

Re: To Reviewers Thank you for your review of our UR ms. We have addressed all comments. They are in yellow in the revised ms.	JBIES-24-00551	Effectiveness of interventions in promoting resilience among new graduate registered nurses in any practice area: An Umbrella Review protocol	Note new title based on Associate Editor comment
Reviewer	Comments	Author Response	Author Comments
Senior Editor	The very long paragraph lines 55-85 could probably be split into 2 or 3 paragraphs to improve readability. The final paragraph should include a description of checking for existing umbrella reviews on this topic: what sources were checked, and what was found? (suggest Epistemonikos if this has not yet been done).	We have revised this section and included where we checked for existing URs. See Lines 80-118.	Thank you for this suggestion. We used Epistemonikos.
	Participants: are these registered nurses or any worker with 'nurse' in the designation? What will you do with syntheses that include health professionals generally, but nursing is one of the included health professions? I think the setting still needs describing, even if it is just 'any practice setting' with some extra description around what that means. What does it mean to be 'practicing'? Consider also what you would do with a review that had students on placement and new grads as their population?	The definition of participants has been clarified, starting on Line 125. Changes are highlighted in yellow. Setting has been rewritten and clarified, starting on Line 136. A definition of 'practicing' has been added at Line 132. Changes are highlighted in yellow. Our population is registered nurses. Students are not included. Reviews with a combined population of nurses/student nurses/ or other health professionals can be included if we can extract the new graduate nurse information.	
	Remove 'study objectives' from the Intervention	Removed	

	heading.		
	Comparators: just describe the comparators of interest in this section.	Rewritten starting on line 179. Changes are highlighted in yellow.	
	Outcomes: While job satisfaction and retention may be end products of resilience, the argument has not been made in the protocol that these are outcomes that can answer the review question. If these are important to the review then they need to be justified. Describe what resilience and any other outcomes of interest will be measured with.	This section has been rewritten for greater clarity, starting on line 184. Changes are highlighted in yellow. The tools for measuring resilience have been included, starting on line 205.	We have rethought our approach and will look at resilience as the primary outcome. Thank you for this suggestion.
	Types of studies: It's unclear how what the statement on line 143 about consultation and a definition's suitability, however it is not appropriate to leave inclusion criteria "open" to interpretation. Please clarify this.	We have removed the focus on consultation and suitability.	
	Methods: PRISMA is a reporting guideline and not a review method.	Revised. Changes are highlighted in yellow, on line 225.	
	Searches: Medline(Pubmed) while medline is searchable through pubmed, unless a specific filter is used, pubmed will search also pubmed central and bookshelf. If you plan to search pubmed, then just state that. The appended search strategy seems to be from Medline through Ovid, however, which would make discussion of pubmed irrelevant. Epistemonikos is a key source for systematic reviews, I strongly suggest including it.	We searched Medline OVID. We have edited this. We will add Epistemonikos to the search strategy.	

	The JBI Library of Systematic Reviews is not a thing, so please clarify what it is you will be searching. Cochrane and Campbell are not sources of unpublished or grey literature. Ensure this is revised and sources of grey literature are included.	Revised, beginning on line 240. Changes are highlighted in yellow.	
	Study selection: Describe the pilot test procedure.	Pilot test has been described, starting on line 260. Changes are highlighted in yellow.	
	Methodological quality: Remove Appendix II which is unnecessary, but ensure the JBI appraisal instrument is cited correctly. Describe piloting the assessment process.	Appendix II has been removed. We have added our pilot test, starting on line 260. Changes are highlighted in yellow.	
	Study selection: Describe the pilot test procedure.	Pilot test has been described, starting on line 260. Changes are highlighted in yellow	
	Data extraction: Please describe a pilot process for extraction. Appendix III is unnecessary	Appendix III has been removed. Pilot test has been described, starting on line 260. Changes are highlighted in yellow	
	Data synthesis and integration: some of this seems to be the methods for a mixed methods or qualitative review. Please remove the methods not appropriate to an effectiveness umbrella review. Remove tables 1 and 2.	This section has been edited, and changes are highlighted, starting on line 321 Tables 1 and 2 have been removed.	
	Appendix I it is very unclear what the second search strategy is for. Only one strategy is required for protocol submissions in this journal. Please check the Medline strategy as I think some important spaces have been removed, such	In my Word document copy of this protocol, these lines are present. They are highlighted in yellow on the resubmitted manuscript. 23 or/17-22	A line-by-line review of Appendix 1 shows all lines to be in numerical order. Based on a comment from Reviewer 1, I have put this information into table format beginning on Line 440. However, I

	as search lines 23, 32, 38 etc.	475,180 32 or/24-31 257,288 38 or/33-37 55,802	have left the original with those highlights that show the lines were present I am not clear on what format is requested, so both are there.
Associate Editor	I think it is not necessary to mention in the title 'in any practice area'. This should be specified in the inclusion criteria.	See revised title above and on the manuscript	
	This umbrella review focuses on new graduate nurses; however, the introduction provides limited context regarding this specific population. For instance, it fails to articulate the necessity of resilience for new graduate nurses, the unique challenges they face in contrast to their more experienced counterparts, and the various factors that influence their resilience. Although the authors strive to highlight the broader issues impacting nurses, such as burnout and suicidal ideation, and the associated intervention costs, they do not adequately address how these issues, particularly burnout, specifically impact new graduate nurses and the potential implications for their job retention.	Revised, starting on line 53. Changes are highlighted in yellow.	
	Dividing the review question into two distinct parts would significantly enhance its clarity and readability. Furthermore, it is essential that the review question is formulated based on the background information and the underlying rationale for undertaking this review.	Edited to three questions, starting on line 119. Changes are highlighted in yellow.	
	. Authors need to choose which term they use	Edited to reflect reviews, not studies.	

	between 'studies' and 'reviews' when describing the study types to include in the review to minimise confusion. When saying studies, the readers may think that authors will draw data from primary studies from the systematic reviews they will include in this umbrella review	All changes are highlighted in yellow.	
	In the search strategy, authors need to indicate the search terms they will use and how they will combine them to locate studies per each database	This has been added, beginning on line 235 and on Line 249. Changes are highlighted in yellow.	
	Content in lines 175-177 fit well in the inclusion criteria. It would also be important for each step (study selection, data extraction, and quality assessment) to indicate the contribution in terms of percentage for each author and further indicate how it will be implemented (manually or using software such as covidence or any other software).	This information is presented in the Study Section, beginning on Line 250. I am not able to determine a percentage of time for each reviewer until we are clear on how many SRs will be included in this UR. As it stands now, each reviewer has committed to at least two full days of work on this UR each month, although this may change given the number of SRs retrieved. I can have reviewers document the time spent on all activities and report this in the final paper I have inserted the word manual in this section. It is highlighted in yellow.	
Reviewer 1	Overall, this topic is highly significant and aligns well with the challenges currently facing the nursing workforce. The author is encouraged to highlight the importance of this topic to clinical care and consider incorporating the following recommendations into the review. 1. LINE 5: Regarding the objective: The author	This has been added to the objective, starting on line 11. Changes are highlighted in yellow.	

	should specify the interventions used to promote resilience, such as the types, categories, and their relative importance.		
	2. LINE 7: The introduction should identify gaps in current evidence to justify the need for an umbrella review in abstract	The gap in current evidence has been added, starting on line 61. Changes are highlighted in yellow.	
	. LINE 17: MEDLINE (EBSCOhost) seems to be a typo; it should be corrected to MEDLINE (PubMed) in abstract	This was an error on our part, we used Medline (OVID) in consultation with a research librarian. This has been corrected.	
	4. Lines 38~40: This article examines the resilience of new nursing staff and the intervention measures that support it. It should include more specific details to clarify its motivation. .	The motivation to conduct this UR has been added at line 49. It is highlighted in yellow.	
	5. Maybe add more detail on defining "Nurse resilience" in the introduction	Greater detail has been added, starting on line 43. Changes are highlighted in yellow.	
	6. The topic focuses on the resilience of new graduate nursing staff, but the preface primarily discusses the resilience of nursing staff in general. There should be some differences between these two populations. Providing more detailed descriptions of the resilience specific to new graduate nurses is recommended. What specific intervention measures are identified in the existing evidence? What knowledge gaps motivated the decision to conduct this Umbrella Review?	More content has been added, starting on line 53. Changes are highlighted in yellow. The gap in knowledge has been added to line 61. Changes are highlighted in yellow.	
	7. Why focus solely on the 'impact on patient care'? What are the current intervention measures	Potential intervention measures can be	

	aimed at improving the resilience of new nursing staff? It is recommended to include more detailed descriptions to provide readers with a clearer understanding of the interventions available for this group and how these measures can enhance their resilience. Emphasizing the importance of resilience for new nursing staff is crucial.	found starting at line 165. The importance of enhancing resilience among new registered nursing staff is described starting on line 43. Changes are highlighted in yellow.	
	8. LINE 92~94: When describing participations, should the author restrict it to registered nurses only?	Yes. Our focus is only on registered nurses. This has been clarified throughout the manuscript.	
	9. LINE 123: It is recommended to include examples of outcome indicators and specify whether there are any measurement tools related to resilience.	Resilience is the primary outcome for this UR. The tools for measuring resilience have been included, starting on line 205 Changes are highlighted in yellow	
	10. LINE 263: "Hospitalhealth.com.au...?" Citation is incomplete.	Completed. Changes are highlighted in yellow	
	11. LINE 303: Appendix I: The search strategy should be presented in a table format for greater clarity.	I have put this in table form starting on Line 435. However, based on the Senior Editor's comments above about missing lines in the strategy, I have left the original that highlights the lines were present.	I am not clear on what format is requested, so both are there.
Reviewer 2	(Please provide at least 200 words of comprehensive feedback]		My apologies, but I do not understand what this means

1 03 Apr 2025
 2
 3 RE: JBIES-24-00551, entitled "Effectiveness of interventions in promoting resilience among new
 4 graduate nurses in any practice area: An Umbrella Review protocol"

5

6 **R**

7 **review title**

8 Effectiveness of interventions promoting resilience among new graduate **registered** nurses:

9 An Umbrella Review protocol

10 **Abstract**

11 **Objective:** This review seeks to compile and analyze evidence on the effectiveness of
 12 various interventions designed to enhance resilience among newly graduated registered
 13 nurses. It explores different types and categories of these interventions, assessing their
 14 significance and impact in fostering resilience within this population.

15 **Introduction:** Nursing is synonymous with high-stress environments, demanding workloads,
 16 and emotional challenges. In this context, nursing resilience plays a crucial role in
 17 maintaining the quality of patient care and safeguarding nurses' well-being. While nursing
 18 education provides theoretical knowledge and clinical training, many new nurses struggle
 19 with applying these skills in real-world, high-pressure environments. Understanding
 20 interventions that promote the resilience of new graduate **registered** nurses will help support
 21 their preparedness for today's challenging healthcare systems.

22 **Inclusion criteria:** This review will include research syntheses about evidence-based
 23 interventions to promote resilience among new graduate **registered** nurses in any practice area
 24 within two years of initial graduation from a nursing program. Comparisons will be made
 25 between evidence-based interventions.

26 **Methods:** A systematic search will be conducted across CINAHL (EBSCOhost), MEDLINE
 27 (**OVID**), Cochrane Library, Academic Search Premier, **Epistemonikos**, and EMBASE, with
 28 no restrictions on geographical location or date, as well as several grey literature sites. Two
 29 independent reviewers will screen the titles and abstracts against the inclusion criteria. The
 30 reviews will be assessed using the JBI critical appraisal instrument for systematic reviews
 31 and research syntheses, and data will be extracted from each review using the JBI data

extraction tool. A narrative summary and tables will describe the review characteristics and findings. Beneficial, neutral, and negative risk factor interventions will represent the outcome indicators (traffic light system). The GRADE approach will be used to rate the overall quality and strength of the evidence.

Keywords: resilience, new graduate registered nurses, umbrella review

Introduction

Nursing is known for its high-stress environments, demanding workloads, and emotional challenges. In this context, nursing resilience plays a crucial role in maintaining the quality of patient care and safeguarding the nurse's well-being. Resilience refers to nurses' capacity to cope with stress effectively, bounce back from adversity, and sustain professional performance.¹ Resilient nurses are better equipped to handle their role's emotional and physical demands, which can lead to improved patient outcomes.² A resilient nurse can manage challenges effectively while maintaining their personal well-being, mental and physical health, and continuing to provide high-quality patient care. Long hours, high patient acuity, and the emotional toll of patient care create an inherently stressful experience for nurses. This, in combination with the fast-paced environment of healthcare and critical decision-making under pressure, results in the potential for burnout, exhaustion, and a decreased sense of personal accomplishment.³ Strengthening resilience empowers nurses to find greater job satisfaction, minimize burnout, and enhance their capacity to support both patients and healthcare colleagues.

New graduate registered nurses encounter additional stressors as they transition from student to professional roles. These challenges may include high workload expectations, concerns about competency, and lack of confidence, often resulting in self-doubt (impostor syndrome), anxiety, and thoughts about resigning. Limited mentorship, emotional strain from exposure to patient suffering, and the need to adapt to workplace culture further contribute to their stress. Additionally, the long hours, night shifts, unpredictable schedules, and mandated overtime experienced by new graduate registered nurses can impact their well-being. Recognizing and fostering resilience in these new nurses is essential for assessing their preparedness to navigate today's demanding healthcare environments.^{3,4} There is a gap in practice for new graduate registered nurses that lies in the lack of structured support systems that ease their transition into professional roles. While nursing education provides theoretical knowledge

and clinical training, many new nurses struggle with applying these skills in real-world, high-pressure environments.

Nurse resilience links directly to the quality of patient care. Resilience allows nurses to manage stress, maintain focus, and ensure high-quality care in challenging situations. Resilience can reduce the likelihood of errors, improve patient safety, and enhance overall patient satisfaction⁵. Successful management of the patient surge and complex care of patients during the COVID-19 pandemic is an example of what can be attributed to nurses' resilience in action.^{4,6} As nurses adapted to this new situation, they quickly learned new skills and protocols to manage the surge of patients, and despite witnessing suffering and loss, they maintained their emotional strength and continued to offer compassionate care. Many nurses worked extended hours, often without adequate rest, to ensure patients received the care they needed and found creative ways to address shortages of personal protective equipment (PPE) and medical supplies. Resilience is not about being invulnerable but about bouncing back, learning, and growing stronger from adversity. So, resilient nurses find ways to persevere and continue providing excellent care, whether it is a chaotic shift, a difficult conversation, an adverse event, an ethical dilemma, or a heartbreaking moment⁷.

One of the adverse results of a lack of resilience is burnout. Nurse burnout leads to increased turnover and can exacerbate existing staffing shortages. The World Health Organization⁸⁻¹⁰ recognizes the impact of burnout as an occupational phenomenon and projects a shortage of 4.5 million nurses by 2030 due to burnout¹⁰. More than a quarter of healthcare workers have reported symptoms of anxiety, depression, and burnout since January 2020. In the United States, \$103 million (USD) was earmarked for implementing strategies to reduce and prevent suicide, burnout, and other mental health conditions⁹. The Australian government allocated a \$25 million (AUD) program to tackle nurses' burnout¹⁰, including peer-to-peer support, counseling, and mental health services¹¹. High turnover rates are costly to organizations and disrupt the continuity of care. Resilient nurses are less likely to experience burnout and, therefore, more likely to remain in their positions¹². The International Council of Nursing¹³ has noted that 90% of National Nursing Associations (NNAs) are somewhat or extremely concerned that stress and burnout, compounded by increasing workloads without adequate resources, are causes for nurses leaving or intending to leave the profession. The COVID-19 pandemic demonstrated that new graduate registered nurses' experiences of burnout and attrition and the need to prioritize mental health support is

a worldwide concern¹⁴⁻¹⁶. Although there is an ongoing focus on promoting individual nurse resilience and self-care, it is becoming clear that burnout is more related to organizational and job-related factors, suggesting that initiatives should prioritize burnout as an organization rather than an individual concern¹⁷ and how these initiatives can support nurses' job satisfaction, emotional well-being, and resilience. This focus is crucial in maintaining quality patient care, reducing burnout and turnover, and ensuring an adequate, sustainable, and focused workforce.

The demand for nursing requires nurses to be resilient and adapt to stress. Identifying interventions that promote resilience, enhance healthcare outcomes, and address challenges in healthcare and the nursing environment is paramount. As nursing continues to confront significant challenges, understanding how to promote nurse resilience is essential. Nursing is fundamentally linked with high-stress environments, demanding workloads, and emotional challenges. Smoothly achieving professional competence is essential for the transition from student to nurse. Developing effective resilience strategies is key to navigating the stressful nursing workplace. By mastering these skills, the new graduate registered nurse can safeguard their well-being and achieve positive outcomes despite stressors. This umbrella review aims to enhance understanding of the effectiveness of resilience-promoting interventions among new graduate nurses across all practice areas.

To determine if there were any umbrella reviews on the topic of resilience among new graduate nurses, we searched the JBI and Cochrane systematic review databases, Clinical Inquiry using PubMed, and Epistemonikos. None were found. We also searched Open Science Framework and Prospero to determine if any umbrella reviews were in process on this topic. None were found.

Review question(s)

What interventions have been implemented to enhance resilience among new graduate registered nurses across various practice areas?

How effective are these strategies?

What strategies are used to assess resilience in new graduate registered nurses?

Inclusion criteria

Participants

We will consider systematic reviews promoting resilience among new graduate registered nurses within the first two years of graduation from an initial nursing program. This umbrella review focuses only on registered nurses. Systematic reviews on student nurses, nurses in practice for longer than two years, and other health professionals will be excluded. Participants will be of any gender, age, race, and ethnicity and will be employed full-time in a nursing practice position in any area or location. Practicing as a nurse means embodying both skill and compassion in the healthcare world. Nurses don't just follow procedures—they advocate for patients, provide comfort, and make critical decisions that impact lives, working in collaboration with other healthcare professionals to provide quality care.

Setting

The practice setting for registered nurses defines the environment in which they deliver care and fulfill their professional duties. These settings vary significantly depending on healthcare demands, shaping a nurse's responsibilities, challenges, and approach to patient care. They also influence daily tasks, interactions, and the overall work experience within the profession. Practice Settings for nurses may include:

- *Hospitals*: Fast-paced environments where nurses provide acute care, work in specialized units (e.g., oncology, critical care, emergency department, maternity, etc.), and collaborate closely with medical and other health professional teams.
- *Clinics and Outpatient Centers*: Nurses focus on preventative care, routine check-ups, and minor procedures, often forming long-term patient relationships in these areas. These can be ambulatory surgery centers, dialysis centers, urgent care centers, etc.
- *Long-Term Care Facilities and Nursing Homes*: Nurses care for elderly or chronically ill patients, managing medications, rehabilitation, and daily health needs in these settings.
- *Home Health Care*: In these settings, nurses visit patients in their homes, providing treatments, wound care, and education to support independent living.
- *Community Health Centers*: In these settings, nurses engage in public health initiatives, education, and outreach programs to promote wellness primarily in underserved areas.

- *Schools:* School nurses provide care coordination, advocate for student-centered healthcare, and collaborate with educators to create a supportive environment for learning. They handle everything from administering medications and managing chronic conditions to offering mental health support and preventing the spread of communicable diseases
- *Corporate and Business settings:* Nurses employed in this area engage in activities related to employee wellness and safety.

Intervention

This umbrella review will consider systematic reviews that evaluated interventions or strategies intended to promote resilience among practicing nurses within two years of graduation from a nursing program. It will identify systematic reviews with or without meta-analyses that have investigated the effectiveness of interventions consistent with a model of resilience promotion, which is likely to include physical, psychosocial, environmental, and work organizational factors. The review will consider various interventions, including mindfulness and meditation, prioritizing self-care, developing practical coping skills, seeking professional support when necessary, and education/continuous learning. We will examine these interventions and any others used to promote resilience in this population, whether they are applied in isolation or in combination. The interventions must have taken place within two years post-graduation, and reviews included in this umbrella review must provide an evaluation of the intervention. Those delivering the intervention will be identified and could consist of various professionals with varying degrees of expertise.

Comparators

This umbrella review will assess systematic reviews, with or without meta-analyses, that examine interventions aimed at enhancing or promoting resilience. It will include reviews comparing interventions to a control group, such as standard practice, as well as those that do not utilize a comparator. Each study must incorporate at least one resilience-enhancing intervention that was focused on new graduate registered nurses.

Outcomes

185 *Resilience*

186 Resilience is the primary outcome for this review. **Resilience** is the ability to transform
187 adversity into opportunities and grow from challenging situations¹⁸. It is thought to mitigate
188 the adverse effects of stress, thereby improving overall well-being. Resilience is a dynamic
189 process that evolves with experience and support. In nursing, resilience, when cultivated and
190 sustained, enables nurses to adapt positively to workplace stressors, prevent psychological
191 harm, and continue delivering safe, high-quality patient care¹⁹. This has been shown to reduce
192 turnover intentions among newly graduated **registered** nurses and positively impact their
193 transition to practice.^{20,21}

194 **Resilience is built upon several key components that enable nurses to navigate challenges**
195 **effectively. Emotional regulation allows them to manage stress, anxiety, and emotional**
196 **difficulties, ensuring a balanced response to adversity. Self-awareness and reflection help**
197 **nurses recognize their emotional triggers and develop coping strategies. Strong support**
198 **systems and teamwork foster connections with colleagues, mentors, and networks, providing**
199 **essential guidance and encouragement. Adaptability and problem-solving skills are crucial**
200 **for adjusting to changing circumstances and finding solutions to unexpected challenges.**
201 **Prioritizing self-care and wellness practices, such as mindfulness, exercise, and rest,**
202 **strengthens mental and physical health, enhancing overall resilience. Additionally,**
203 **continuous professional growth and learning equip nurses with the skills and confidence**
204 **needed to handle stress and excel in their roles.**

205 **Various methods are used to assess resilience in nurses, providing insight into their ability to**
206 **manage stress and adapt to challenges. Resilience scales, such as the Connor-Davidson**
207 **Resilience Scale (CD-RISC) and the Brief Resilience Scale (BRS), measure an individual's**
208 **capacity to bounce back from adversity. Self-reported questionnaires help evaluate coping**
209 **mechanisms, emotional regulation, and adaptability in difficult situations. Psychological**
210 **well-being measures, including the Professional Quality of Life Scale (ProQOL), assess**
211 **burnout, compassion fatigue, and overall mental health. Workplace stress and coping**
212 **assessments examine how nurses handle stressors in their practice settings and the**
213 **effectiveness of resilience-building interventions.**

214 *Types of studies*

To be included in this umbrella review, systematic reviews with or without meta-analyses must define and measure resilience, the factors that enhance or impede resilience, and/or strategies to promote resilience. This review will only include information on new graduate registered nurses. Reviews that examine resilience across various healthcare disciplines, student nurses, or nurses in practice longer than two years, will only be considered if findings related to new graduate registered nurses (within two years of practice) can be isolated for extraction. Qualitative and economic systematic reviews will be excluded, as will systematic reviews that rely on sources other than primary studies for their analysis.

Methods

The proposed systematic review will follow the JBI methodology for umbrella reviews. The umbrella review will be reported according to the criteria of the PRISMA statement.^{22,24} This protocol has been registered with PROSPERO #CRD42024611496.

Search strategy

The search strategy was developed to identify all the relevant published and unpublished reviews concerning our topic using a three-step process. First, an initial limited search of MEDLINE (OVID), CINAHL, and EMBASE was conducted to identify existing reviews on the topic. A preliminary review of the results meeting inclusion criteria yielded 277 potential systematic reviews (see Table I for an example search strategy). To refine the search strategy, text words from titles and abstracts of relevant reviews, along with their index terms, were analyzed.

A more comprehensive second search using all the identified keywords and index terms will be undertaken across all the databases included in the study. This strategy will be designed in collaboration with a research librarian, integrating both medical subject headings (MeSH) terms and keywords for each database. Inclusion will be limited to English-language studies, with no restrictions on geographic location, date, or nursing practice area.

Databases to be searched include MEDLINE, CINAHL, Academic Search Premier, and EMBASE). Sources for unpublished studies and gray literature will also be examined, including Advanced Google Scholar, Mednar, Virginia Henderson Library, DART Europe E-theses portal, and ProQuest Dissertations & Theses Global.

This secondary search strategy will be tailored for each specific information source. Additionally, systematic reviews will be sought within the JBI Library of Systematic Reviews, the Cochrane Library, the Campbell Library, and Epistemonikos.

Thirdly, to ensure thoroughness, reference lists of all studies selected for critical appraisal will be screened for additional relevant sources. We will hand-search *JBIES*.

Key words

Key search terms and phrases will include, but are not limited to, *systematic review*, *nurse resilience and interventions aimed at fostering resilience in nursing practice*. The search will also cover challenges faced by nurses and available support systems, including *mentorship*, *impostor syndrome*, *anxiety*, and *early resignation among new graduate nurses*. Additionally, we will explore the impact of resilience on nurse *well-being*, *mental and physical health*, *job satisfaction*, *burnout*, and *nursing turnover*. Various resilience-promoting strategies will be examined, such as *structured support systems*, *peer-to-peer support*, *counseling services*, and *mental health resources* designed to mitigate burnout and improve nurse retention. These keywords and phrases will be used to tailor each specific information source in consultation with a research librarian.

The Pilot Test

A pilot test for this umbrella review, focused on quality appraisal and data extraction, was conducted as a crucial preliminary step to ensure reliability and efficiency and minimize bias before full implementation. It also aimed to identify training needs where reviewers required additional guidance or resources. Through this pilot test, we aimed to strengthen the overall reliability of our umbrella review process. The test involved reviewing two systematic reviews on the topic, with all team members actively participating. The systematic reviews chosen for the pilot test were those that described the effect of at least one resilience strategy. We examined the tools used and assessed the results of the quality appraisal included in the reviews, where two reviewers independently assessed the quality of the review and then reported the results back to the entire team. We used the JBI quality appraisal tool for systematic reviews. Key information, such as study aim, methodology, and outcomes, was collected by two independent reviewers and entered into the JBI data extraction form to test for completeness and reliability. Additionally, we evaluated data analysis procedures to

identify gaps in methodology and the appropriateness of data analysis methods used. The successful completion of this pilot test reinforced the reliability of our methodology, ensuring a smooth and effective full implementation of the umbrella review process. No training needs were identified among the reviewers. The conduct of this pilot test will ultimately strengthen the quality of evidence synthesis.

Study selection

Titles and abstracts will be manually screened by two independent reviewers for assessment against the inclusion criteria for the review. Potentially relevant studies will be retrieved in full, and their citation details will be imported into the JBI System for the Unified Management, Assessment, and Review of Information.²³ Two independent reviewers will assess the full text of selected citations in detail against the inclusion criteria. The systematic review will record and report reasons for excluding full-text studies that do not meet the inclusion criteria. Any disagreements between the reviewers at each stage of the study selection process will be resolved through discussion or with a third reviewer. The entire review team will determine whether any systematic review should be included in this umbrella review. The results of the search will be reported in full in the final review according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram.²⁴

Assessment of methodological quality

Two independent reviewers will manually assess quantitative systematic reviews selected for retrieval for methodological validity before inclusion in the review using standardized critical appraisal instruments from JBI SUMARI for Umbrella Reviews.²³ The principal investigator will critically appraise each article with one of the three other reviewers.

Authors of papers will be contacted once to request missing or additional data for clarification, where required. Any reviewer disagreements will be resolved through discussion or with a third reviewer. Critical appraisal results will be reported in a narrative format and a table. All studies, regardless of the results of their methodological quality, will undergo data extraction and synthesis (where possible), and any apparent flaws will be noted.

Data extraction

Quantitative data will be manually extracted from studies included in the review by two independent reviewers using the standardized JBI data extraction tool in JBI SUMARI for Umbrella Reviews.²³ Specifically, quantitative data will be composed of data-based outcomes of descriptive and inferential statistical tests. Data extraction will comprise systematic review characteristics (title, first author, country, year of publication, objectives, the number of included studies), included populations (sample sizes, age, gender, clinical practice area), and search strategy (e.g., electronic databases and inclusion/exclusion criteria), prevalence or incidence rates of reported, the intervention studied (name/type of interventions, intervention components, type of controls, sample sizes, effect sizes).analysis and synthesis of data, overall findings and authors' conclusions. For reviews with meta-analyses, data will be extracted on effect sizes (e.g., rate ratio, risk ratio, odds ratio, mean difference, or standardized mean difference for continuous data) and corresponding 95% CIs and P values.

Any reviewer disagreements will be resolved through discussion or with a third reviewer. Extracted data will be presented in a Table of Included Review Characteristics. This table lists the systematic reviews and meta-analyses included in the umbrella review and relevant details such as the authors, year of publication, study design, and key findings. It will help provide transparency and allow readers to see which studies were considered and why.

Data synthesis and integration

Data synthesis and integration for this umbrella review will systematically aggregate findings from multiple systematic reviews to provide a comprehensive assessment of existing evidence. The review will begin with reviews using effectiveness studies, including experimental and quasi-experimental research. This will be followed by reviews containing correlational, cohort, or case-control studies that assess resilience through observational methods. Findings and results will be presented in alignment with the umbrella review questions, ensuring a structured analysis that identifies patterns, discrepancies, and gaps while considering methodological, population, and outcome variations. A narrative synthesis will be used to highlight key themes, complemented by statistical analyses, including meta-analysis if sufficient data are available.

To enhance clarity, the results will be visually represented in a table using a traffic light system to indicate beneficial, neutral, and adverse effects of each intervention. Additionally, a citation matrix will be developed to identify potential overlaps among primary studies, with

the corrected covered area index calculated to assess the extent of duplication. This comprehensive approach ensures that the findings are systematically organized, allowing for a meaningful interpretation of the evidence.

Certainty of Findings

The Grading of Recommendations, Assessment, Development, and Evaluations (GRADE) approach will be employed to evaluate the quality of evidence and the strength of recommendations across reviews. This method ensures transparency and consistency in the assessment of evidence. A Summary of Findings will present the outcomes of the included reviews. For similarities between risk factors and interventions, the GRADE approach will assess the quality of evidence by considering the risk of bias, inconsistency, indirectness, imprecision, and publication bias. Based on these factors, the quality of evidence will be either downgraded or upgraded, with all adjustments thoroughly documented. The quality of evidence will be classified as high, moderate, low, or very low.

Conflict of Interest

All authors declare no conflict of interest.

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435 Table I: Medline Search Strategy
436

#	Query	Results
1	Resilience, Psychological/	8,501
2	(resilience or resilient or resiliency).mp.	64,281
3	exp Adaptation, Psychological/	140,540
4	(coping or "positive adaptation" or hardiness).mp.	75,750
5	Students, Nursing/	30,903
6	(nurs* adj1 student*).mp.	39,807
7	exp Nurses/ or nurs*.mp.	820,528
8	((new* or recent* or young) adj1 grad*).mp.	5,676
9	(early adj1 career*).mp.	3,514
10	(entry adj1 level).mp.	2,109
11	("new graduate*" or "recent* graduate*" or "latest graduate*" or "young graduate*" or "beginning professional*" or "early career" or "entry-level" or "junior professional*" or "junior nurs*" or "newly graduate*" or "novice professional*" or "novice nurs*" or "young professional*").mp.	10,853
12	8 or 9 or 10 or 11	12,328
13	7 and 12	3,570
14	5 or 6 or 13	42,488
15	or/1-4	238,020
16	14 and 15	2,203
17	Meta-Analysis as Topic/	23,514
18	meta analy\$.tw.	284,241
19	metaanaly\$.tw.	2,639
20	Meta-Analysis/	189,680
21	(systematic adj (review\$1 or overview\$1)).tw.	306,733
22	exp Review Literature as Topic/	23,886
23	or/17-22	475,180
24	cochrane.ab.	140,504
25	embase.ab.	161,779
26	(psychlit or psyclit).ab.	917
27	(psychinfo or psycinfo).ab.	61,190
28	(cinahl or cinhal).ab.	48,279
29	science citation index.ab.	3,856
30	bids.ab.	696
31	cancerlit.ab.	638
32	or/24-31	257,288
33	reference list\$.ab.	22,640
34	bibliograph\$.ab.	23,082
35	hand-search\$.ab.	8,728

36 relevant journals.ab.	1,372
37 manual search\$.ab.	6,268
38 or/33-37	55,802
39 selection criteria.ab.	36,830
40 data extraction.ab.	33,993
41 39 or 40	68,089
42 Review/	3,235,889
43 41 and 42	36,025
44 Comment/	1,024,785
45 Letter/	1,234,940
46 Editorial/	671,352
47 animal/	7,345,996
48 human/	21,584,842
49 47 not (47 and 48)	5,135,504
50 or/44-46,49	7,264,905
51 23 or 32 or 38 or 43	567,280
52 51 not 50	540,501
53 16 and 52	75

437 Export to Sheets

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440 -----
Medline (OVID) Ovid MEDLINE(R) ALL <1946 to November 10, 2023>

441

442 # Query Results from 13 Nov 2023

443 1 Resilience, Psychological/ 8,501

444 2 (resilience or resilient or resiliency).mp. 64,281

445 3 exp Adaptation, Psychological/ 140,540

446 4 (coping or "positive adaptation" or hardiness).mp. 75,750

447 5 Students, Nursing/ 30,903

448 6 (nurs* adj1 student*).mp. 39,807

449 7 exp Nurses/ or nurs*.mp. 820,528

450 8 ((new* or recent* or young) adj1 grad*).mp. 5,676

451 9 (early adj1 career*).mp. 3,514

452 10 (entry adj1 level).mp. 2,109

453 11 ("new graduate*" or "recent* graduate*" or "latest graduate*" or "young graduate*" or "beginning
454 professional*" or "early career" or "entry-level" or "junior professional*" or "junior nurs*" or "newly graduate*")

455	or "novice professional*" or "novice nurs*" or "young professional*").mp.	10,853
456	12 8 or 9 or 10 or 11 12,328	
457	13 7 and 12 3,570	
458	14 5 or 6 or 13 42,488	
459	15 or/1-4 238,020	
460	16 14 and 15 2,203	
461	17 Meta-Analysis as Topic/ 23,514	
462	18 meta analy\$.tw. 284,241	
463	19 metaanaly\$.tw. 2,639	
464	20 Meta-Analysis/ 189,680	
465	21 (systematic adj (review\$1 or overview\$1)).tw. 306,733	
466	22 exp Review Literature as Topic/23,886	
467	23 or/17-22 475,180	
468	24 cochrane.ab. 140,504	
469	25 embase.ab. 161,779	
470	26 (psychlit or psyclit).ab. 917	
471	27 (psychinfo or psycinfo).ab. 61,190	
472	28 (cinahl or cinhal).ab. 48,279	
473	29 science citation index.ab. 3,856	
474	30 bids.ab. 696	
475	31 cancerlit.ab. 638	
476	32 or/24-31 257,288	
477	33 reference list\$.ab. 22,640	
478	34 bibliograph\$.ab. 23,082	
479	35 hand-search\$.ab. 8,728	
480	36 relevant journals.ab. 1,372	
481	37 manual search\$.ab. 6,268	
482	38 or/33-37 55,802	
483	39 selection criteria.ab. 36,830	
484	40 data extraction.ab. 33,993	

485	41	39 or 40	68,089
486	42	Review/	3,235,889
487	43	41 and 42	36,025
488	44	Comment/	1,024,785
489	45	Letter/	1,234,940
490	46	Editorial/	671,352
491	47	animal/	7,345,996
492	48	human/	21,584,842
493	49	47 not (47 and 48)	5,135,504
494	50	or/44-46,49	7,264,905
495	51	23 or 32 or 38 or 43	567,280
496	52	51 not 50	540,501
497	53	16 and 52	75
498			
499			
500			