Review

An assessment of scoping review reporting within paramedicine: A scoping review

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<https://doi.org/10.33151/ajp.17.834>

Abstract

Aim

This study aimed to examine the quality of published paramedic scoping reviews against pre-existing frameworks to assess the extent to which they fulfil the requirements of this methodological approach. Subsequently, recommendations will be presented regarding improvements for future paramedic scoping reviews.

Methods

A scoping review was conducted guided by the PRISMA Extension for Scoping Reviews. A literature search was performed in six electronic databases as well as the grey literature to identify previous scoping reviews that focussed on paramedic or emergency medical service personnel. Relevant data were extracted from included articles and presented in narrative and tabular formats.

Results

The literature search initially identified 475 articles, of which 20 remained after title/abstract and full-text screening. There was a general increase in the number of studies published over time, the majority of articles (80%) had conducted their scoping review utilising published frameworks, and 75% of first authors were paramedics. Although many areas of these reports comply with published guidelines, there was an overall lack of consistency in the specific information included, the level of detail of that information, and the location of information within the reports.

Conclusion

All paramedic scoping studies should be reported with the use of a published framework to enable standardisation in the reporting, thus facilitating understanding, reproducibility, and utility. The PRISMA Extension for Scoping Reviews provides a checklist and thorough explanations of each step in the reporting process and is recommended for use with all future paramedic scoping reviews.

Keywords:

emergency medical technician; knowledge synthesis; methodology; paramedic; paramedicine; scoping review

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Introduction

The process of knowledge synthesis in discrete healthcare areas is important to enable progress and improvements in practice, research and policy, based on the best available evidence (1). Although many methods can be used to examine, summarise and amalgamate existing literature (2), the scoping review is one approach that is becoming increasingly common (3,4). This type of literature review aims to examine a broad base of literature comprehensively, and may be used to investigate the existing literature in a particular field as well as knowledge gaps, ascertain the value of performing a full systematic review, or to summarise research findings for wider dissemination (5). As opposed to a systematic review, a scoping review literature search is deliberately broad and thus may include additional sources of information such as the grey literature. Whereas a systematic review endeavours to provide answers to sharply focussed research questions, scoping reviews are commonly used to obtain an overview of a broader topic (6).

To enhance the methodological rigour and utility of results of a knowledge synthesis report, it should be guided by a standardised framework, checklist or guideline (7). Given the widespread use of scoping reviews, several methodological guidelines or frameworks have now been developed and published. The first framework proposed was developed by Arksey and O'Malley in 2005 (5). This methodology consists of six-stages: identifying the research question, identifying the relevant studies, study selection, charting the data, collating summarising and reporting the results, and consultation (optional). Since this seminal paper, several authors have proposed modifications to the original format. In 2010, Levac and colleagues (8) proposed amendments, and more recently, the Joanna Briggs Institute (JBI) has published a scoping review methodology (7,9). A significant difference of the JBI approach is that it involves the development of an a priori protocol to improve methodological rigour and clarity.

Scoping review methodology has continued to evolve, however, only recently have relevant evidence-based checklists appeared in the literature (6,10). A checklist published by Cooper et al (6) was developed within the nursing and midwifery professions, and a further scoping review checklist was recently developed via modification of the pre-existing PRISMA guidelines for the reporting of systematic reviews and meta-analyses (11). The PRISMA Extension checklist (PRISMA-ScR) for scoping reviews (12) contains 22 items. Due to an extensive development process (10), the multidisciplinary nature of experts involved, thorough explanations and examples for all items, and its endorsement by EQUATOR Network (www.equator-network.org/wp-content/uploads/2018/09/PRISMA-ScR-Fillable-Checklist-1.pdf), we have chosen to use the PRISMA-ScR checklist to guide the present study.

In the rapidly developing paramedic research environment, a scoping review is a valuable approach (8). However, there should be standardisation across studies to facilitate comprehension, interpretation, the utility of outcomes and knowledge translation (6,13). Thus, utilising the PRISMA-ScR, the aim of this study was to examine the quality and comprehensiveness of published paramedic scoping reviews to assess the extent to which they fulfil requirements of a standardised methodological approach, and make suggestions where improvements may be made for future studies.

Methods

Search strategy

The academic literature was comprehensively searched up to 31 March 2020, for relevant studies using six electronic databases: CINAHL, EMBASE, Medline, Proquest, Emcare and All EBM Reviews. Further grey literature was identified using Google Scholar, Trip and Trove databases. Terms used in the search were 'scoping review' / 'scoping study' and 'allied health personnel' / 'paramedic' / 'emergency medical technician' / 'EMS' / 'emergency medical service' / 'EMS'.

Study selection process

Studies were included if they were written in English, were full text, peer-reviewed, identified in the text as a scoping study/review, or reported using a pre-existing scoping review reporting framework (5,8,9). The main focus was on paramedic/emergency medical service personnel. No start date for the literature search was included as scoping reviews are a relatively recently utilised method. A study was excluded if it was a protocol, an abstract, a study with multidisciplinary cohorts (even if the paramedic cohort was analysed separately), or if the study topic was not primarily concerned with personnel (eg. paramedic procedures or apparatus).

Duplicates were removed, after which the remaining articles underwent independent screening by title/abstract by the two authors (BW, BB). The remaining articles were subject to full-text screening by the same authors. Any disagreements at all stages were resolved by discussion between the authors. The 20 articles remaining after this step were included in the final evaluation (Figure 1).

Data summary and synthesis

Data were extracted by one author (BB) from the included manuscripts into an Excel spreadsheet according to the predefined items of the PRISMA-ScR checklist (12). Data were also extracted from a random sample of 30% of the manuscripts by the co-author (BW) to check for inter-rater consistency. Any differences in charting or interpretation of the charting items were resolved by discussion. Descriptive statistics were utilised to describe data as appropriate, as well as a narrative account of results.

Figure 1. PRISMA flow diagram

Figure 2. Publication year of included paramedic scoping reviews (n=20)

Results

Literature search and selection

The literature search identified 475 articles, of which 379 remained after the removal of duplicates. After screening by title/abstract, 34 articles remained, with 20 articles remaining after the full-text screening. The main reasons for exclusion were: an abstract, multidisciplinary, not a scoping review, or the study assessed paramedic equipment or procedures (Figure 1).

General characteristics of included scoping review articles

The scoping studies included in this review were all published between 2014 and March 2020. These 20 publications appeared in 14 peer-reviewed journals, four of which were primarily paramedic in orientation. All were stand-alone projects, as opposed to serving as a prelude to a systematic review. Apart from 2018, there appears to be a general increase in the number of studies published over time, with five studies published in 2014 to 2016 and 14 publications in 2017 to 2019. The literature search was completed in early 2020, which accounts for the small number of publications in 2020 (Figure 2); 20% of articles were published in quartile 1 or 2 journals, as opposed to 45% which were published in journals with no quartile ranking. These 20 publications appeared in 14 peer-reviewed journals, four of which were primarily paramedic in orientation. All were stand-alone projects, as opposed to serving as a prelude to a systematic review. See Table 1 for included studies.

Sixty percent of articles stated that they had conducted their scoping review utilising the Arksey and O'Malley framework (5). Other frameworks used were that published by the Joanna Briggs Institute (15%) (34) and Levac (5%) (8), with 20% not declaring the use of any particular published framework or methodology. The most recently published of the articles (33) that utilised guidelines from the Joanna Briggs Institute (34) stated that it had also followed those of the PRISMA-ScR (12).

Eighty-five percent (17/20) of articles identified scoping methodology within the title. Of these, 16 identified as a 'scoping review' and one as a 'scoping study'; 75% of articles had a paramedic first author, with the remaining 25% were from the nursing profession. Authors from 85% of the articles were affiliated with Australian institutions, with two articles having affiliations with the US. New Zealand, Taiwan, Canada, Sweden, South Africa and Finland were represented on one paper each.

Reporting of included scoping review articles (PRISMA-ScR)

• Abstract

All but one paper (33), provided a structured summary within the abstract, however, the journal which published this article specified an unstructured abstract. No abstract included all information as outlined by the PRISMA-ScR checklist. The most common inadequacies were regarding charting methods (100% of articles) and eligibility criteria (90%).

• Introduction

In the introduction, a rationale should be provided both for context (ie. Why was the study performed?), as well as for methodology (ie. Why was a scoping review methodology chosen?). All of the articles provided a contextual rationale; however, only three provided information on why scoping review methodology was selected over another approach. However, of the 17 articles that did not provide this information in the introduction, 11 included some justification within the methods section of the paper. All articles included either aims, objectives, or research questions to guide their work; however, six articles included this information in the methods section.

• Methods

The PRISMA-ScR checklist recommends indicating if a priori protocol exists where this can be accessed as well as registration details. Only one of the articles (28) had published a protocol for their study; however, there was no mention of protocol registration. No other study stated whether a protocol had been previously developed. Eligibility criteria were included in the majority of articles (75%), with two including this information in the introduction rather than the methods section. Requirements for inclusion in the remaining articles were described either by the keywords used or given in general terms such as: 'This review considered all studies that include prehospital competencies developed to aid... by...' (19). No exclusion criteria were given in 20% of articles.

All studies described which databases were used in the literature search, with four of these describing additional consultation with corresponding authors or other content experts. The date of the most recent literature search was included in 55% of articles, although the details of this information were included in results and discussion sections in one article (33).

The full electronic search strategy for at least one database was included in 55% of articles. In contrast, many of the remaining articles included keywords that were used in the search but not the full search strategy. The process of selection of which articles remained in the study, including the number of people involved in screening, use of eligibility criteria, and how disagreement was resolved, were well explained by 30% of articles. Ninety percent of articles failed to include specific reasons for exclusion at each stage of screening and how many were excluded for each reason. Most often, general reasons were given for exclusion, such as the articles did not meet inclusion criteria. An explanation of how disagreements were resolved was absent in 70% of studies.

Information regarding data charting methods should include how many people were involved in the data extraction, any forms that were used (including any form pre-testing), and anything that was done to acquire or clarify data from the authors. The data items to be charted were mostly outlined in general terms or listed, but typically not further described, and the number of reviewers involved in data extraction and how disagreements

were handled mainly were omitted. One study reported using a pre-published data collection form (23), one using a 'standardised [Excel] data extraction form' (20), one extracted data into an Excel spreadsheet (33) and a further two studies stated that they used the framework developed by Arksey and O'Malley (5) for charting of data (25,26). The variables for which data were sought was listed in 70% of articles, and none performed a critical literature appraisal. The PRISMA-ScR checklist contends that the management and synthesis of extracted data should be discussed in the methods section, including how the information will be presented, for example, in a narrative or tabular form. Forty percent of articles gave no information about data handling and synthesis methods to be used within the methods section.

• Results

All articles provided results about the selection process for their sources, with all but one paper (which found no relevant articles) (26) including a flow diagram, with most utilising that recommended by the PRISMA Statement (13). Specific reasons for exclusion at each stage were often omitted, only that they did not comply with inclusion/exclusion criteria.

Results of single sources of evidence that relate to the review question should also be presented in the results section. All but two articles (30,33) which identified sources of evidence relevant to their research question (one study found none) (26) included characteristics of their sources of evidence such as each study's country of origin, cohort type and main findings – both articles which did not include these details presented summarised data in the form of thematic summary tables. Interestingly, 15% of the articles had no separate results section (21,23,32), so this information was included under the methods or the discussion sections.

The synthesis of results was presented in all articles with identified sources of evidence. Thirty-five percent of articles excluded a separate results section. The results in these cases were presented either in the methods or discussion sections.

• Discussion

All articles presented a summary of the evidence, including an overview of concepts and /or themes. It was evident that the discussion sections linked back appropriately to the proposed research questions or objectives.

• Study limitations, conclusions and funding

All articles except one (30) presented study limitations and all presented conclusions. Funding received was not specified in 65% of the articles. Of the remaining articles, five reported nil funding and two acknowledged they received funding.

Discussion

Scoping review methodology is an increasingly common process to synthesise the literature within the field of paramedicine. It is

relatively quick to perform and can provide valuable information, especially in areas of developing research literature such as within paramedicine (35,36). Although a developing area, the large percentage (75%) of paramedics as first authors in the included articles suggests the evolving growth and maturity of paramedic research. However, as 25% of first authors came from other health professions, it is clear that paramedic-focussed research requires further ongoing development, mentorship and professional support.

With the prospect of a continuation of scoping review usage, consistency and standardisation is an important issue. Previous studies should be examined to assess aspects that are well and poorly executed. In this way, recommendations may be made for future scoping reviews to enable consistency in their organisation, performance, presentation and interpretation. The examination of existing paramedic scoping reviews in the present study indicates that many areas of these reports comply with the PRISMA-ScR guidelines and are thoroughly completed. All articles included a contextual rationale in the introduction, which described reasons the study was undertaken, the databases used for the literature search, results of the selection process of paper inclusion, a synthesis of information in results, a summary of the evidence within the discussion and a conclusion. The other aspects that were typically completed appropriately were inclusion of a limitation section, characteristics of the sources of evidence such as country of origin/main findings and eligibility criteria used for study inclusion. The majority of studies declared the use of a published framework for the performance of scoping reviews, with most using Arksey and O'Malley's original methodological offering (5). The use of reporting frameworks or guidelines assists in writing research syntheses that are inclusive of the standardised information required to produce a high-quality review and enable a thorough understanding of all methods and results (35,37).

However, it was apparent that the included studies demonstrated an overall lack of consistency in the specific information included, the level of detail of that information, and the location of information within the report. Transparent, comprehensive reporting of research syntheses are valuable for understanding, interpretation and to enable reproduction of a study's methods by other researchers (38). Many of the articles included in this literature synthesis would not have facilitated study reproduction due to omission of such items as literature search dates, the inclusion of a full electronic search strategy, data handling and synthesis methods, and a full explanation of inclusion/exclusion criteria. This lack of a standardised approach was evident even when the same framework was used.

An a priori protocol was completed for only one of the studies (28). This particular study was one of the two studies which utilised the JBI scoping study guidelines (9), which advocates such a document to predefine the details of objectives and methods of the proposed study. However, it has been noted

that as scoping reviews have a broader nature compared with systematic reviews, some modifications to the protocol may be required during the performance of the study, which should be described in the final report (7). It is not surprising that the vast majority of studies had not written a formal proposal, as the most widely used framework does not suggest this procedure (5). However, to minimise duplication of a study and promote transparency, the PRISMA-ScR framework advocates that an a priori protocol be developed and registered, and the details included within the methods section of the scoping review (12). Unlike systematic review protocols that may register with The International Prospective Register of Systematic Reviews (PROSPERO), scoping reviews are not entitled to register on this platform (39). However, the Open Science Framework (35) may be accessed to register scoping review protocols.

The abstract section of most included studies was deficient in some information as outlined by the PRISMA-ScR, with the most common omissions being descriptions of charting methods used and eligibility criteria for inclusion of articles in the study. As the abstract is the only part of an article read by some, it should comprehensively describe the important points of the research, including all the steps of what was done and how these were done (40). The PRISMA-ScR provides a valuable checklist to ensure the inclusion of all relevant information within this part of a research report.

None of the articles examined in the present study included a critical appraisal of the articles included in their individual scoping studies, however, the explanation for the PRISMA-ScR states that this item is optional (12). Critical appraisal is generally considered a component of systematic reviews, where the risk of bias should be assessed within and across studies (13). The requirement for scoping studies to complete quality assessments on included articles has been discussed for many years (8). It has been suggested that the lack of this assessment makes the results of scoping studies more challenging to interpret, however assessment of the quality of various types of studies/information that may be included in a scoping study may be problematic (41). Table 2 shows the PRISMA-ScR checklist characteristics of articles included in this review.

There appear to be differing viewpoints regarding where various information should be located in this type of study. Regularly, items such as the research question were placed in the methods section instead of the introduction, and at times results were included in the methods area. Likewise, when the rationale behind the selection of scoping review methodology was included, approximately half of the articles included it in the methods rather than the introduction section. It was noteworthy that approximately one-third of articles did not include a separate results section, which resulted in the merging of results and discussion information. However, the conventional approach to writing a review of the literature specifies that results and discussion are written as separate entities (42), as does the PRISMA-ScR guidelines (12).

A scoping review that is informed by a reputable framework or guideline and appropriately performed is a logical and rigorous approach to the synthesis of existing research. It should not be viewed as a type of less comprehensive systematic review; it is a different construct (41) and can provide valuable information, especially in developing fields of research (35) such as paramedicine. The PRISMA-ScR is a comprehensive framework that promotes methodological rigour in the reporting of scoping reviews (35). Understanding and utility of the PRISMA-ScR are assisted by thorough explanations and examples given for each item (12). The requirement for clear examples to illustrate the steps of a scoping review has been previously identified (36).

Based on our results, which indicate that the reporting of existing paramedic scoping reviews is heterogeneous, it is proposed that:

- a) for the continued development and interpretation of scoping reviews, all paramedic scoping studies should be completed with the utilisation of a published framework, and that this framework is declared within the paper
- b) Although it is recognised that different journals have varying author instructions and expectations, the authors recommend that the PRISMA-ScR be used for scoping reviews whenever permitted by publishers
- c) it is suggested that scoping review protocols be registered with the Open Science Framework at <https://osf.io>.

Limitations

Although we considered our literature search to be comprehensive, the possibility remains that some articles may have been missed, particularly as the search was limited to English language publications. Also, many of the articles included in this review were published after the PRISMA-ScR became available and thus were unable to consider its use. A further limitation of this study is that our literature search strategy did not encompass all terms used throughout the world for out-of-hospital healthcare personnel.

Conclusion

This study provides an overview of existing scoping reviews that focussed on paramedic/emergency medical service personnel. The examination of these studies was guided by the PRISMA-ScR framework and explored the extent to which these reviews fulfil the requirements of this approach. Scoping review methodology is a valuable approach for knowledge synthesis, especially in developing areas of research such as paramedicine. The rapid increase in the utilisation of scoping reviews along with the heterogeneous nature of published studies indicates that it is important to report them rigorously and transparently to facilitate understanding, extrapolation and study reproduction. Adherence, where possible, to a standardised framework such as the PRISMA-ScR is recommended to enable this process.

Competing interests

The authors declare no competing interests. Each author of this paper has completed the ICMJE conflict of interest statement.

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Table 1. General characteristics of included scoping review articles (n=20)

Article title	Authors	First author profession	Author affiliation country	Year	Journal	Journal ranking
How are ambulance personnel prepared and supported to withhold or terminate resuscitation and manage patient death in the field? A scoping review (14)	Anderson, Slark, Gott	Nursing	New Zealand	2019	Australasian Journal of Paramedicine	Nil
Professionalism among paramedic students: achieving the measure or missing the mark? (15)	Bowen, Williams, Stanke	Paramedic	Australia	2017	Advances in Medical Education and Practice	Nil
What are the educational and curriculum needs for emergency medical technicians in Taiwan? A scoping review (16)	Chang, Tsai, Williams	Paramedic	Australia/ Taiwan	2017	Advances in Medical Education and Practice	Nil
Paramedic management of mental health-related presentations: a scoping review (17)	Emond, O'Meara, Bish	Nursing	Australia	2019	Journal of Mental Health	Q2
Improving paramedic confidence with paediatric patients: a scoping review (18)	Fowler, Beovich, Williams	Paramedic	Australia	2017	Australasian Journal of Paramedicine	Nil
Paramedic disaster health management competencies: a scoping review (19)	Horrocks, Hobbs, Tippet, Aitken	Nursing / emergency and disaster management	Australia	2019	Prehospital & Disaster Medicine	Q3
Quality indicators for evaluating prehospital emergency care: a scoping review (20)	Howard, Cameron, Wallis, Castren, Lindstrom	Paramedic	Sweden/ South Africa/ Australia	2018	Prehospital & Disaster Medicine	Q3
What is known about situational awareness in paramedicine? A scoping review (21)	Hunter, Porter, Williams	Paramedic	Australia / USA	2019	Journal of Allied Health	Q3
Pre-employment physical capacity testing as a predictor for musculoskeletal injury in paramedics: a review of the literature (22)	Jenkins, Smith, Stewart, Kamphuis	Paramedic	Australia	2016	Work: A Journal of Prevention, Assessment & Rehabilitation	Q4
Student paramedic experience of transition into the workforce: a scoping review (23)	Kennedy, Kenny, O'Meara	Paramedic	Australia	2015	Nurse Education Today	Q1
A scoping study and qualitative assessment of care planning and case management in community paramedicine (24)	Leyenaar, McLeod, Chan, et al	Paramedic	Canada	2018	Irish Journal of Paramedicine	Nil
Educational standards for training paramedics in ultrasound: a scoping review (25)	Meadley, Olausson, Delorenzo, et al	Paramedic	Australia	2017	BMC Emergency Medicine	Q1
Paramedic transition into an academic role in universities: a scoping review (26)	Munro, O'Meara, Kenny	Paramedic	Australia	2016	Journal of Paramedic Practice	Nil

Table 1. General characteristics of included scoping review articles (n=20) (continued)

Article title	Authors	First author profession	Author affiliation country	Year	Journal	Journal ranking
Community paramedics: a scoping review of their emergence and potential impact (27)	O'Meara	Paramedic	Australia	2014	International Paramedic Practice	Nil
Indicators to measure prehospital care quality: a scoping review (28)	Pap, Lockwood, Stephenson, Simpson	Paramedic	Australia	2018	JB I Database of Systematic Reviews and Implementation Reports	Q3
The core components of community paramedicine – integrated care in primary care setting: a scoping review (29)	Rasku, Kaunonen, Thyer, Paavilainenand, Joronen	Nursing	Australia / Finland	2019	Scandinavian Journal of Caring Sciences	Q2
Professionalism and professionalisation in the discipline of paramedicine (30)	Reed, Cowin, O'Meara, Wilson	Paramedic	Australia	2019	Australasian Journal of Paramedicine	Nil
Decision-making processes when paramedics refer low acuity patients away from hospital: a scoping review (31)	Sheffield, O'Meara, Verrinder	Paramedic	Australia	2016	Irish Journal of Paramedicine	Nil
Everyday dangers – the impact infectious disease has on the health of paramedics: a scoping review (32)	Thomas, O'Meara, Spelten	Paramedic	Australia	2017	Prehospital & Disaster Medicine	Q3
A scoping review of community paramedicine: evidence and implications for interprofessional practice (33)	Thurman, Moczygemba, Tormey, et al	Nursing	US	2020	Journal of Interprofessional Care	Q3

Table 2. PRISMA-ScR checklist characteristics of included articles

Scoping study ID	Items	Anderson, Slark, Gott (2019)	Bowen, Williams, Stanke (2017)	Chang, Tsai, Williams (2017)	Emond, O'Meara, Bish (2019)	Fowler, Beovich, Williams (2017)	Horrocks, Hobbs, Tippet, Aitken (2019)	Howard, Cameron, Wallis, Castron, Lindstrom (2018)
Scoping study title		How are ambulance personnel prepared and supported to withhold or terminate resuscitation and manage patient death in the field? A scoping review	Professionalism among paramedic students: achieving the measure or missing the mark?	What are the educational and curriculum needs for emergency medical technicians in Taiwan? A scoping review	Paramedic management of mental health related presentations: a scoping review	Improving paramedic confidence with paediatric patients: a scoping review	Paramedic disaster health management competencies: a scoping review	Quality indicators for evaluating prehospital emergency care: a scoping review
Title								
Scoping study title – identify the report as a scoping review	1	✓	x	✓	✓	✓	✓	✓
Abstract								
Structured summary	2	✓	✓	✓	✓	✓	✓	✓
Introduction								
Rationale	3	✓ contextual ✓ use of scoping study	✓ contextual x use of scoping study	✓ contextual x use of scoping study	✓ contextual x use of scoping study	✓ contextual x use of scoping study	✓ contextual x use of scoping study	✓ contextual x use of scoping study
Objectives	4	✓	✓	✓	✓	✓	✓	✓
Methods								
Protocol and registration	5	x	x	x	x	x	x	x
Eligibility criteria	6	✓	✓	x	✓	✓	x	✓
Information sources	7	✓	✓	✓	✓	✓	✓	✓
Search	8	x	x	✓	✓	✓	x	x
Selection of sources of evidence	9	✓	✓	✓	x	✓	✓	✓

Data charting process	10	✓	x	✓	✓	✓	✓	✓	✓
Data items	11	✓	x	✓	✓	✓	✓	✓	✓
Critical appraisal of individual sources of evidence	12	x	x	x	x	x	x	x	x
Synthesis of results	13	✓	x	x	✓	✓	✓	✓	✓
Results									
Selection of sources of evidence	14	✓	✓	✓	✓	✓	✓	✓	✓
Characteristics of sources of evidence	15	✓	✓	✓	✓	✓	✓	✓	✓
Critical appraisal within sources of evidence	16	x	x	x	x	x	x	x	x
Results of individual sources of evidence	17	✓	✓	✓	✓	✓	✓	✓	✓
Synthesis of results	18	✓	✓	✓	✓	✓	✓	✓	✓
Discussion									
Summary of evidence	19	✓	✓	✓	✓	✓	✓	✓	✓
Limitations	20	✓	✓	✓	✓	✓	✓	✓	✓
Conclusions	21	✓	✓	✓	✓	✓	✓	✓	✓
Funding									
Funding	22	ns	ns	ns	ns	ns	ns	ns	ns
Scoping study ID	Items	Hunter, Porter, Williams (2019)	Jenkins, Smith, Stewart Kamphuis (2016)	Kennedy, Kenny, O'Meara (2015)	Leyenaar, McLeod, Chan, et al (2018)	Meadley, Olausson, Delorenzo, et al (2017)	Munro, O'Meara, Kenny (2016)	O'Meara (2014)	

Scoping study title	What is known about situational awareness in paramedicine? A scoping review	Pre-employment physical capacity testing as a predictor for musculoskeletal injury in paramedics: a review of the literature	Student paramedic experience of transition into the workforce: a scoping review	A scoping study and qualitative assessment of care planning and case management in community paramedicine	Educational standards for training paramedics in ultrasound: a scoping review	Paramedic transition into an academic role in universities: a scoping review	Community paramedics: a scoping review of their emergence and potential impact
Title							
Scoping study title – identify the report as a scoping review	1	✓	x	✓	✓	✓	✓
Abstract							
Structured summary	2	✓	✓	✓	✓	✓	✓
Introduction							
Rationale	3	✓ contextual x use of scoping study	✓ contextual x use of scoping study	✓ contextual x use of scoping study	✓ contextual x use of scoping study	✓ contextual x use of scoping study	✓ contextual ✓ use of scoping study
Objectives	4	✓	✓	✓	✓	✓	✓
Methods							
Protocol and registration	5	x	x	x	x	x	x
Eligibility criteria	6	x	x	✓	✓	✓	✓
Information sources	7	✓	✓	✓	✓	✓	✓
Search	8	✓	x	x	✓	x	✓
Selection of sources of evidence	9	✓	x	x	✓	x	x
Data charting process	10	✓	x	✓	✓	✓	✓
Data items	11	✓	x	✓	✓	✓	✓

Critical appraisal of individual sources of evidence	12	x	x	x	x	x	x	x	x
Synthesis of results	13	x	x	x	x	x	x	✓	x
Results									
Selection of sources of evidence	14	✓	✓	✓	✓	✓	✓	✓	✓
Characteristics of sources of evidence	15	✓	✓	✓	✓	✓	✓	n/a	✓
Critical appraisal within sources of evidence	16	x	x	x	x	x	x	n/a	x
Results of individual sources of evidence	17	✓	✓	✓	✓	✓	✓	n/a	✓
Synthesis of results	18	✓	✓	✓	✓	✓	✓	n/a	✓
Discussion									
Summary of evidence	19	✓	✓	✓	✓	✓	✓	✓	✓
Limitations	20	✓	✓	✓	✓	✓	✓	✓	✓
Conclusions	21	✓	✓	✓	✓	✓	✓	✓	✓
Funding									
Funding	22	nil	nil	nil	nil	nil	✓	nil	ns
Scoping study ID	Items	Pap, Lockwood, Stephenson, Simpson (2018)	Rasku, Kaunonen, Thyer, Paavilainen, Joronen (2019)	Reed, Cowin, O'Meara, Wilson (2019)	Sheffield, O'Meara, Verrinder (2016)	Thomas, O'Meara, Spelten (2017)	Thurman, Moczygmba, Torney, et al (2020)		

Scoping study title	Indicators to measure prehospital care quality: a scoping review	The core components of community paramedicine – integrated care in primary care setting: a scoping review	Professionalism and professionalisation in the discipline of paramedicine	Decision-making processes when paramedics refer low acuity patients away from hospital: a scoping review	Everyday dangers – the impact infectious disease has on the health of paramedics: a scoping review	A scoping review of community paramedicine: evidence and implications for interprofessional practice
Title						
Scoping study title – identify the report as a scoping review	1	✓	x	✓	✓	✓
Abstract						
Structured summary	2	✓	✓	✓	✓	x
Introduction						
Rationale	3	✓ contextual x use of scoping study	✓ contextual x use of scoping study	✓ contextual x use of scoping study	✓ contextual x use of scoping study	✓ contextual x use of scoping study
Objectives	4	✓	✓	✓	✓	✓
Methods						
Protocol and registration	5	✓	x	x	x	x
Eligibility criteria	6	✓	✓	✓	✓	✓
Information sources	7	✓	✓	✓	✓	✓
Search	8	✓	✓	✓	✓	✓
Selection of sources of evidence	9	✓	x	x	x	✓
Data charting process	10	✓	x	x	✓	✓
Data items	11	✓	x	x	x	✓
Critical appraisal of individual sources of evidence	12	x	x	x	x	x

Synthesis of results	13	✓	✓	x	x	✓	x	✓	✓
Results									
Selection of sources of evidence	14	✓	✓	✓	✓	✓	✓	✓	✓
Characteristics of sources of evidence	15	✓	✓	x	✓	✓	✓	✓	x
Critical appraisal within sources of evidence	16	x	x	x	x	x	x	x	x
Results of individual sources of evidence	17	✓	✓	x	✓	✓	✓	✓	x
Synthesis of results	18	✓	✓	✓	✓	✓	✓	✓	✓
Discussion									
Summary of evidence	19	✓	✓	✓	✓	✓	✓	✓	✓
Limitations	20	✓	✓	x	✓	✓	✓	✓	✓
Conclusions	21	✓	✓	✓	✓	✓	✓	✓	✓
Funding									
Funding	22	✓	ns	ns	nil	ns	ns	ns	ns

ns = not specified; n/a = not applicable (no articles deemed relevant to include)