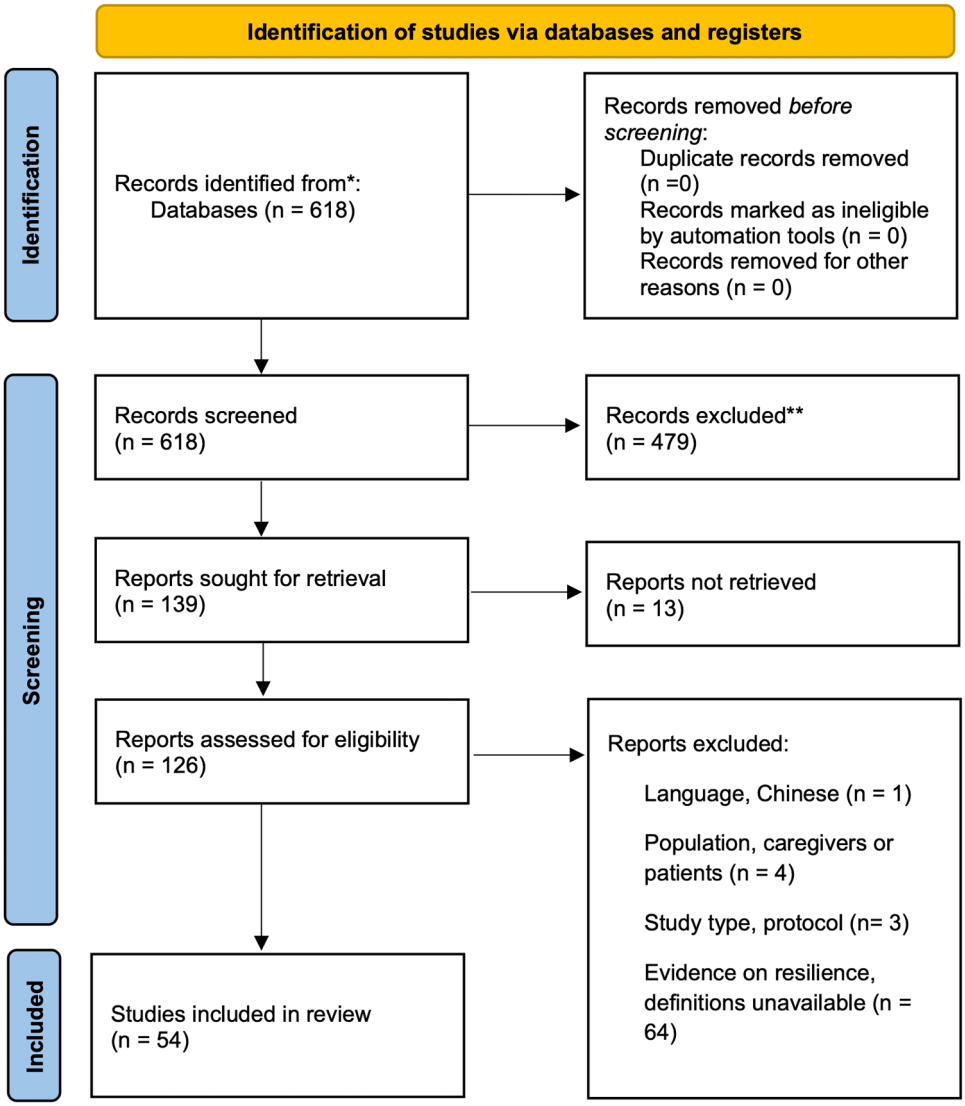

Fig. 1. PRISMA flow diagram showing the selection of studies for the review.

3.2. *Resilience according to the levels of socio-ecological model*

We adapted Bronfenbrenner's socio-ecological model [22] to place the types of resilience at three levels, namely, micro-, meso- and macro levels, corresponding to individual or interpersonal; organization or community; and policy or societal levels, respectively.

In Fig. 3, we mapped the stressors and well-being factors extracted from resilience definitions in the socio-ecological model. Micro-, meso- and macro-levels form a single continuum and span from the individual to system levels. Placing the extracted keywords within the model revealed overlaps, indicating that a single factor may relate to multiple levels. An example at the individual level (Fig. 3) is: if burnout and workload are stressors that lead to negative impacts, inner strength, spirituality, or social support can build more resilient individuals. Similarly, at the macro level, building resilient systems by improving infrastructure and ensuring adequate human resources can mitigate the impact of health emergencies or disasters.

We conducted an additional analysis of the micro-, meso- and macro-elements in the included studies ($n = 54$), where we marked each study for the presence of one or more elements, to understand their usage patterns across the socio-ecological model. We found that the micro elements were present in 81.5 %, *meso* elements in 24.1 %, and macro elements were present in 9.3 % of the studies. A small fraction of studies (18.5 %) had exo-elements, i.e. elements which could not be mapped in the levels of socio-ecological model. The analogy of a socio-ecological model was given in 11 (20.4 %) included studies.

3.3. *Dimensions of resilience*

Studies included in this review classified resilience by the type of exposure, response, and time of the event. Resilience can be understood as both a process (event occurrence) and a characteristic (response to exposure), representing different dimensions of resilience [23]. Fig. 4 depicts the different dimensions and levels of resilience.

Studies viewed resilience from a continuum of low to high. Low resilience is a response to moderate impact caused by an adverse event. Intermediate resilience is a flexible response, where the impact caused by the adverse event was minimal and short-lived. High resilience involves minimal or null impact, and the individual grows toward a higher level of functioning [24]. Therefore, the dimensions of resilience depending on type of response could be as follows: adaptive (the ability to withstand and adjust to unfavourable conditions and shocks), absorptive (the ability to withstand but also to recover and manage using available assets and skills), anticipatory (the ability to predict and minimize vulnerability), and transformative (transformative change so that systems better cope with new conditions) [14]. Additional examples

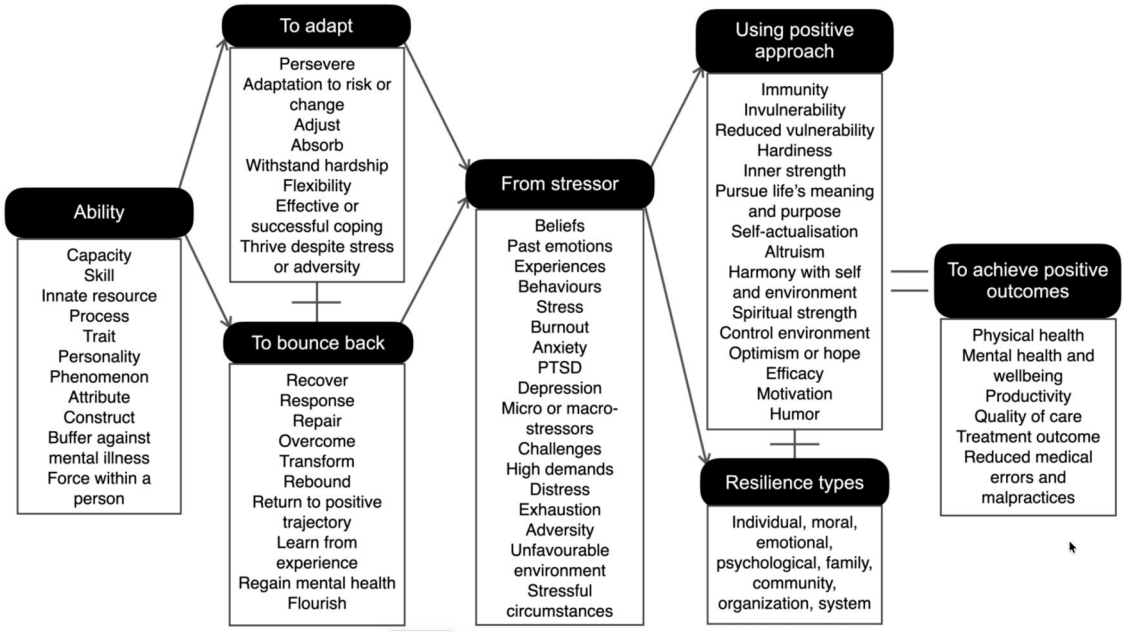

Fig. 2. Concept analysis of resilience definitions (data from all included studies).

of resilience categorized by type of response observed in healthcare settings are provided in Supplementary File 3.

Resilience is affected by life events. In the context of resilience, such an event could be a health emergency, a natural calamity or disaster, unexpected crises, disease, harm, stressors or death. A study by Tan and colleagues [25] describes how resilience varies across time (pre-event, intra-event, and post-event). This study also suggested a conceptual framework for healthcare resilience as an event cycle, where the pre-event steps are ‘

“prevent” and “prepare”, intra-event steps are “absorb” and “adapt”, and post-event steps are “recover” and “review” [25]. The cross-cutting or trans-event steps listed in Tan’s framework were collaboration, cooperation and coordination, connectedness, and communication. Understanding resilience according to time of the event is necessary as there has been a shift from a focus on primarily disasters and crises toward a more integrated approach to resilience. The contextual dimensions of resilience are often described as changes in the immediate physical and social environment, leading to war, disasters, climate change, pandemics, or disease outbreaks. These contextual changes are external to the definitions of resilience.

In the additional analysis of the definitions of resilience, we found that 66.7 % of studies described the dimension of resilience as a capability, 22.2 % as a process, 25.9 % described it as an outcome or a skill and 14.8 % described resilience as multidimensional, respectively.

Following from the above, we developed a prototypical resilience trajectory mapped on a two-dimensional axis of resilience response level and time of event (Fig. 5). This is based on the understanding of resilience according to the previously discussed dimensions. On the y-axis, low to high resilience is represented. The x-axis is according to time of event, where any event would have a pre-, intra- and post-event timeline. A given event may be any shock, trauma, or adversity, and as shown in Fig. 5, the healthcare workers are constantly trapped in the intra-event phase, exposing them to higher levels of risk for lower resilience as compared to other occupations and the general population. We created trajectories for the four case-scenarios: “no intervention”, “micro-level”, “meso-level” and “macro-level” interventions, based on hypothetical data and an understanding of different levels of interventions. These trajectories may serve as a starting point for a multidimensional analysis of the concept of resilience or help in designing resilience interventions.

Fig. 5 highlights the challenge of understanding and implementing resilience because it exists in a multidimensional space with various constructs. This complexity makes it difficult to define resilience effectively. We suggest “capability” and “neurobiology” as the third and fourth dimensions of this figure, noting that interventions at various levels influence resilience responses differently across these four dimensions.

3.4. *Resilience among healthcare workers*

We included studies focusing on healthcare workers based on our operational definitions. The term “frontline workers” or “professionals” was used in very few studies [9,26]. However, the term “frontline responders” appeared in multiple studies [27–31]. Some studies combined social care professionals and medical professionals as their focal study population [9,31–33]. Nurses (registered nurses, mental health nurses, palliative care nurses, critical care nurses, oncology nurses) were the most studied population for resilience (n = 16), followed by a combination of doctors, nurses and paramedics (n = 8), then paramedical staff or frontline staff (n = 4), then doctors (n = 3), medical or paramedical students (n = 3) and midwives (n = 1). We found no systematic review of resilience among community health workers.

Nurse resilience has been widely studied. This is due to the challenging nature of their work and the clarity regarding the profession and its role globally. Many challenges are inherent to the nursing role [34], including extended working hours, the fear of disease, and an atmosphere of unease while caring for infected patients [35,36]. Nurses have been reported employing emotion-focused coping strategies such as humor, avoidance behaviors including social isolation, or problem-focused strategies such as mindfulness techniques, intentional diversion from work, and reducing working hours. They also described finding comfort in cooking, reading books, painting, shopping, watching movies, exercising, and participating in healing programs [37].

Systematic reviews suggest that resilience training interventions can be beneficial for healthcare workers. Resilience programs have shown moderate positive effects on resilience, well-being, and mental health among nursing staff [38]. Effective interventions often include mindfulness, relaxation, psychoeducation, and cognitive strategies [39]. Recent studies have reported improvements in well-being, work engagement, and resilience, along with reductions in burnout and stress

Table 1
Mapping the definitions of resilience.

Level	Definition	Contexts
Resilience	The ability of an individual or community or systems to adapt or withstand hardships, and thrive despite adversity and recover from stressors using a positive approach to achieve positive health outcomes	Individual resilience
Family resilience [13]	The family's ability to withstand and bounce back from disruption in life, by adjusting over time to handle crises or adversity	Interpersonal or family resilience
Community resilience [14,15]	The ability of a community to "withstand, adapt and permit growth in adverse circumstances due to social structures, networks and interdependencies within the community" and work cohesively toward common objectives	Resilience of communities or in social circles
Organizational resilience [16,17]	An organization's capacity to resist and adapt to challenges or crisis, to improve employee productivity and well-being and continue its activities in line with its goals and vision	Workplace or organizational resilience
Systems resilience [18]	The capacity of a system to adapt successfully to disturbances that threaten the viability, function or development of the system. It describes the degree to which the system is capable of self-organization, learning and adaptation	Systems or national level resilience or conflict-affected contexts
Moral resilience [19]	The ability to preserve or restore integrity in response to moral adversity	Individual resilience
Psychological and emotional resilience [20,21]	The personal trait of "toughness and elasticity" that helps achieve individual resilience and "flourishing despite adversity"	Individual resilience

among healthcare professionals following workplace interventions such as mindfulness and the deliberate cultivation of a positive mindset [38].

4. Discussion

In this section, we focus on healthcare worker resilience, the value our research adds to the existing corpus, common challenges in defining resilience, and the requirement of a multidisciplinary, contextually driven, and multi-pronged approach to resilience interventions. Healthcare workers face trauma on a regular basis. Interventions for healthcare workers may help enhance and sustain the resilience response among them. Hence, promoting evidence-based research is essential to inform policy decisions and develop resilient individuals and systems, ensuring effective recovery and adaptation strategies. This review is a step towards that normative goal.

We noted a lack of a universally accepted definition in the literature. While the American Psychological Association's definition of resilience [7] is helpful, there is a need for descriptions and definitions that complement domains ranging from neurobiology and organizational development to labor policy and regulation, among others — this will augment research and study designs that reflect multifactorial hypotheses and outcomes, and aid in comparing findings across studies. To explore this, we extracted various definitions of resilience from the included studies and mapped them in an inductive framework given as the concept analysis presented as the first figure in our results.

The various definitions and descriptions of resilience reflect perspectives from individual micro-, meso-, and/or macro-levels, and are constrained by the context of one's specific discipline. However, the ongoing reliance on narratives and analogies to convey these concepts across different domains brings to the forefront descriptive gaps at the intersections of disciplinary boundaries. The definitions of resilience we have encountered likely represent a subset of a broader range of definitions and concepts being explored across various domains. These definitions often borrow terminology from multiple disciplines and frequently rely on metaphors or analogies from fields such as thermodynamics, immunology, mechanics, and even theology. A logical consequence of this is that it raises the issue of the target audience for these definitions and the contexts in which their effectiveness or suitability should be assessed, if not even potentially modified. The primary users of these definitions are among the scientific, governance, clinical, and investment sectors across various disciplines. However, due to the systemic and multifactorial nature of resilience, there are other users such as organizational program managers, essential services workers, monitoring and evaluation professionals, and policy professionals, to

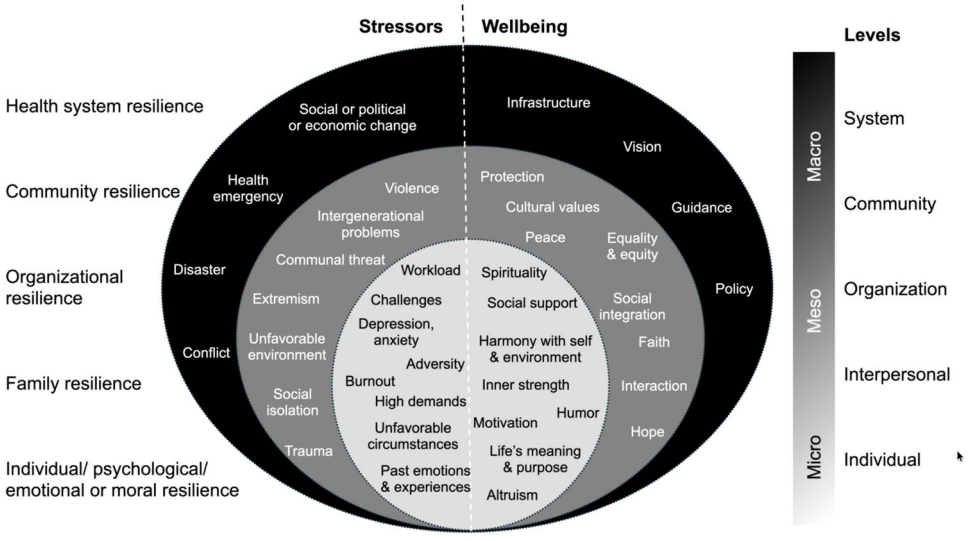

Fig. 3. Types of resilience, stressors and well-being factors according to levels of Bronfenbrenner's socio-ecological model (authors' creation based on data from included studies).

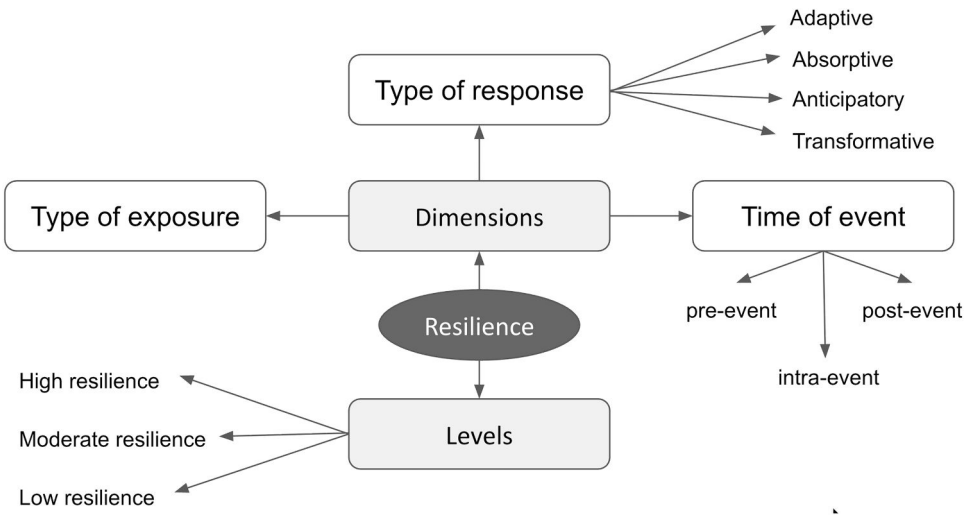

Fig. 4. Schematic for dimensions and levels of resilience (authors' creation).

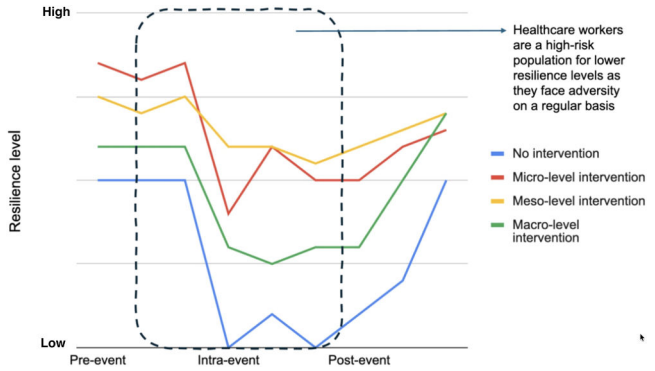

Fig. 5. Prototypical resilience response trajectory for time of event according to level of interventions (authors' creation).

name a few. Such groups may find existing descriptions inadequate to interact effectively on the frontlines and across the micro-meso-macro levels and may therefore need to rely on, translating or contextualising these concepts for their interaction. Our experience with diverse TRC stakeholders, during participatory workshops, field visits, implementation research and consultations, has shown that discussions involving burnout, trauma, resilience, or recovery almost always include metaphors, regardless of the formal definitions used [40]. Phrases like "it is like…" help individuals from different public health sectors engage more effectively by using idioms and similes from their cultural and disciplinary contexts. Therefore, employing these metaphors for specific audiences may be necessary to convey and evaluate the concepts of resilience more clearly.

We acknowledge the significant pressure on the authors of the included studies to convey complex ideas and concepts that align with academic rigor and their primary discipline's nomenclature. Additionally, ensuring these ideas resonate clearly with diverse cultural constructs for easier recall and communication is a considerable challenge. This highlights the need for awareness of the multi-factorial elements that contribute to resilience concepts, and those that erode them. Such awareness is crucial for causal rigor, clarity in communication, investment decisions, and evaluation processes. The goal is not to frame and accept a single globally relevant definition of resilience but to complement existing descriptions of resilience as a preferred outcome. This approach acknowledges the complexity and diversity of resilience, emphasizing the importance of multifaceted and contextually relevant definitions.

Individual and environmental factors that form parts of interacting systems have dynamic and complex relationships. Therefore, the socio-ecological model has been helpful for situating and understanding multiple levels of influence on health behaviors and outcomes. The socio-ecological model provides a foundational understanding of how systems can withstand and adapt to various stressors according to concepts of resilience, adaptability, and transformability. Our study identified various types of resilience at the micro-, meso- and macro-level of the socio-ecological model, namely, individual or personal, moral, emotional, psychological, family, community, organizational, workplace, and system resilience with varying definitions. Each level or layer is presented without strict boundaries, and factors affecting resilience overlap across the different levels depending on the context. Boundaries of different types of resilience are not rigid, and resilience may span one or more levels of the model. Individual resilience can be equated with moral, emotional, and psychological resilience. Further, it is closely associated with family resilience. Therefore, the thin line between individual and family resilience lies in the fact that the family is a unit consisting of members related by blood or by alliance. Family resilience is directly affected by individual resilience, as it is a closely-knit unit. However, community or organizational resilience may or may not depend on individual resilience, for it can be based on paradigms within which it operates. Health system resilience is complex and may be related to national or international systems or societies.

Resilience encompasses individual, organizational, and systemic capacities. This multidimensional nature of resilience spans psychological, social, and structural domains, making it challenging to capture through a single theoretical lens. Current literature employs diverse frameworks—such as the Job Demands–Resources model [41], Conservation of Resources theory [42], and Health System Resilience [43]—each providing distinct perspectives on resilience mechanisms and interventions. While these models offer valuable insights, a systematic comparison of their theoretical underpinnings, strengths, and limitations is beyond the scope of this study.

The concept of resilience encompasses the onset of triggers, the process, and the capability to bounce back from adversity. This includes building skills to become resilient and the ability to respond to adversity triggers. Contextually, these definitions are also applied to areas such as climate, disaster, and conflict, while being widely recognized in academic discussions related to health and well-being. To address this, TRC aims to take steps to simplify and clarify these constructs. The recommended capability vs. neurobiological chart (Fig. 5) and related system dynamics maps could provide insights into the interplay between different dimensions of resilience. Creating a short-form video explainer

to describe these dimensions could provide clearer understanding and provoke further action, especially among researchers and practitioners in the field to aid in dissemination.

Healthcare worker (HCW) terminology tends to be used to refer to various groups and subgroups within the healthcare sector without adhering to a universal definition. This broad use of terminology includes doctors, nurses, paramedics, medical students, and social care workers. What stands out in our findings is this: resilience training and interventions are most important for the frontline workers or HCWs—in this case, those working in healthcare—because work-related stress and constant exposure to disease and death make them vulnerable to poor mental and physical health. In addition to that, a resilient healthcare workforce ensures that positive health outcomes are met. An unexpected finding in this review was that there were no systematic reviews focused on community health workers.

Our review brings in finer levels of nuance depending on the level of analysis at which resilience operates. Our contribution specifically examines ways in which resilience is defined for individuals, communities, and health systems. Our focus is on how individuals or health systems can overcome challenges, adapt to changes, and grow stronger. The range of definitions and descriptions of resilience represents perspectives from individual micro-, meso-, and macro layers, and the scientific discipline as a limiting context. However, the continuing reliance on stories and analogies to translate these concepts across other domains implies that there are descriptive gaps at the intersection of discipline boundaries.

4.1. Research and policy implications

Firstly, we propose evaluating the effectiveness of definitions within the context of healthcare worker (HCW) resilience by using metaphors in participatory setups, assessing their effectiveness, and validating them. Secondly, we recommend developing and refining theoretical frameworks to define and measure resilience. These frameworks should aim to leverage cross-cultural and cross-disciplinary lenses to better inform practical descriptions of resilience. Thirdly, we recommend creating and testing intervention strategies tailored to specific populations and settings, and integrating resilience concepts into policy-making across sectors. Researchers should consider prioritizing robust methodological approaches—such as longitudinal designs, mixed-methods studies, and cross-cultural validation—to advance resilience research and ensure comprehensive, contextually relevant findings. Additionally, future research should undertake comparative analyses of resilience models to clarify their applicability across different levels and contexts, thereby informing more integrated and comprehensive resilience strategies. An important implication is the assumption that a supportive environment positively affects the mental health of healthcare workers (HCWs). Whilst this may seem intuitive, future research should critically examine and unpack the mechanisms through which supportive environments influence mental health outcomes. Fourthly, we advocate for cross-sector collaboration between HCWs, researchers, policymakers, and practitioners to ensure practical applications of resilience research. Finally, we recommend the provision of funding and resources to support trans-disciplinary resilience research and the implementation of evidence-based policies.

4.2. Strengths and limitations

The strengths of the review are the systematic inclusion of literature and the concept analysis for the definitions of resilience. A limitation of the review is that search was conducted in a single database; however, we attempted to mitigate this by complementing it with an additional search. Another limitation of this review is that the micro-, meso- and macro-levels of the socio-ecological model describing organization or community levels and policy or systems level resilience focus on health and are not limited to individuals, health organizations, or health systems. This raises the question of what constitutes the domain of health. We have defined healthcare work, but some of the articles on resilience pertain to the general population. This may have influenced the interpretation of findings, as general population studies might not fully align with healthcare-specific contexts. To address this, we explicitly noted these distinctions in the synthesis. While resilience cannot exist in isolation, we emphasize that studying resilience at the molecular level [44] is not within the scope of this article because we aim to generate knowledge on psycho-social study of resilience. There were no studies on community health workers. These results are likely related to the paucity of empirical research on resilience among different communities. An implication of this finding may be increased interest in investing in primary studies and interventions for community health worker resilience. Future research should also consider multi-database searches and broader inclusion criteria to capture diverse perspectives.

5. Conclusion

Resilience, a complex and multifaceted construct, is essential for the well-being of healthcare workers, organizations, and the healthcare system. The complex systems-based approach requires the integration of multiple disciplines in the study, measurement, and description of resilience, rather than striving for a singular or uniform definition. Cataloging diverse definitions across contexts enables mapping relationships and demonstrating systems equity. While scientific rigor provides essential guidance, the trans-disciplinary alignment and practical application complement and acknowledge other domains, thereby enhancing systemic value. Future research should explore the cross-cultural and interdisciplinary dimensions of resilience to develop more comprehensive models and interventions for healthcare workers. Exploring these dimensions of resilience is essential. Failure to do so may lead to resilience-building strategies that are too narrow and unable to address diverse needs. This could ultimately compromise the well-being of the healthcare workforce and the quality of care delivered by them. By engaging experts from various disciplines to develop integrated resilience models, and designing adaptable interventions, we can create more effective and comprehensive strategies. These strategies can address the diverse needs of different cultural contexts and specific groups. In addition, this multidisciplinary approach ensures that resilience-building efforts are both inclusive and practical. To ensure the long-term sustainability and effectiveness of the healthcare system, it is imperative that we prioritize and invest in resilience-building research and initiatives.

Author contribution

Conceptualization: **PP, VS, SS, AM**.
Data Curation: **PP, AM, SS, SS1, AS**.
Formal Analysis: **VS, AM, SS, PP**.
Writing - Original draft: **PP, SS, AM, SS1, AS**.
Writing - Review & Editing: All Authors
Funding acquisition - **VS, OJ**.
Supervision - **OJ**.

Funding

The Resilience Collaborative Grant from J&J Foundation.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used Microsoft Copilot in order to improve readability and language. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. The author is an Editorial Board Member/Editor-in-Chief/Associate Editor/Guest Editor for this journal and was not involved in the editorial review or the decision to publish this article.

Acknowledgements

The authors would like to thank Sarah L Mullane for her constant support and encouragement for conducting this review. We thank the contributors to “What is Resilience By The Way” event.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.hsr.2025.100252.

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