Received: 16 May 2023 | Accepted: 17 September 2023

DOI: 10.1111/inm.13235

International Journal of Mental Health Nursing

REVIEW ARTICLE

Thirty years of emotional intelligence: A scoping review of emotional intelligence training programme among nurses

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Abstract

The stressful environment of any healthcare setting can be detrimental to nurses' mental and emotional health. In recent years, emotional intelligence (EI) has emerged as a vital psychological resource that positively impacts mental and emotional health and improves organizational functioning and success. This scoping review aimed to collate, synthesize and outline the research conducted on EI training programmes among nurses to assess their effectiveness in improving staff nurses' EI. Electronic databases of MEDLINE via PubMed, CINAHL, Scopus, Cochrane, ProQuest, Embase and Web of Science were comprehensively searched for related studies published between 1990 and 2021 (updated in May 2022). Two investigators independently screened the abstracts of the retrieved studies against the inclusion and exclusion criteria. Out of 728 initially retrieved studies, only 7 were included in the final synthesis. The PRISMA-ScR (2018) checklist was used to report the study findings. All the studies included in the review reported a significant improvement in nurses' EI after a training programme. The results also indicate that EI interventions are an effective way to improve nurses' psychological resources (improve resilience and coping skills; reduce anxiety and stress), leadership qualities, job performance and patient experience of nursing care. As nurses are exposed to a wide range of emotions, human pain and suffering, the results of this review suggest that improving the EI skills of nurses through short training programmes is an effective way to maintain their emotional and mental well-being. This scoping review is preregistered in Prospero (CRD42020161084).

KEYWORDS

emotional intelligence, emotional well-being, evidence synthesis, mental health, mental health interventions, occupational health, staff nurse, systematic review, training programme

INTRODUCTION

Emotional intelligence (EI) is one of the most crucial tools available to nurses for enhancing their psychological well-being. Emotional intelligence can be defined as 'the ability of any individual to monitor their own and others' emotions, distinguish between positive and negative effects of emotions, and use emotion-related information to guide their cognitive reasoning and take actions' (Mayer et al., 2008). It connects crucial personal and interpersonal abilities and serves as a gateway between emotion and logical thought.

Emotions play a central role in the process of providing nursing care (Giesbrecht et al., 2021), as in this process, there is always an exchange of emotions, actions and experiences between the nurse and patients

Reporting method: The article adheres to the relevant EQUATOR guidelines (PRISMA-ScR, 2018).

(Jiménez-Herrera et al., 2020). However, excessive job and emotional expectations and a lack of mental or physical resources to handle them can put healthcare workers in a poor psychological state (Fonseca et al., 2020; Soto-Rubio et al., 2020), influence their mental and physical well-being, lead to work accidents, burnout and work-related stress (Elshaer et al., 2018; Soto-Rubio et al., 2020; Watanabe & Yamauchi, 2019; Wu et al., 2018), decrease trust between nurses and patients, decrease job satisfaction, increase attrition and eventually negatively affect patients' medical treatment and output (Kaur et al., 2013; Lee & Sim, 2021).

There is sufficient proof to demonstrate that the EI of medical workers may affect their cognition (Kozlowski et al., 2017; Ye et al., 2022) and clinical decision-making (Smith et al., 2009). Individuals with high EI are also noted to make positive judgements and display appropriate adaptive behaviour even under challenging circumstances, whereas individuals with low EI have been shown to cause 'emotional conflict' and have a high stress perceptiveness, making it more difficult for them to adjust to social change or situations (Lee & Sim, 2021). In the context of nursing, the available literature suggests that EI helps nurses recognize, assess, and interpret emotional meanings (Ye et al., 2022), influences their job performance (Nightingale et al., 2018), and helps them manage their physical, emotional, and social demands. Since nurses provide people-centred care and aid to those who are physically and emotionally suffering, their EI level must inevitably be high (Lee & Sim, 2021).

Although the evidence from the literature shows that training programmes can effectively improve healthcare workers' emotional regulation skills (Ye et al., 2022), EI interventions with nursing staff in real-world settings are few (Kozlowski et al., 2018). This reinforces that improving EI through educational/training programmes is crucial and can strengthen and equip nurses with the necessary resources to work in a stressful atmosphere. However, as EI interventions may vary for each study, it is thus critical to understand how interventions must be designed to facilitate the development of EI among nurses and evaluate their effectiveness. Thus, this scoping review aimed to explore the studies that were conducted to improve nurses' EI through the implementation of interventions and to assess the effectiveness of the interventions applied. Furthermore, the study also aimed to elucidate the EI interventions provided to the nurses, draw an outline of the interventions and observe the impact of nurses' EI on the various aspects of their psychological/mental and organizational well-being that are reported in the included studies.

The researcher would like to acknowledge Kotsou et al. (2018) who published a similar systematic review in 2019, where they reviewed studies employing EI intervention across disciplines and did not restrict to only studies done among nurses. The current scoping review may be considered as an update of the review done by Kotsou et al. (2018) but with a focus on nurses as the core sample or population of interest. It is necessary to further explore EI interventions among nurses, as the demands, expectations and responsibilities of nurses are not comparable to those of other professions. The outcome of this review may inform researchers to design EI interventions specifically for nurses.

MATERIALS AND METHODS

Arksey and O'Malley's (2005) five-stage framework, which was further refined by JBI (Peters et al., 2020), was adopted to conduct this review, which includes identifying research questions, identifying relevant studies, selecting the studies, charting the data and collating, summarizing and reporting results. The review protocol is registered in PROSPERO (CRD42020161084).

Formulating research questions

The main research question for this review was 'What is known in the available literature about EI interventions among nurses?' Additionally, the sub-questions formulated were 'Are EI interventions effective among nurses?', 'How are the interventions designed and delivered?', and 'What is the impact of nurses' EI on the various aspects of their psychological/mental and organizational well-being that are reported in the included studies?'

Identifying suitable studies

After formulating the research questions, the keywords and MeSH terms were identified and expanded. The search syntax was then formulated by two authors based on the identified keywords and MeSH terms. A statistician and expert researchers in the field of systematic/scoping reviews were consulted to ensure that the search syntax was accurate. As applicable for each database's indexing reference, search phrases included keywords, truncations, MeSH terms and appropriate Boolean operators and limiters. To identify relevant studies, a comprehensive search was then performed in online databases, viz. PubMed, CINAHL, Scopus, Cochrane, ProQuest, Embase and Web of Science (updated in May 2022). The search strategy was developed by two investigators. Four categories were used to organize and combine search results: EI, nurse, training programme and effectiveness, which were used as combination keywords in all the databases. Because EI is fundamental to the review's goal, the first category employed it as a single search phrase, as well as used synonymous terms such as 'emotion regulation'. The

TABLE 1 Table showing the search strategy and the result from PubMed database.

Database	Search string	Limiters applied	Total number of articles retrieved initially
PubMed	("emotionally intelligent"[Title/Abstract] OR "emotional intelligence"[Title/Abstract] OR "emotional regulation"[Title/Abstract] OR "emotional adjustment"[Title/Abstract])) AND (nurs* OR "staff nurs*" OR "nursing staff" OR "nurse practitioner*" OR "nurse midwi*" OR "nurse clinician*" OR "nurse administrator" OR "nurse leader" OR "nurse specialists" OR "community health nurse*" OR "licensed practical nurse*"))) AND (((("inservice training" OR teaching OR "staff development" OR learning OR "teaching materials" OR "teaching rounds" OR "early intervention" OR "psychosocial intervention" OR "internet-based intervention") OR ((training[Text Word] OR educati*[Text Word] OR "training program*"[Text Word] OR "online training"[Text Word] OR "virtual training"[Text Word] OR "online course*"[Text Word] OR "educational program*"[Text Word])	1990–2021; Free full text; Humans; English; Exclude pre-print (updated in May 2022)	66

TABLE 2 Table showing the inclusion and exclusion criteria for selecting the studies.

PCC	Inclusion criteria	Exclusion criteria
Participant	Studies conducted among staff nurses.	Studies that were conducted exclusively among student nurses, nurse leaders, healthcare workers, doctors and other adult populations.
Concept	Studies that implemented EI interventions among staff nurses and compared the treatment/intervention to a control group or studies that followed participants through time (pre-post-test studies).	Surveys/cross-sectional studies, qualitative and mixed-method studies, case series, case reports, commentaries and registered trials/protocols were excluded. Grey literature (e.g. dissertations and reports).
Context	All interventional studies that were directed towards improving EI/EI-related skills of staff nurses in any healthcare setting, in any geographical location. Papers published in the English language between 1990 and 2022.	

second category employed descriptors related to nurses (which includes staff nurses working in any area, with any qualification). The third category includes literature on EI interventions that were delivered to nurses in any setting and mode. An example of the search strategy can be found in Table 1 (Table S1 shows the search strategy used in the selected electronic databases for this study). The references of the retrieved papers were also searched to expand the findings.

Study selection

The participant, concept and context (PCC) format, as recommended by the Joanna Briggs Institute (JBI), was used to frame the inclusion and exclusion criteria of the studies, as shown in Table 2. Furthermore, the studies were included in this review if they (1) were published between January 1990 and November 2021 (updated in May 2022) and (2) were published in the English language (as funding for a translator was not available).

Screening

A systematic literature search was conducted and reported according to the Preferred Reporting Items for Systematic and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) checklist (Tricco et al., 2018). The flow diagram is shown in Figure 1.

First, one investigator independently searched the selected databases using the approved search terms, Boolean operators, truncations and limiters. The search results were all exported to the Mendeley desktop application to remove duplicates and store the retrieved studies. In the next step, two investigators independently screened and selected the studies by reviewing the title and abstract and matching them with the inclusion and exclusion criteria. In the first stage of screening, subfolders labelled 'included for follow-up' and 'discard' were made in the Mendeley application to segregate the papers. Next, the articles judged eligible for full-text screening were moved to the 'included for follow-up' subfolder, while those that did not fulfil the inclusion criteria were

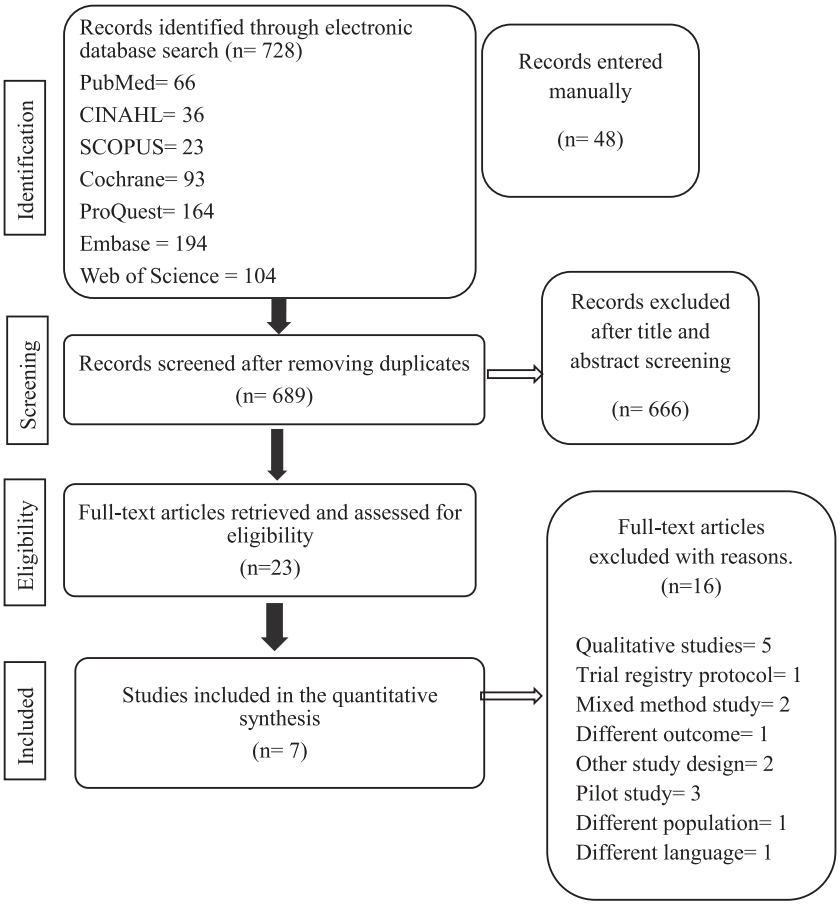

FIGURE 1 Figure showing PRISMA flow chart.

moved to the 'discard' subfolder. The two investigators met each time they reviewed 50 articles to discuss and verify the results. This helped to increase consistency. To decide if the articles qualified for inclusion in the final review, two investigators carefully evaluated the full text of all pertinent papers. Articles on which the two investigators disagreed were subsequently selected for their inclusion or exclusion by consensus via discussion.

Data extraction and charting

A data-charting form was developed in Microsoft Excel by modifying the JBI data extraction template by two investigators based on the research questions. From each chosen study, a thorough descriptive summary was taken that includes the name(s) of the author(s) and year of study, study design features (e.g. data collection points, the inclusion of a control group or not), characteristics of the sample (staff nurse or nurse leader), the mode of intervention delivery (i.e. online or offline), the type of intervention (i.e. workshop, classes) and outcome of the intervention (e.g. EI, stress). The description of outcome measure(s) and reported value(s) for intervention effectiveness (e.g. *p-Value*, effect size), information on the psychometric tools (i.e. reliability score, number of items) and observed quantitative impacts that were statistically significant at $p<0.05$ (Breslin et al., 2022) were also extracted. The report of the data extraction was then shared with all the investigators, and the results were discussed for the final inclusion of the extracted data. Any disagreements or discrepancies were resolved by discussing them with the investigators.

Reporting the results

The data synthesis and analysis were conducted by three investigators. Thorough reports were continuously monitored by all the investigators in this study. Any discrepancies were resolved through discussions with the investigators. The results are presented and discussed narratively. A descriptive summary of the included studies is presented in Table 3, whereas Table 4 provides a summary of the excluded studies.

Risk of bias across studies

We used the Joanna Brigg's Institute (JBI) critical appraisal tools for assessing the risk of bias in the included studies. The JBI tool/checklist for assessing the quality

of quasi-experimental studies (Tufanaru et al., 2020) includes nine items/questions, whereas the JBI tool for assessing the quality of randomized control trials (Barker et al., 2023) includes thirteen items/questions. Each item/question in the JBI tools must be appraised as 'yes, no, unclear or not applicable'. The tool provides no instructions for scoring the studies, but if the answer to a specific item/question in the tool/checklist is 'Yes,' the score is 1, and 0 for 'No', or 'unclear/not reported'. The percentages of the scores are added together, and the studies are classed as having a high, moderate or low risk of bias (Andargie et al., 2021). Tables 5 and 6 show the quality appraisal performed for the quasi-experimental studies and the RCT study, respectively.

RESULTS

The studies reviewed in the current scoping review were heterogeneous with different methodological approaches, measurements, variables, findings and outcomes. Therefore, the key results and limitations of each study are presented narratively which provides evidence of the effects of a training programme aimed at enhancing the EI of nurses.

Study selection

The PRISMA-ScR statement for reporting scoping reviews was used as a guideline. The PRISMA-ScR flow diagram details the selection procedure (Figure 1). An initial search result of 728 was retrieved from the electronic databases (66 from PubMed, 36 from CINAHL, 23 from Scopus, 93 from Cochrane, 164 from ProQuest, 194 from Embase and 104 from Web of Science). An additional 48 studies were further identified and added to the search result, making the total count to be 1210 studies. After removing 39 duplicates, 689 titles and abstracts were reviewed. A total of 666 of them were excluded after it was determined that they did not meet the requirements for eligibility. A detailed screening was then performed on a total of 23 articles after they were determined to be eligible. The researchers decided to exclude 16 of the 23 publications because they failed to meet the inclusion criteria in at least one area. Five of the articles were qualitative studies that used qualitative interventions to address EI (i.e. via storytelling, story writing and interviews). Two studies were excluded for using a mixed-method design, while another two were excluded as they employed a different study design. One study was eliminated because it was focused on behavioural outcomes (i.e. towards illicit drug use) and did not assess any outcome related to EI at any time point. One article was deemed ineligible as it was only a protocol in trial registry. Three studies were removed as they were pilot studies, one study was removed as the participants did not meet the inclusion criteria of this review, and another one study was published in a different language. For the remaining 7 studies to be included in this review, all researchers unanimously agreed on their inclusion.

Study characteristics

A total of seven studies were found, which were conducted between 2010 and 2022 in six countries: two from Iran (Nooryan et al., 2012; Sabzevar et al., 2016), one each from Australia (Kozlowski et al., 2018), Spain (Sarabia-Cobo et al., 2017), China (Mao et al., 2021), United States of America (Crowne et al., 2017) and Japan (Kusaka et al., 2010). One study included for data extraction was an RCT (Mao et al., 2021), and the remaining six studies adopted a quasi-experimental study design. The follow-up time of studies varied from 1 month (Nooryan et al., 2012) to 3 years (Crowne et al., 2017). Three of the studies had a larger sample size that included more than 100 nurses as participants (Mao et al., 2021; Nooryan et al., 2012; Sabzevar et al., 2016), whereas the other four studies had less than 100 nurse participants. The seven studies involved a total of 618 nurses working in hospitals and clinics. The largest sample size was 135 (Sabzevar et al., 2016) and the smallest was 38 (Kusaka et al., 2010) staff nurses.

Sample characteristics

The included studies employed various proforma to define the participant demographic information. The age group of the participants in the included intervention studies was between 20 and 42 years old; however, in one study (Kozlowski et al., 2018), age of the participants was not mentioned.

Four studies (Crowne et al., 2017; Mao et al., 2021; Nooryan et al., 2012; Sabzevar et al., 2016) reported the education level of the study participants, where the majority were B.Sc. nurses. A majority of the staff nurses were working full-time, with a range of 1–38 years of experience in their jobs in nursing homes and hospitals. There were more married study participants (Mao et al., 2021; Nooryan et al., 2012; Sabzevar et al., 2016) than single/unmarried and most identified themselves as female (Crowne et al., 2017; Kusaka et al., 2010; Sabzevar et al., 2016; Sarabia-Cobo et al., 2017). Other than registered nurses, three studies (Crowne et al., 2017; Nooryan et al., 2012; Sarabia-Cobo et al., 2017) included participants who were working as certified nursing assistants, physicians and nursing directors in their respective settings. Other sample characteristics of staff nurses in the selected studies include their work shift, area of work/ward, settlement states, that is native or non-native and having children (Mao et al., 2021; Nooryan et al., 2012; Sabzevar et al., 2016). In all the reviewed studies, except for the participants in the control group, all underwent a

TABLE 3 Table showing a summary of included studies.

Sl. No.	Author/year of publication/country	Sample & sample size	Study design	Outcomes assessed	Tool to measure emotional intelligence
1	Kozlowski et al. (2018), Australia	60 staff nurses	Quasi-experimental, two-group, pre-test post-test design	Emotional Intelligence	GENOS Emotional Intelligence measure
2.	Sabzevar et al. (2016), Iran	135 staff nurses	Quasi-experimental, two-group, pre-test post-test design	EI & Anxiety	The Bar-On's EQ-i
3.	Sarabia-Cobo et al. (2017), Spain	92 registered geriatric nurses and certified nurse assistants	Quasi-experimental, one-group pre-test post-test design	Emotional Intelligence & Coping styles	Spanish version of Trait Meta-Mood Scale (TMMS-24)
4.	Mao et al. (2021), China	103 nurses	Randomized Controlled Trial	Emotional Intelligence, resilience, perceived stress and inpatient experience	Wong and Law Emotional Intelligence Scale (WLEIS)
5.	Nooryan et al. (2012), Iran	150 (120 Intensive Care Unit nurses and 30 Intensive Care Unit physicians)	A quasi-experimental design with the control group.	Emotional Intelligence and Anxiety	Bar-On EQ-I
6.	Crowne et al. (2017), USA	60 Director of Nursing and Registered Nurses	Quasi-experimental, one-group design	Emotional Intelligence and Transformative Leadership	Bar-On EQ-i (online version)
7.	Kusaka et al. (2010), Japan	38 nurses	Quasi-experimental, one-group design.	Emotional Intelligence & Nursing Autonomy	Emotional Quotient Scale

training programme on EI either in the form of a workshop, seminar or course.

Design and delivery of interventions

A core element of this scoping review was that interventions must target nurses' EI. Training programmes that were given to the participants in all the included studies varied from each other. It was also observed that all the interventions were general programmes that included the components of EI and were developed based on EI models. The programmes in the included studies ranged from a single 2-h lecture (Kusaka et al., 2010) to a 3-year EI course (Crowne et al., 2017). However, none of the studies described the method of developing the intervention. Group training was the most common strategy used in all the included studies.

For instance, the intervention (lecture sessions) developed by Mao et al. (2021) for nurses had two phases and aimed to assess its effectiveness in improving nurses' EI, resilience and stress, as well as to determine the impact of the training programme on inpatient experience. The study recruited 103 nurses who were randomly assigned to intervention ($n=53$) and control ($n=50$) groups. The first phase, that is the system training phase, was provided to the intervention group through lecture classes twice a week for a month. These lecture classes were based on Mayer and Salovey's EI model and covered aspects such as perception, awareness, regulation of emotions and their practice in real life. In the second phase of consolidated learning, nurses in the intervention group discussed their experiences with emotional management in their clinical work through case descriptions and case discussions. This phase was held once a week for 44 weeks, and each session lasted 60–90 min. The programme was delivered by four educators with a background and experience in counselling and clinical psychology teaching. This is the only randomized controlled study that is included in this review. Although the study mentions using the concept of Mayer and Salovey's EI model in their teaching-learning programme, the study lacks clarity on the method of developing the intervention itself.

Similarly, in the study by Sarabia-Cobo et al. (2017), the participants ($N=92$) received a 4-h EI workshop over the course of 4 weeks, with each session occurring at a 1-week interval. The study aimed to test the impact

Intervention	Data collection period	Summary of findings
Single training workshop of 4 h delivered by accredited trainers with one-on-one coaching 3 months post-training.	Baseline pre-training and post-test approximately 3 months post-training	There was an increase in the Emotional Intelligence score of the intervention group whereas, there was no significant change in Emotional Intelligence scores for the control group, from pre to post-test data collection.
EI training in six 2-h sessions (one session per week) in the form of a conference with psychological experts and the researcher.	Immediately at Pre-training and post-training	There was a significant increase in the Emotional Intelligence score of the intervention group. Also, a reverse and significant relationship association was found between total anxiety score and Emotional Intelligence.
The intervention consisted of four 4-h sessions conducted over a period of 4 weeks (one session every week) by the researcher.	Immediately at pre- and post-intervention and after 1 year.	There was a significant increase in the score of Emotional Intelligence and coping strategies after the training.
Phase I (training phase) consisted of lecture sessions twice weekly for a month. Phase II (consolidated learning phase) weekly sessions of 60–90 min were repeated 44 times.		The results show a significant improvement in the nurses' Emotional Intelligence and resilience and decrease in perceived stress post-intervention and an improved inpatient experience.
Training programmes were given in two sessions per week for 3 weeks, with each session of 2 h.	Immediately before and at the end of the training programme.	The training programme on Emotional Intelligence reduced the situational anxiety of the participants during the post-test.
3 years course	Immediately before the training course and at 6 weeks post-training.	The training programme did improve the participants' Emotional Intelligence and Transformative Leadership abilities.
Lecture session of 2 h.	1 week before and 1 month after the intervention programme	There were improvements in the post-test scores of Emotional Intelligence and Nursing Autonomy.

TABLE 4 Table showing a summary of the excluded studies.

Sl. No.	Author & year	Place	Reason for exclusion
1.	Akerjordet and Severinsson (2004)	Norway	Qualitative study design
2.	Kooker et al. (2007)	Hawaii	Qualitative study design
3.	Codier et al. (2010)	Hawaii	Mixed-method study
4.	Codier et al. (2011)	Hawaii	A pilot study among nurse leaders and managers
5.	Codier et al. (2013)	Hawaii	Mixed-method study
6.	Taylor et al. (2015)	Australia	Action research design
7.	Ahmadi (2018)	Iran	Trial registry study protocol
8.	Goudarzian et al. (2017)	Iran	Pilot study where Emotional Intelligence training outcomes were assessed in terms of improvement in illicit drug use among nurses, but no component of Emotional Intelligence was assessed.
9.	Bamberger et al. (2017)	Israel	Pilot study
10.	Bahrami et al. (2018)	Iran	Qualitative study design
11.	Hutchinson et al. (2018)	Australia	Qualitative study design
12.	Mansel and Einion (2019)	United Kingdom	Qualitative study design
13.	Reisi et al. (2019)	Iran	Different language
14.	Imani et al. (2019)	Iran	Phenomenological study design
15.	Frias et al. (2021)	USA	The sample was nurse leaders
16.	Tadmor et al. (2016)	Israel	Pilot study

TABLE 5 Table showing quality appraisal of selected quasi-experimental studies.

JBI critical appraisal checklist for quasi-experimental studies

1. Is it clear in the study what is the 'cause' and what is the 'effect'?
2. Were the participants included in any comparisons similar?
3. Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?
4. Was there a control group?
5. Were there multiple measurements of the outcome both pre and post-intervention/exposure?
6. Was follow-up complete and if not, were differences between groups in terms of their follow-up adequately described and analysed?
7. Were the outcomes of participants included in any comparisons measured in the same way?
8. Were outcomes measured in a reliable way?
9. Was appropriate statistical analysis used?

Sl. No.	Author	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Total	%	Risk of bias
1	Kozlowski et al. (2018)	1	1	0	1	1	0	1	0	1	6	66.66	Moderate
2.	Sabzevar et al. (2016)	1	1	0	1	0	1	1	1	1	7	77.77	Low
3.	Sarabia-Cobo et al. (2017)	1	1	0	0	1	0	1	1	1	6	66.66	Moderate
4	Nooryan et al. (2012)	1	1	0	1	1	1	1	1	1	8	88.88	Low
5.	Crowne et al. (2017)	1	1	0	0	1	0	1	1	1	6	66.66	Moderate
6.	Kusaka et al. (2010)	1	1	0	0	1	1	0	1	1	6	66.66	Moderate

Note: NB: 1 indicates the article fulfils the checklist criteria; 0 indicates the article does not fulfil the checklist criteria.

TABLE 6 Table showing quality appraisal of the selected Randomized Controlled Trials study.

JBI critical appraisal checklist for Randomized Controlled Trials

1. Was true randomization used for the assignment of participants to treatment groups?
2. Was allocation to treatment groups concealed?
3. Were treatment groups similar at the baseline?
4. Were participants blind to treatment assignment?
5. Were those delivering treatment blind to treatment assignment?
6. Were outcomes assessors blind to treatment assignment?
7. Were treatment groups treated identically other than the intervention of interest?
8. Was follow-up complete and if not, were differences between groups in terms of their follow-up adequately described and analysed?
9. Were participants analysed in the groups to which they were randomized?
10. Were outcomes measured in the same way for treatment groups?
11. Were outcomes measured in a reliable way?
12. Was appropriate statistical analysis used?
13. Was the trial design appropriate, and were any deviations from the standard RCT design accounted for in the conduct and analysis of the trial?

Sl. No.	Author	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Total	%	Risk of bias
1	Mao et al. (2021)	0	0	1	0	0	0	1	0	0	1	1	1	0	5	38.46	Moderate

Note: NB: 1 indicates the article fulfils the checklist criteria; 0 indicates the article does not fulfil the checklist criteria.

of theoretically based training on EI and coping styles among geriatric nurses. The workshop's methods focused on the four branches of the Mayer and Salovey model: perception, appraisal and expression of emotion; emotional facilitation of thinking; understanding and analysing emotions; and reflective regulation of emotion and applying these skills on the job. The teaching-learning techniques used in the programme were brief lectures, group discussions, readings and role plays; each session had 1 h of theoretical content, 2 h of work-based group activities and dynamics, and 1 h of case discussion, with an emphasis on the importance of listening and expressing emotions. Four researchers who acted as lead facilitators oversaw every session. The value of listening and expressing feelings was emphasized further in the programme. Data were collected from the participants before and after the intervention and at the 1-year follow-up. Although the participants showed higher adherence to the programme at the 1-year follow-up and provided positive feedback on the intervention, the study did not elaborate on how the intervention was developed.

Sabzevar et al. (2016) aimed to determine the effect of EI training on nurses' anxiety. The intervention group ($n=62$) received EI training in the form of six 2-h conferences and question-and-answer sessions over a duration of 6 weeks, aided by psychological experts and the researcher, whereas the control group ($n=73$) did not receive any intervention. The study did not mention the method of developing the intervention; however, it describes the content of each session, which emphasizes EI components based on the Bar-On model of EI, emotional self-discipline, expression of emotions and feelings, emotional self-control, coping abilities, stress management,

relaxation therapy, emotional self-provocation, EI techniques and use of EI.

Similarly, Nooryan et al. (2012) aimed to investigate the impact of EI training on physicians' ($n=30$) and nurses' ($n=120$) anxiety. The intervention group in the study was given a training programme in the form of EI sessions of 2 h per week for 3 weeks, that is a total of 12 h of EI sessions. Participants were also provided with educational pamphlets and booklets on the taught concepts to facilitate continuous learning. The programme focused on the thirteen subscales of the Bar-On EQ-i Scale and anxiety/stress management techniques, as well as included topics such as methods of thinking, emotion expression, affection, changing perceptions and judgements. The study does mention a brief description of the contents of each session, although it does not provide a detailed picture of how the intervention was developed.

In the study done by Kozlowski et al. (2018), a single 4-h workshop was given to the participants in the intervention group ($n=30$), whereas the control group ($n=30$) did not receive any intervention. The workshop was provided by the researcher and covered the GENOS model of EI and featured activities aimed at assisting participants in identifying and controlling their own and other people's emotions. After 2 weeks of the 4-h training course, interested research participants received an additional one-on-one EI counselling that lasted for 30–40 min over the phone, which was based on the participant's areas of interest arising from the EI report. This provided the participants with the opportunity to improve aspects of EI and motivate them to inculcate new behaviours. The participants were also provided with a workbook to encourage self-paced reflection and learning. Additionally, the participants who agreed to provide their phone numbers were given individualized text messages approximately 2 weeks after the feedback session as a brief reminder to focus on the area chosen by the participant.

Similar to the study done by Kozlowski et al. (2018), Kusaka et al. (2010) provided a short single intervention to their participants ($n=36$). Unlike the other studies included in this review, Kusaka et al. (2010) mentioned using Peplau's theory as a framework to design the lecture as the intervention. However, the process of developing the intervention was still missing in their article. The core content of the lecture was related to the nursing process, interpersonal relationships, integration of thought and emotion, and improving the method of knowing self and the ability to use emotional information, which was provided by a psychiatric nursing researcher. The 2-h lecture session also included a 20-min video programme, and a worksheet to record and reflect on their emotions was provided to the participants.

The intervention period of the study conducted by Crowne et al. (2017), which lasted 3 years, was the longest of the seven studies considered in this review. The curriculum was designed to help registered nurses and nurse leaders improve their EI and transformative leadership abilities. Each year, the objective of the programme was different. For instance, the first year of the programme concentrated on evaluating and developing EI and leadership abilities, as well as protocols to improve the delivery of high-quality care. This material was covered in twelve 1-day seminars that lasted roughly 8 h each. In years two and three, peer gatherings and rigorous mentorship were used to provide support and coaching. Six 2-h visits and eight 1-h group conference calls were also provided to the participants. Various tactics, including group discussions, self-help discussions, feedback on EI and developmental reports, and brainstorming for strategy formulation, were also employed during the 3-year training programme.

Outcomes

In addition, to observe differences in the score of total EI, before and after an intervention, the outcome variables chosen in each study were different. The seven articles included in the final review targeted multiple outcomes. The most frequent outcome was anxiety in the workplace ($n=2$) among the staff nurses. Other outcomes assessed were coping styles, resilience, perceived stress, transformational leadership and nursing autonomy. Only one study (Mao et al., 2021) assessed the impact of the intervention on inpatient experiences.

Effectiveness of EI interventions

All the studies included in the review assessed the impact of EI interventions on the participants' EI and reported an improvement in their EI after the implementation of a training programme. As mentioned above, other outcomes were measured in each study to assess the effectiveness of the training programme. Mao et al. (2021) assessed resilience, perceived stress and inpatient experience scores before and after the intervention. The findings of their study show an improvement in all the observed variables after the training in EI. Sarabia-Cobo et al. (2017) measured nurse participants' EI and coping style at baseline, immediately after and at 1 year, and the findings showed a significant positive difference between the EI and coping style scores from baseline to the 1-year follow-up after the workshop, suggesting that EI training programmes can improve EI and coping style among nurses. In the study done by Sabzevar et al. (2016), the levels of EI and anxiety were assessed before and after the intervention for nurses. The results show that the anxiety scores of the participants significantly decreased after the educational intervention on EI, indicating that training in

EI components reduces anxiety. An interesting finding was observed in the study by Nooryan et al. (2012), which showed that doctors had a significantly higher level of EI than nurses. The study also reported that the situational anxiety of physicians and nurses in both the case and control groups was significantly lower after the training programme on EI. Similarly, the results from the studies that were done by Crowne et al. (2017) and Kusaka et al. (2010) also show a higher score of EI and transformational leadership and autonomy of nurses post-intervention. These results indicate that interventions directed towards improving nurses' EI are effective in improving not only their EI but also their psychological resources and influencing patient care outcomes.

Tools/instruments used to measure EI

Even after 30 years of research in EI, there is still disagreement on the construct of EI. The argument of whether EI is an ability or an emotional personality trait is still ongoing, and thus, there are different measurements of EI (Kotsou et al., 2018). Among all studies included in this review, three measured participants' EI with different versions of the Bar-On EQ-i Scale (Crowne et al., 2017; Nooryan et al., 2012; Sabzevar et al., 2016), Kozlowski et al. (2018) used the 64-item GENOS Emotional Intelligence Scale, Sarabia-Cobo et al. (2017) used the 24-item Trait Meta-Mood Scale (TMMS), Mao et al. (2021) used the 16-item Wong and Law EI Scale (WLEIS), and Kusaka et al. (2010) used the 65-item Japanese Emotional Quotient Scale (EQS) developed by Yamauchi et al. (Kusaka et al., 2010).

Quality of included studies

The Joanna Briggs Institute critical appraisal tools for quasi-experimental and Randomized Controlled Trials (RCT) studies were used to assess the risk of bias in the included studies. All the studies included in this review were defined as low to moderate risk of bias. Among the six quasi-experimental studies, four studies were defined as having moderate risk bias, and two studies had a low risk of bias. None of the studies mentioned whether the participants were receiving or were exposed to any other treatment/training during the study intervention of interest. The only RCT article in this review by Mao et al. (2021) was defined as a moderate risk of bias.

DISCUSSION

The present systematic review examined the effectiveness of an EI training programme solely among staff nurses. However, Kotsou et al. (2018) published a similar systematic review in 2019, where they reviewed studies employing EI intervention across disciplines and did not restrict to only studies done among nurses. The current scoping review may be considered as an update of the review done by Kotsou et al. (2018) but with a focus on nurses as the core sample or population of interest. Some of the studies that were included in the review done by Kotsou et al. (2018) were excluded from the current review because they did not meet the inclusion criteria. These studies were conducted by Codier et al. (2011), as the sample was nurse managers; another study by Codier et al. (2013), as the study design was mixed method, and the study by Sharif et al. (2013), as the full-text was unavailable.

Synthesizing the data in a review is crucial, as it provides a direction for future studies. These scoping review results show that there were variations in the quality of the included papers in terms of the type of interventions, demographic profile, instruments used, and outcome assessed. Additionally, there were variations in the follow-up period, sample size, data collection technique and length of the intervention. Due to the heterogeneous nature of the pooled study in this review, variation in intervention formats and outcome measures, synthesizing the results with a meta-analysis was not appropriate. Therefore, the results are discussed narratively.

How are the interventions designed?

The review shows that with the element of EI as the major skill in all the included studies, skill development in areas such as stress management, coping strategies, relaxation techniques, personal leadership development, interpersonal relationships and transformational leadership were embedded in the intervention programmes of the selected studies. Most of the studies included in this review focused on mental health outcomes such as anxiety (Nooryan et al., 2012), coping style (Sarabia-Cobo et al., 2017), resilience and perceived stress (Mao et al., 2021), which showed a significant improvement after the EI intervention. Only two studies included in this review used strategies in their interventions that 'support' nurses' mental health. The first is the study by Kozlowski et al. (2018), where nurses were supported through one-on-one coaching, and the second is the study by Crowne et al. (2017), where EI interventions had components of peer gathering, mentorship, coaching and self-help discussions. This demonstrates that interventions were mostly focused on the prevention of mental illness and the promotion of mental health in the workplace. This is similar to the findings of a scoping review conducted by Edgelow et al. (2022), which indicates that the most commonly used technique of workplace interventions focuses on primary prevention that aims at preventing stress-related mental health issues, followed

by secondary prevention interventions such as support groups and peer mentoring.

A theory or model provides a framework and works as a scientific guide for designing an intervention. The investigator noted that although most of the studies used EI models and EI elements to structure their interventions, only a few mentioned the use of an appropriate model/theory for the development of the interventions. Additionally, none of the included studies mentioned using a theoretical/conceptual framework in their study. For instance, Kozlowski et al. (2018) mentioned that their intervention sessions had the elements of the GENOS EI model but did not explain how the intervention was developed. Similarly, Kusaka et al. (2010) mentioned the use of Peplau's theory to develop their intervention, that is lecture sessions; Sarabia-Cobo et al. (2017) mentioned the use of Mayer and Salovey's EI model to frame the sessions; Sabzevar et al. (2016) and Nooryan et al. (2012) mentioned using the Bar-On model and its components to structure their intervention and discussions in their sessions; Crowne et al. (2017) evaluated the effectiveness of the Leading Nurses Program on improving nurses' EI, but none of the studies explained the steps taken in developing the interventions, nor did they mention using a conceptual framework that guided their research. This reduces the credibility of the interventions and does not allow researchers to replicate or improve the interventions.

How are the interventions delivered?

Wild et al. (2020) state that multisession programmes are much more effective than single-session programmes. Most of the studies ($n=5$) included in this review implemented a multisession programme on EI, and only two studies (Kozlowski et al., 2018; Kusaka et al., 2010) had single-session intervention programmes. The studies included in this review have provided interventions through workshops, conferences, short sessions, courses and lectures. Mao et al. (2021) used consolidated learning in addition to the traditional lecture method in their intervention. Similarly, Sarabia-Cobo et al. (2017), Sabzevar et al. (2016), Nooryan et al. (2012), Kozlowski et al. (2018), Kusaka et al. (2010) and Crowne et al. (2017) incorporated creative teaching-learning techniques in their interventions. The included studies implemented learning methods such as individual and group activities, group discussions, reading stories, role plays, case descriptions, case discussions, brainstorming solutions and recording experiences during the intervention. Educational/reading materials in the form of pamphlets and workbooks were also provided to the participants to facilitate self-paced learning and reflection. Teaching skills such as expressing emotions effectively, emotional self-control and relaxation techniques through active learning techniques such as games, discussion and simulation can prove effective in learning and retention. These methods are useful because they help nurses understand the theoretical aspects of EI and assist them in developing skills that they may use in real clinical settings. Such interventions that utilize exercise and imagery are found to be effective strategies for new learning and retention (Wild et al., 2020) and facilitate participants' realization of the emotions of the self and others. Likewise, improvements in nurses' EI were reported in the studies included in this review, which used various teaching-learning methods. Such training programmes, if aided by a supportive working environment and professional psychological experts, would further help nurses navigate through their emotions and apply EI skills.

Nurses have a hectic work environment added to the variation in their shifts, which limits their chances of taking part in time-intensive interventions. These are some of the practical real-world obstacles that researchers may face while experimenting with interventions in the workplace for nurses. This may explain why most of the included studies were quasi-experimental designs with small sample sizes, moderate-to-high attrition and shorter follow-up durations (a longer follow-up period also increases the chances of contaminating a control group and an increased drop-out). These might restrict the researchers from using more robust research designs such as a randomized control trial or an experimental design with a longer follow-up. Most of the included studies did not mention the reasons for dropouts ($n=5$). Crowne et al. (2017) mentioned the reason for attrition being nurses leaving their organization or being moved to other positions, whereas Kusaka et al. (2010) mentioned the reason for attrition being maternity leave. As noted in a study by Teall and Melnyk (2021), among nurses, the major barriers to participation and meeting goals are primarily time constraints, busy schedules and not merely the absence of motivation or disinterest.

Although nurses' schedules may be a great barrier to their ability to attend lengthy training, they must learn and build their skills to empower their psychological resources to combat everyday stress, fatigue and burnout. The results of this review showed that effective EI training can be provided to nurses at their workplace through short face-to-face sessions of 2 h per week for a duration of 3–6 weeks. Such short training programmes are feasible and accessible alternatives for nurses who often have time constraints and heavy workloads to gain knowledge and skills. This reduces the chances of nurses missing out on sessions due to their busy work schedules and unpredictable work environments.

Challenges and gaps identified

Although Mao et al. (2021), Sarabia-Cobo et al. (2017), Sabzevar et al. (2016), Kozlowski et al. (2018) and Nooryan

et al. (2012) demonstrated that training programmes can improve nurses' EI, the studies failed to mention the steps taken to develop the intervention programme. This gap hampers the credibility of the programme as well as the ability of future researchers to replicate or develop interventions based on this study design. The review findings show that none of the included studies assessed whether long-term EI interventions in the form of counselling, support groups or changing workplace policies would have had an impact on the mental, emotional and physical health of the nurse, as well as on essential workplace outcomes such as retention, job satisfaction and patient care outcomes. It is essential to assess whether long-term interventions are effective, as they may be more sustainable and accessible for nurses and other healthcare team members. It was also interesting to note that most of the included studies were from developed nations such as Australia, the USA, China, Spain and Australia, which are known for their research excellence and promotion of mental health. The application of such interventions may be lower in lower-income countries because of the scarce financial and human resources and an ever-increasing patient population.

Overall, the results of this review indicate that understanding the importance of EI, applying its skills and improving its various aspects can result in meaningful improvement in an individual's mental and emotional health and improve work outcomes. The findings from this review may inform future researchers in the development of low-cost and accessible EI interventions for nurses.

Strengths of the study

For this scoping review, seven online databases were searched using a comprehensive search strategy. Additionally, quality assessment performed for individual studies provides important insight into the strength of the evidence. Despite the many limitations, this scoping review highlights emerging trends and methods of EI intervention given to nurses. This review also shows that there are currently very few studies that have designed and implemented EI training programmes specifically for staff nurses. The findings thus support the need for increased consideration of nurses' EI and the necessity for some planned measures, despite the variation in evaluation methods.

Limitations

The number of pooled studies in the current scoping review is very small, with varying study designs and interventions, and thus, the findings of the current review lack the strength to make a definite recommendation about the effectiveness of EI training programmes among staff nurses.

CONCLUSIONS

The results of this review show that EI interventions can help participants' coping skills, anxiety levels and stress levels while also improving other aspects of their EI. Additionally, the findings show an improvement in the patient experience as nurses' EI improved. The results of this review also indicate that measures must be taken to develop EI in nurses, which would help them recognize and manage their emotions in stressful environments.

RELEVANCE TO CLINICAL PRACTICE

Nursing is a challenging profession, as it demands that nurses be physically and mentally strong to be able to handle the intense environment of a hospital or any care setting. This posits the importance of enhancing EI skills among nurses. This review highlights that training programmes focused on EI are effective in improving nurses' emotional and physical well-being, as well as contributing positively to patient care outcomes. The findings inform healthcare policymakers, nurse leaders and managers to develop and implement effective, sustainable and long-term training programmes focused on EI for nurses.

RECOMMENDATIONS

This review highlights the importance and need of paying attention to and prioritizing mental health among staff nurses. Because nurses are frequently on the front lines, and because mental health is so important to one's physical health, interventions must be implemented to enhance the psychological well-being of staff nurses. Considering that nurses' duty hours and amount of work varies from one institution and one nation to another, more research with appropriate study design with higher quality needs to be done to support EI interventions for nurses. There is also a lack of evidence of whether nurses' EI could be improved by bringing in supportive interventions such as policy changes in the hospital setting, support groups and/or counselling. Researchers may further develop and explore the impact of EI interventions which blend prevention, promotion and protection strategies of mental health intervention in the workplace.

AUTHOR CONTRIBUTIONS

All authors listed in this article met the authorship criteria according to the latest guidelines of the International Committee of Medical Journal Editors. All the authors have read and approved the final manuscript. MS, LSG, BU, BSN and NS made substantial

contributions to conception and design or acquisition of data or analysis and interpretation of data; given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content; agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. MS, LSG and BSN involved in drafting the manuscript or revising it critically for important intellectual content.

ACKNOWLEDGEMENTS

We would like to thank the respective organization for providing the resources to execute this scoping review.

FUNDING INFORMATION

The current project is not funded by any organization or institution.

CONFLICT OF INTEREST STATEMENT

The author/s declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

DATA AVAILABILITY STATEMENT

A supplementary file (Table S1) has been provided with the search strategy that inform the findings of this review.

STATISTICS

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Saikia, M., George, L.S., Unnikrishnan, B., Nayak, B.S. & Ravishankar, N. (2024) Thirty years of emotional intelligence: A scoping review of emotional intelligence training programme among nurses. *International Journal of Mental Health Nursing*, 33, 37–51. Available from: https://doi.org/10.1111/inm.13235