



Teaching Conflict Management Skills to Medical Students: A Scoping Review

Fatemeh Mohseni^{1,2}, Aeen Mohammadi³, Nasim Khajavirad⁴, Kamal Basiri⁵, Mahboobeh Khabaz Mafinejad^{2,6*}

Received: 20 Jun 2022

Published: 5 Mar 2024

Abstract

Background: Conflict management skills include the ability of team members to actively use appropriate methods and strategies in different conflict situations. Considering the necessity of effective training in conflict management skills for medical students as a member of healthcare teams, this scoping review study aimed at reviewing the appropriate methods for teaching conflict management to medical students.

Methods: In this scoping review, PubMed, Eric, ProQuest, Web of Science (WoS), and Scopus databases were systematically searched until May 21, 2023. Titles, abstracts, and full texts were screened separately by 2 researchers. The quality of the articles was assessed using the Best Evidence Medical Education (BEME) tool. Then, a descriptive synthesis was performed, and the results were reported. The Kirkpatrick model was used to evaluate the educational outcomes assessment.

Results: Out of 2888 retrieved studies, 19 studies were included. Although active and interactive teaching methods such as roleplay, group discussion, and interactive workshops were the most frequently used methods, the results did not pronounce the superiority of one method over others.

Conclusion: Based on the results of this scoping review, further research should evaluate the effectiveness of conflict management training methods by focusing on the randomized controlled trial design and using standard and valid tools to assess educational outcomes.

Keywords: Teaching, Medical students, Conflict Management, Scoping review

Conflicts of Interest: None declared

Funding: Gerash University of Medical Sciences.

*This work has been published under CC BY-NC-SA 1.0 license.

Copyright© Iran University of Medical Sciences

Cite this article as: Mohseni F, Mohammadi A, Khajavirad N, Basiri K, Khabaz Mafinejad M. Teaching Conflict Management Skills to Medical Students: A Scoping Review. *Med J Islam Repub Iran.* 2024 (5 Mar);38:24. <https://doi.org/10.47176/mjiri.38.24>

Introduction

The possibility of conflict in the service delivery process and the experience of managing it in different clinical settings is inevitable (1). Because team members have diverse professional duties and often opposing aims, they frequently work in stressful settings and experience conflict when working on healthcare and medical teams (2). Conflict management skills include the ability of members

of a team to actively use appropriate interactive methods and strategies in other conflict situations. Based on the recent evidence, conflict management, as one of the cores expected outcomes, has been reflected by many researchers, educational institutions, and accreditation institutions in the education of medical students (1). Improper management of conflicts in the healthcare process can lead to

Corresponding author: Dr Mahboobeh Khabaz Mafinejad, m-mafinejad@tums.ac.ir

¹ Department of Medical Education, Education Development Center, Gerash University of Medical Sciences, Gerash, Iran

² Department of Medical Education, Medical School, Tehran University of Medical Sciences, Tehran, Iran

³ Department of E-Learning in Medical Education, Center of Excellence for E-learning in Medical Education, Medical School, Tehran University of Medical Sciences, Tehran, Iran

⁴ Department of Internal Medicine, Imam Khomeini Hospital Complex, Tehran University of Medical Sciences, Tehran, Iran

⁵ Prehospital and Hospital Emergency Research Center, Sina Hospital, Tehran University of Medical Sciences, Tehran, Iran

⁶ Health Professions Education Research Center, Department of Medical Education, Education Development Center, Tehran University of Medical Sciences, Tehran, Iran

↑What is “already known” in this topic:

Teaching medical students to deal with conflict in health care practice with proper conflict management skills is critical as they are considered influential members of the treatment team.

→What this article adds:

The findings of this review study show that in most studies, various methods were employed by the researchers. This scoping review also provides a new perspective for teachers and educational planners on designing and using appropriate strategies and methods for teaching conflict management skills in curricula.

serious adverse consequences (3), ultimately declining the effectiveness of clinical services (4, 5). The results of a study by Wright showed that conflict in healthcare teams and the negative impact on patient care can lead to burn-out and resignation from the workplace settings and impose unwanted economic consequences (6). Therefore, acquiring this skill as one of the basic skills for healthcare professionals is essential, especially for physicians as main team members (7-9).

Various studies show that effective training can improve such skills (10, 11). Teaching medical students proper conflict management is critical as they are considered influential members of the healthcare team (12, 13). Evidence shows that training through the university program curriculum has improved students' self-confidence and attitude (14), provided constructive feedback, and employed primary conflict management skills with colleagues (1). Although the results of several studies show that training in workplace settings and using simulation have been effective in improving physicians' conflict management skills, due to the methodological limitations of related studies, various conflict management training methods should be examined to achieve the most effective approach (15-17).

It can highlight the importance of conducting scoping reviews to evaluate educational interventions in studies on training methods to improve conflict management skills. However, health sciences students, especially medical students, due to their involvement in teamwork and their obligation to learn communication skills, need to improve

conflict management and resolution skills (18). Based on the evidence, no scoping review has been conducted on the effectiveness of conflict management teaching methods to medical students.

The purpose of this scoping review was to collate, summarize, and categorize the educational methods used to teach conflict management to medical students, discover a range of reported outcomes, and highlight the gaps for further research.

Methods

Data Sources and Searches Strategy

The present scoping review followed the Preferred Reporting Items for Scoping Reviews and Meta-Analyses (PRISMA) guidelines (19). Figure 1 shows full details of the study's search process using the PRISMA method. A librarian was consulted to review the search strategy. This scoping review was performed on studies on teaching conflict management to medical students. Due to the limited number of related studies, all studies were considered until May 21, 2023. To select desired publications, the publication's title, abstract, and keywords were searched independently by 2 authors (F.M. and M.K.M.) in PubMed, Eric, ProQuest, Web of Science (WoS), and Scopus databases using the following keywords: "conflict," "manag,*" "resolution," "training," "teaching," "education," " learning, "" students, medical, "" medical student,* "" Education, Medical, "" medical education, "" residen* "and" medical Trainees." Then, the search was continued as ancestry searching and forward tracing on Google Scholar. The

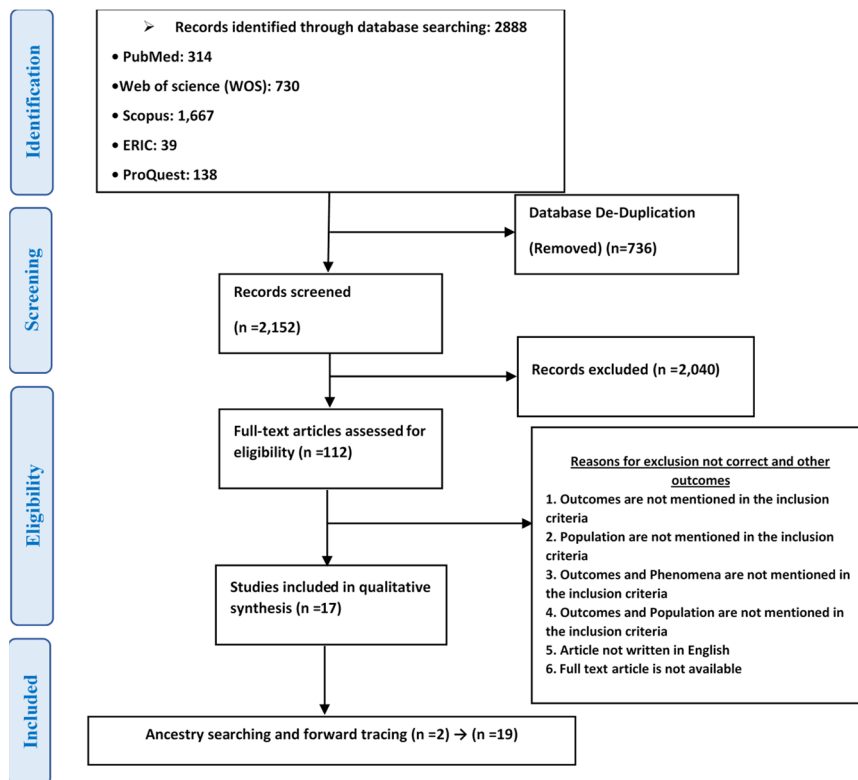


Figure 1. PRISMA flowchart

search strategy for 1 database (PubMed) is presented in Appendix 1.

Eligibility Criteria

The following were the inclusion criteria for the relevant articles:

1. Focusing on teaching, training, and education of conflict management/conflict resolution.
2. Addressing reaction (satisfaction), learning (knowledge, attitude, and skills), behavior, and performance.
3. Being relevant to medical students, residents, medical trainees, and physicians.
4. Written in English.
5. Original articles, short communications, conference papers, and dissertations that included the report of an educational intervention.

Other studies were excluded because they were not in line with the purpose of the study, which is to review the methods used in conflict management training. The inclusion and exclusion criteria were summarized in Table 1.

Screening and Study Selection

All retrieved articles were inserted into Endnote X7.8, and duplicate data were removed. Data were analyzed in 2 stages by 2 researchers (F.M. and M.K.M.) separately based on the inclusion and exclusion criteria. First, studies were selected based on their titles and abstracts, then based on their full text to prepare a preliminary list of 19 studies. In case of researcher disagreement, a third author was consulted for a final decision.

To increase the study's validity, the included articles were reviewed for methodological quality using a valid tool: Best Evidence Medical Education (BEME). This tool contains 11 quality indicators about research question, study objectives, data collection methods, data completeness, control of confounding factors, result analysis, conclusion, reproducibility, prospective, ethical considerations, and triangulation (20). Studies with at least eight 6

or 7, 5 or fewer quality indicators were considered high, medium, and low quality, respectively (21). To qualitatively evaluate the consequences of educational interventions of the target studies, the Kirkpatrick pyramid introduced by BEME was used to assess the educational outcomes assessment. The adapted model consists of 4 levels: level 1 considers participants' reaction to the training; and levels 2a and 2b consider changes in participants' attitudes/perceptions and knowledge/skills, respectively; level 3 considers changes in participants' behavior; and level 4a and 4b consider changes in organizational practice and benefit to patients, respectively (22).

Results

Study Selection

A total of 2888 studies were identified using electronic database search. In this process, 736 studies were excluded due to duplication, and 2152 studies were removed after title and abstract screening, resulting in 112 articles being eligible for full-text evaluation. Two studies were added through a manual search. After a thorough screening, 19 articles were selected for inclusion in the review (Figure 1).

Study Characteristics

Based on a scoping review, 19 studies (14 from the USA, 4 from Canada, and 1 from Australia) were selected. Of these 19 studies, 5 were based on a theory or a model (15, 16, 23-25). Teaching methods used in these studies were often in the form of interactive workshops (15, 16, 23, 25-28) roleplay (28), teaching, and discussion in small groups (1, 14, 28, 29) and the use of simulation methods (15, 17, 30, 31). An education through play and talk was used in 1 study (32). In 2 studies, the hot seat simulation method was used (15, 23). The provision of feedback, evidence-based practice, and the use of interactive theater were employed in some studies to teach the skills more effectively (33). A standardized patient was used in 2 studies (24, 29). In a few studies, the training were implemented as part of the curriculum in the form of courses

Table 1. Inclusion and Exclusion Criteria for the Proposed Study Based on a PICOS^a

PICOS	Inclusion	Exclusion
Population	- Medical students, residents, medical trainees, and physicians	- Other populations are not mentioned in the inclusion criteria
Intervention	- Teaching conflict management/conflict resolution - Conflict management/conflict resolution education - Conflict management/conflict resolution training	- Conflict of interest - Ethical conflict
Comparison	- NA ^b	- NA
Outcome	- Reaction (satisfaction) - Learning (knowledge, attitude, and skill) - Behavior - Performance	- Other outcomes are not mentioned in the inclusion criteria
Language	- English Language	- Non-English articles
Publication date	- Until May 21, 2023	-
Study classification	- Publication type: Original articles, short communications, conference papers, and dissertations	- Other publications are not mentioned in the inclusion criteria
Distinct characteristics	- Method, approach, and technique	- Other distinct characteristics are not mentioned in the inclusion criteria

^a PICOS, Patient/Population, Intervention, Comparison and Outcomes, Study design.

^b NA, Not applicable.

Table 2. Quality of the Included Studies

Quality indicator	Details	Indicator met	Indicator not met
Research question	Is the research question or hypothesis clearly stated?	9	10
Study subjects	Is the subject group appropriate for the study (in terms of the number, characteristics, selection, and homogeneity)?	17	2
Data collection methods	Are the methods used (qualitative or quantitative) reliable and valid for the research question and context?	11	8
Completeness of data	Have the subjects dropped out? Is the attrition rate of less than 50%? Is the response rate acceptable (60% or above) for questionnaire-based studies?	16	3
Control of confounding	Have multiple factors/variables been removed or accounted for, where possible?	1	18
Analysis of the results	Are the statistical or other methods of results analysis used appropriately?	13	6
Conclusions	Is it clear that the data justifies the conclusions obtained?	14	5
Reproducibility	Could other researchers repeat the study?	10	9
Prospective	Does the study look forward in time (prospective) rather than backward (retrospective)?	18	1
Ethical issues	Were all the relevant ethical issues addressed?	7	12
Triangulation	Were the results supported by the data from more than one source?	13	6

lasting several hours to several weeks, and seminars using interactive teaching methods (29, 34).

In terms of methodological quality, 10 high-quality articles (15, 17, 24, 27, 29-32, 34, 35), 5 medium-quality (1, 16, 26, 36-37), and 4 low-quality were included in the present study (14, 25, 28, 33). All articles were reviewed based on 11 BEME tool quality indicators (Table 2). The Kirkpatrick model was used to differentiate the level of evaluation completed for the training reported in each of the articles reviewed. The Kirkpatrick model is probably the best-known model for analyzing and evaluating the outcomes of educational programs.

The number of articles evaluating the effects of educational intervention at different levels of Kirkpatrick outcome is listed in Figure 2.

Level 1: Eight articles reported results at level 1, which focused on participants' reactions to conflict management training. This level measures how participants react to the training, including program satisfaction (25, 27, 28, 33), perspectives of participants using semi-structured interviews (16, 31), curriculum feasibility and acceptability (29), perspectives of participants using audio-recorded conferences, and interviews (30).

Level 2A: Six articles reported results at level 2A,

which involved changes in participants' attitudes and perceptions, including confidence in skill assessment (23), revised occupational stress inventory, personal strain questionnaire, and personal resources questionnaire (35), Boggs scale for collaboration and satisfaction about care decisions (24), self-reported confidence and attitudes evaluation (14), self-reported attitude to interprofessional learning, measure motivation-to-learn and perception to transfer of learning (36), attitudes toward interprofessional, healthcare teams scale, and interdisciplinary education perception scale and team skills scale (34).

Level 2B: Five articles reported changes in knowledge or skills at level 2B, including confidence assessment, objective structured clinical examination (1), confidence of being ready to manage conflict questionnaire (15), de-escalation anger (17), reflection on teamwork and conflict resolution styles (29), well-being, reflective capacity, and communication skills assessment (32).

Level 4B: Only 1 article reported results at level 4B, which focused on organizational practice or benefit to patients, including changes in practice questionnaires, interprofessional communication, and practice changes using focus groups (26). Table 3 summarizes the main findings of the reviewed studies.

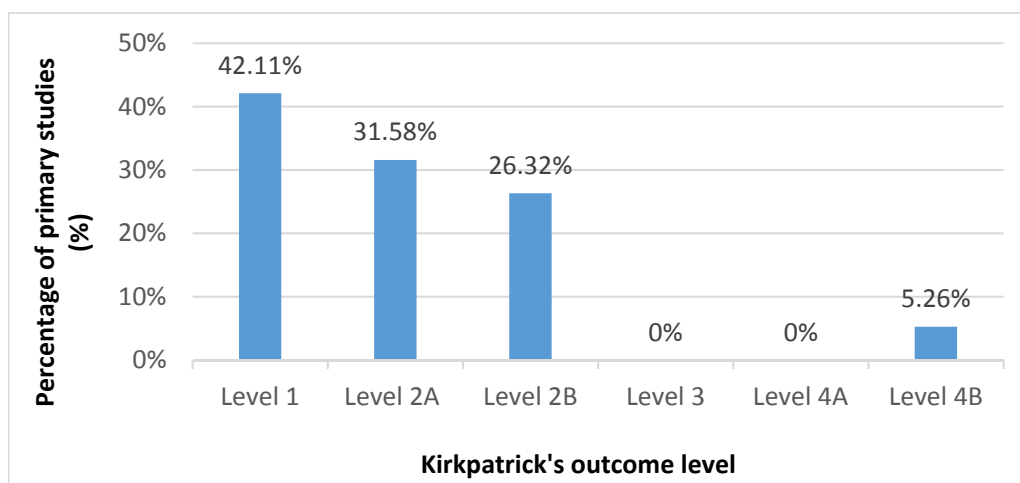


Figure 2. Distribution of the reviewed studies based on Kirkpatrick outcome levels

Table 3. Studies Proposing Training Methods for Conflict Management Skills

ID	Authors	Year	Journal	Countries	Article classification	Participants	Theory/model/framework	Teaching methods/ strategies/ techniques	Instrument	Outcomes measured
1	Westcott, S. & et. al.	2023	Academic Psychiatry	Canada	Original article	• Psychiatric residents	Not stated	• Play and Talk	• CIPP evaluation • Questionnaire • Recorded debriefings • Focus group	• Well-being • Reflective capacity • Communication skills
2	Gunasingha, R.M. & et. al.	2021	MedEdPORTAL	USA	Original article	• Medical students	Not stated	• Role play with standardized Patient	• Program evaluation questionnaire	• Curriculum feasibility and acceptability • Reflection on teamwork • Conflict resolution styles
3	Birnbaum, D.J. & et. al.	2021	Anesthesia & Analgesia	USA	Original article	• Anesthesiology Residents	Not stated	• Simulation	• Novaco Anger Scale • Checklist	• De-escalation Anger
4	Barr, K.P. & et. al.	2020	Journal of Graduate Medical Education	USA	Original article	• Physical medicine, rehabilitation (PM & R) residents	Shannon-Kim 4-Step Conflict Dialogue Model	• "Hot Seat" Simulation and Role play	• Questionnaire	• Confidence in being ready to manage conflict questionnaire
5	Wolfe, A.D. & et. al.	2018	MedEdPORTAL	USA	Original article	• Pediatric residents	Not stated	• Didactic presentation • Small-group discussion • Workshop	• Program evaluation questionnaire	• Program Satisfaction
6	Cochran, N. & et. al.	2018	Conflict Resolution Quarterly	USA	Review the article & describe a pilot project	• Health professionals • Medical students • Mid-career • Physicians • Students without any background in health care	Not stated	• Brief didactics • Small-group discussion • Coaching and feedback	• Myers Briggs Personality Inventory • Thomas Kilmann Conflict Mode Instrument • Objective structured clinical examination (OSCE)	• Confidence assessment • Objective structured clinical examination (OSCE) • Perspectives of participants using interviews

Discussion

This scoping review aimed to search and analyze conflict management training methods for medical students. Although many studies were conducted on conflict management in the field of nursing, studies that targeted medical students were limited (37). Various training methods were proposed, and in-depth analysis is required to design an effective training program. Different techniques were employed—including lecture presentation (16, 35), demonstration (16), simulation (25, 30, 31), and standardized patient (24), as well as student-centered and active methods such as reflection (16), reflective problem-solving exercises (25), group discussion (1, 14, 27, 28), game and gamification (15, 23), roleplay (14, 16, 28), and theater (33).

Most studies were conducted in a single group, and the effectiveness of an educational method was not evaluated compared with other methods. While simulation-based

training and active, interactive techniques like roleplaying, group discussions, and interactive workshops were among the most popular approaches, the research could not identify any 1 approach as the most successful or highlight any technique as the most effective. Determining which teaching methods can be most effective remains an unresolved gap in the studies. The findings of this review study show that in most studies, various methods were employed by the researchers. Hence, we cannot quantitatively synthesize them (15, 16, 23, 25-28, 33).

Based on the 11 quality indicators of the BEME tool, almost half of the retrieved studies are of high quality. Differences in study methodology make it impossible to judge the best teaching method confidently. To determine the best and most effective teaching method, it is helpful to conduct studies with a robust and high-quality methodology, such as a randomized controlled trial that can compare the effectiveness of different teaching methods.

The findings of this study show that it is essential to

Table 3. Continued

ID	Authors	Year	Journal	Countries	Article classification	Participants	Theory/model/framework	Teaching methods/ strategies/ techniques	Instrument	Outcomes measured
7	Itri, J.N. & et. al.	2017	Current Problems in Diagnostic Radiology	USA	Original article	<ul style="list-style-type: none"> • Radiology residents 	Not stated	<ul style="list-style-type: none"> • Group discussion • Role-play 	<ul style="list-style-type: none"> • Myers Briggs Personality Inventory • Thomas Kilmann Conflict Mode Instrument • Program evaluation questionnaire 	<ul style="list-style-type: none"> • Program Satisfaction
8	Vandergoot, S. & et. al.	2017	Journal of Inter-professional Care	Australia	Original article	<ul style="list-style-type: none"> • Nursing students • Medical students 	Not stated	<ul style="list-style-type: none"> • Interprofessional education 	<ul style="list-style-type: none"> • Questionnaire 	<ul style="list-style-type: none"> • Self-reported attitude to interprofessional learning • Measure motivation-to-learn • Perception to transfer of learning
9	Kim, S. & et. al.	2017	Journal for Healthcare Quality	USA	Original article	<ul style="list-style-type: none"> • Physician • Nurses • PhD clinicians • Spiritual counselor 	Shannon-Kim 4-Step Conflict Dialogue Model	<ul style="list-style-type: none"> • "Hot Seat" Simulation 	<ul style="list-style-type: none"> • Program evaluation questionnaire • Thomas Kilmann Conflict Mode Instrument • Checklist 	<ul style="list-style-type: none"> • Program Satisfaction • Confidence in skill assessment
10	Chiarchi-aro, J. & et. al.	2016	Critical care medicine	USA	Original article	<ul style="list-style-type: none"> • Physicians 	Not stated	<ul style="list-style-type: none"> • Case-based simulation 	<ul style="list-style-type: none"> • Interviews 	<ul style="list-style-type: none"> • Perspectives of participants using audio-recorded conferences and interviews
11	Friend, M.L. & et. al.	2016	Journal of Nursing Education	USA	Original article	<ul style="list-style-type: none"> • Nursing students • Medical students 	Not stated	<ul style="list-style-type: none"> • Lecture 	<ul style="list-style-type: none"> • Interview and survey • Interprofessional healthcare teams scale • Team skills scale and interdisciplinary education perception scale 	<ul style="list-style-type: none"> • Attitudes toward Interprofessional • Healthcare Teams Scale • Interdisciplinary Education Perception Scale • Team Skills Scale
12	Chiarchi-aro, J. & et. al.	2015	Annals of the American Thoracic Society	USA	Original article	<ul style="list-style-type: none"> • Physicians 	Not stated	<ul style="list-style-type: none"> • Case-based simulation 	<ul style="list-style-type: none"> • Program evaluation questionnaire • Semi-structured interviews 	<ul style="list-style-type: none"> • Program Satisfaction • Perspectives of participants using semi-structured interview
13	Lifchez, S.D. & et. al.	2015	Journal of Graduate Medical Education	USA	Original article	<ul style="list-style-type: none"> • Plastic surgery residents 	The Standardized Professional Encounter Model (S-Pro Encounter)	<ul style="list-style-type: none"> • Role play with Standardized Patient 	<ul style="list-style-type: none"> • Boggs scale for collaboration and satisfaction about care decisions 	<ul style="list-style-type: none"> • Boggs scale for collaboration and satisfaction about care decisions

consider the level of the outcome evaluation when attempting to assess the effectiveness of the teaching

method. Given that the ultimate goal of education is to change behavior and improve skills leading to improved

Table 3. Continued

ID	Authors	Year	Journal	Countries	Article classification	Participants	Theory/model/framework	Teaching methods/ strategies/ techniques	Instrument	Outcomes measured
14	Sargeant, J. & et. al.	2011	Journal of Continuing Education in the Health Professions	Canada	Original article	<ul style="list-style-type: none"> Health care professionals 	Not stated	<ul style="list-style-type: none"> Evidence-based practice Interactive theater 	<ul style="list-style-type: none"> Program evaluation questionnaire Focus group 	<ul style="list-style-type: none"> Program Satisfaction Self-reported communication skills Changes in practice questionnaire Interprofessional communication and practice changes using focus group
15	Zweibel, E. B. & et. al.	2008	USA Conflict Resolution quarterly	Canada	Original article	<ul style="list-style-type: none"> Residents Faculty 	The framework draws from classic conflict resolution works	<ul style="list-style-type: none"> Small-group activities Roleplay Demonstration and Simulation 	<ul style="list-style-type: none"> Program evaluation questionnaire Workshop feedback forms Semi-structured interviews 	<ul style="list-style-type: none"> Program Satisfaction Perspectives of participants using semi-structured
16	Knickle, K. C. McNoughton, N.	2008	Medical Education	Canada	Original article	<ul style="list-style-type: none"> Not stated 	Attribution theory	<ul style="list-style-type: none"> Simulation Reflective problem-solving exercises 	<ul style="list-style-type: none"> Program evaluation questionnaire 	<ul style="list-style-type: none"> Program Satisfaction
17	Haraway, D.L. & Haraway, W.M.	2005	Hospital Topics	USA	Original article	<ul style="list-style-type: none"> Hospital managers Directors or supervisors Physicians Nurses 	Not stated	<ul style="list-style-type: none"> Lecture 	<ul style="list-style-type: none"> Occupational Stress Inventory Personal Strain Questionnaire Personal Resources Questionnaire Program evaluation questionnaire 	<ul style="list-style-type: none"> Revised Occupational Stress Inventory Personal Strain Questionnaire Personal Resources Questionnaire
18	Ang, M. & et. al.	2001	Academic Medicine	USA	Original article	<ul style="list-style-type: none"> Not stated 	Not stated	<ul style="list-style-type: none"> Small-group discussion Role-play Watching videotaped role-plays 	<ul style="list-style-type: none"> Myers Briggs Personality Inventory 	<ul style="list-style-type: none"> Self-reported confidence and attitudes evaluation
19	Bryan, T.J. & Stafford, M.A.	1996	Journal of Investigative Medicine	USA	Original article	<ul style="list-style-type: none"> Internal medicine residents 	Not stated	<ul style="list-style-type: none"> Small-group discussion Role-play 	<ul style="list-style-type: none"> Program evaluation questionnaire 	<ul style="list-style-type: none"> Program Satisfaction

patient care, the lack of evidence on the effectiveness of educational methods on student performance based on the Kirk Patrick pyramid can be acknowledged. However, in most of the studies reviewed in this research, the evaluations were limited to surveys on students regarding the relevance of the training course to their future job needs and on the satisfaction of study participants regarding the quality of the training program and training methods, determining the predominant style of conflict management. A few studies focused on the assessment of knowledge and attitude. None of the studies have evaluated the outcomes at Kirkpatrick's levels 3 and 4A, and only 1 study

evaluated the effectiveness of the teaching method employed at Level 4B of Kirkpatrick's educational outcomes (26).

For future studies, evaluation at higher Kirkpatrick levels is recommended to judge the effectiveness of teaching methods. Few studies assessed the efficacy of conflict management skills' training methods at the level of behavioral change, organizational performance, or patient improvement (high levels of Kirkpatrick). It seems that because of the complexity of the factors affecting patient care, high levels of outcomes cannot simply be assessed. However, workplace-based assessment can provide help-

ful information about the effectiveness of educational interventions on performance change at higher levels of Kirkpatrick. Future educational interventions can propose procedures for using active methods of interprofessional learning and teaching in achieving high outcomes in conflict management training.

Moreover, the training courses in the reviewed studies were short-term. Only 2 studies compared the effectiveness of its training course in both intervention and control groups. However, due to the nonequivalency of the groups, the generalizability of the results was considered as a confounding variable (32, 34). Moreover, the evaluation of the effectiveness of training in the long run and after 12 months of the training course was performed in only 1 study (16). In contrast, in other studies, no such subsequent evaluation was reported.

Another shortcoming of most studies was the lack of appropriate tools for skill assessment by the observer to evaluate the training method's effectiveness. Student self-assessment can be helpful as a complementary tool to assess the training method's effectiveness and not as the only assessment method. Future studies on the effectiveness of conflict management training methods should employ standard and valid assessment tools for studies with randomized controlled trial designs. These assessment tools should be focused on the student's behavioral changes rather than their self-perceived changes in knowledge or satisfaction.

Of the studies included in this review, few were based on theory or model (15-16, 23-25), highlighting the need to understand the reason for using a teaching method conforming to specific frameworks, which is a critical element in evaluating effectiveness. Including regular and longitudinal conflict management training in the medical students' curriculum is required. Moreover, instructional design based on appropriate theories and frameworks as suitable guides for the training course is valued.

Implications

Most of the evaluations in this review study were single-centered and only assessed learners' satisfaction. Future studies should focus on the "why" and "how" of the effectiveness of innovative training methods and strategies of conflict management skills. This can be accomplished by implementing the following: (i) describing the educational context; (ii) the reasons for choosing suitable educational methods with a pedagogical approach; (iii) describing the resources; and (iv) appropriate considerations and educational methodology in the form of long-term assessment of the outcomes. Future research should also consider innovative workplace-based teaching and learning approaches. Training through simulation, as well as active and interactive methods such as roleplay, group discussion, and interactive workshops, were among the most frequent methods in the studies. Based on the findings of this review, it is recommended that educators and teachers use a hybrid approach by combining several methods to improve the training of students' conflict management skills.

Limitations

This review study has several limitations. The search in this study was limited to 5 databases, and no searches for nonindexed journals were performed on the databases. Moreover, given the focus of this review on medical education, especially for undergraduate medical students and graduated physicians, this study's findings cannot be unchangeably generalizable to other healthcare disciplines.

Conclusion

This scoping review aimed to provide an overview of the literature's various training methods for conflict management and the best evidence of the most appropriate training method. This scoping review also provides a new perspective for teachers and educational planners on designing and using appropriate strategies and methods for teaching conflict management skills in curricula. Further quantitative and qualitative research should evaluate the effectiveness of conflict management training methods by focusing on the randomized controlled trial design and using standard and valid tools to assess the educational outcomes. Regardless of the training method, future studies should emphasize the "why" and "how" of the effectiveness of the training methods and strategies. Moreover, in future studies, evaluations at the higher levels of Kirkpatrick should be considered to ensure the effectiveness of these methods and transfer them to the workplace.

Acknowledgements

Not applicable.

Ethics Statement

Ethical approval was obtained from Ethical Committee of Gerash University of Medical Sciences (No: IR.GERUMS.REC.1401.010).

Authors Contributions

Conceptualization: F.M., M.K.M. Data curation: F.M., M.K.M., A.M. Methodology/formal analysis/validation: F.M., M.K.M. Project administration: M.K.M. Funding acquisition: not applicable. Writing the original draft: F.M., M.K.M., A.M., N.K.H., K.B. Writing, reviewing & editing: F.M., M.K.M., A.M., N.K.H., K.B.

Conflict of Interests

The authors declare that they have no competing interests.

References

1. Cochran N, Charlton P, Reed V, Thurber P, Fisher E. Beyond fight or flight: The need for conflict management training in medical education. *Confl Resolut Q*. 2018;35(4):393-402.
2. West MA, Lyubovnikova J. Real teams or pseudo teams? The changing landscape needs a better map. *Ind Organ Psychol*. 2012;5(1):25-8.
3. Behaviors that undermine a culture of safety. Sentinel event alert / Joint Commission on Accreditation of Healthcare Organizations. 2008;40:1-3.
4. Sinskey JL, Chang JM, Shibata GS, Infosino AJ, Rouine-Rapp K. Applying Conflict Management Strategies to the Pediatric Operating Room. *Anesth Analg*. 2019;129(4):1109-17.
5. Centered on the workforce... conflict and the nursing workforce. *Am*

- Nurse. 2006;38(6):7.
6. Wright AA, Katz IT. Beyond burnout—redesigning care to restore meaning and sanity for physicians. *N Engl J Med*. 2018;378(4):309-11.
 7. Paice E, Rutter H, Wetherell M, Winder B, McManus I. Stressful incidents, stress and coping strategies in the pre-registration house officer year. *Med Educ*. 2002;36(1):56-65.
 8. Englander R, Cameron T, Ballard AJ, Dodge J, Bull J, Aschenbrenner CA. Toward a common taxonomy of competency domains for the health professions and competencies for physicians. *Acad Med*. 2013;88(8):1088-94.
 9. Nursing AAOCo, Nursing AAOCo. Competencies and curricular expectations for clinical nurse leader education and practice. 2013.
 10. Boissy A, Windover AK, Bokar D, Karafa M, Neuendorf K, Frankel RM, et al. Communication skills training for physicians improves patient satisfaction. *J Gen Intern Med*. 2016;31(7):755-61.
 11. Krasner MS, Epstein RM, Beckman H, Suchman AL, Chapman B, Mooney CJ, et al. Association of an educational program in mindful communication with burnout, empathy, and attitudes among primary care physicians. *Jama*. 2009;302(12):1284-93.
 12. Mossanen M, Johnston SS, Green J, Joyner BD. A practical approach to conflict management for program directors. *J Grad Med Educ*. 2014;6(2):345-6.
 13. Saltman DC, O'dea N, Kidd M. Conflict management: a primer for doctors in training. *Postgrad Med J*. 2006;82(963):9-12.
 14. Ang M. Advanced communication skills: conflict management and persuasion. *Acad Med*. 2002;77(11):1166.
 15. Barr KP, Reyes MR, Kim S. "Hot Seat" Simulation to Teach Conflict Management Skills to Residents. *J Grad Med Educ*. 2020;12(4):485-8.
 16. Zweibel EB, Goldstein R, Manwaring JA, Marks MB. What sticks: How medical residents and academic health care faculty transfer conflict resolution training from the workshop to the workplace. *Confl Resolut Q*. 2008;25(3):321-50.
 17. Birnbach DJ, Rosen LF, Fitzpatrick M, Shekhter I, Arheart KL. Preparing anesthesiology residents for operating room communication challenges: A new approach for conflict resolution training. *Anesth Analg*. 2021;133(6):1617-23.
 18. Regmi K, Jones L. A systematic review of the factors—enablers and barriers—affecting e-learning in health sciences education. *BMC Med Educ*. 2020;20:1-18.
 19. Moher D, Liberati A, Tetzlaff J, Altman DG, Group P. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med*. 2009;6(7):e1000097.
 20. Buckley S, Coleman J, Davison I, Khan KS, Zamora J, Malick S, et al. The educational effects of portfolios on undergraduate student learning: a Best Evidence Medical Education (BEME) systematic review. BEME Guide No. 11. *Med Teach*. 2009;31(4):282-98.
 21. Passi V, Johnson S, Peile E, Wright S, Hafferty F, Johnson N, et al. Doctor role modelling in medical education: BEME guide no. 27. *Med Teach*. 2013;35:e1422-36.
 22. Harden RM, Grant J, Buckley G, Hart IR. BEME guide no. 1: Best evidence medical education. *Med Teach*. 1999;21:553-62.
 23. Kim S, Frans E, Bohannon I, Barr K, Buttrick E, Fehr R, et al. "Hot Seat" Simulation Model for Conflict Resolution: A Pilot Study. *J Healthc Qual*. 2018;40(4):177-86.
 24. Lifchez SD, Cooney CM, Redett III RJ. The standardized professional encounter: A new model to assess professionalism and communication skills. *J Grad Med Educ*. 2015;7(2):230.
 25. Knickle K, McNaughton N. Collegial conflict: Experiencing attribution theory through simulation. *Med Educ*. 2008;42(5):541-2.
 26. Sargeant J, MacLeod T, Murray A. An interprofessional approach to teaching communication skills. *J Contin Educ Health Prof*. 2011;31(4):265-7.
 27. Itri JN, Yacob S, Mithqal A. Teaching communication skills to radiology residents. *Curr Probl Diagn Radiol*. 2017;46(5):377-81.
 28. Bryan T, Stafford M, editors. Teaching housestaff to deal with conflict. *J Investig Med*. 1996: SLACK INC 6900 GROVE RD, THOROFARE, NJ 08086.
 29. Gunasingha RM, Knudsen N, Scialla T, Shepherd A, Clay A. Vital conversations: an interactive conflict resolution training session for fourth-year medical students. *MedEdPORTAL*. 2021;17:11074.
 30. Chiarichiaro J, White DB, Ernecoff NC, Buddadhumaruk P, Schuster RA, Arnold RM. Conflict management strategies in the ICU differ between palliative care specialists and intensivists. *Crit Care Med*. 2016;44(5):934.
 31. Chiarichiaro J, Schuster RA, Ernecoff NC, Barnato AE, Arnold RM, White DB. Developing a simulation to study conflict in intensive care units. *Ann Am Thorac Soc*. 2015;12(4):526-32.
 32. Westcott S, Simms K, van Kampen K, Jafine H, Chan TM. Off-Script, Online: Virtual Medical Improv Pilot Program for Enhancing Well-being and Clinical Skills among Psychiatry Residents. *Acad Psychiatry*. 2023:1-6.
 33. Wolfe AD, Hoang KB, Denniston SF. Teaching conflict resolution in medicine: lessons from business, diplomacy, and theatre. *MedEdPORTAL*. 2018;14.
 34. Friend ML, Friend RD, Ford C, Ewell PJ. Critical care interprofessional education: exploring conflict and power—lessons learned. *J Nurs Educ*. 2016;55(12):696-700.
 35. Haraway DL, Haraway WM. Analysis of the effect of conflict-management and resolution training on employee stress at a healthcare organization. *Hosp Top*. 2005;83(4):11-7.
 36. Vandergoot S, Sarris A, Kirby N, Ward H. Exploring undergraduate students' attitudes towards interprofessional learning, motivation-to-learn, and perceived impact of learning conflict resolution skills. *J Interprof Care*. 2018;32(2):211-9.
 37. Kim S, Bochatay N, Relyea-Chew A, Buttrick E, Amdahl C, Kim L, et al. Individual, interpersonal, and organizational factors of healthcare conflict: a scoping review. *J Interprof Care*. 2017;31(3):282-90.

Appendix 1. PubMed Search Strategy.

```
((conflict[Title/Abstract]) AND (manag* [Title/Abstract] OR resolution[Title/Abstract])) AND (training [Title/Abstract] OR teaching [Title/Abstract] OR education [Title/Abstract] OR learning[Title/Abstract])) AND ("students, medical" [Title/Abstract] OR "medical student*" [Title/Abstract] OR "Education, Medical" [Title/Abstract] OR "medical education" [Title/Abstract] OR residen* [Title/Abstract] OR "medical Trainees"[Title/Abstract])
```