**Supplementary methods and results to “Patient, Public, and Healthcare Professional’s Sepsis Awareness, Knowledge, and Information Seeking Behaviors: A Scoping Review”**

**Supplementary Table 1.** Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

| **SECTION** | **ITEM** | **PRISMA-ScR CHECKLIST ITEM** | **REPORTED ON PAGE #** |
| --- | --- | --- | --- |
| **TITLE** | | | |
| Title | 1 | Identify the report as a scoping review. | Page 1 |
| **ABSTRACT** | | | |
| Structured summary | 2 | Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives. | Page 2 |
| **INTRODUCTION** | | | |
| Rationale | 3 | Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach. | Page 3 |
| Objectives | 4 | Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives. | Page 3 |
| **METHODS** | | | |
| Protocol and registration | 5 | Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number. | Page 4 |
| Eligibility criteria | 6 | Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale. | Page 4 |
| Information sources\* | 7 | Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed. | Page 4 |
| Search | 8 | Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated. | Supplementary File 1 |
| Selection of sources of evidence† | 9 | State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review. | Page 5 |
| Data charting process‡ | 10 | Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators. | Pages 5-6 |
| Data items | 11 | List and define all variables for which data were sought and any assumptions and simplifications made. | Pages 5-6 |
| Critical appraisal of individual sources of evidence§ | 12 | If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate). | Not applicable |
| Synthesis of results | 13 | Describe the methods of handling and summarizing the data that were charted. | Pages 5-6 |
| **RESULTS** | | | |
| Selection of sources of evidence | 14 | Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram. | Page 6, Figure 1 |
| Characteristics of sources of evidence | 15 | For each source of evidence, present characteristics for which data were charted and provide the citations. | Pages 6-11 |
| Critical appraisal within sources of evidence | 16 | If done, present data on critical appraisal of included sources of evidence (see item 12). | Not applicable |
| Results of individual sources of evidence | 17 | For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives. | Pages 6-11, Figure 2, Figure 3 |
| Synthesis of results | 18 | Summarize and/or present the charting results as they relate to the review questions and objectives. | Pages 6-11, Figure 2, Figure 3, Table 1, Table 2 |
| **DISCUSSION** | | | |
| Summary of evidence | 19 | Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups. | Page 12-13 |
| Limitations | 20 | Discuss the limitations of the scoping review process. | Page 14 |
| Conclusions | 21 | Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps. | Page 14 |
| **FUNDING** | | | |
| Funding | 22 | Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review. | Page 15 |

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

\* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O’Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting*.*

§The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

*From:* Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. [doi: 10.7326/M18-0850](http://annals.org/aim/fullarticle/2700389/prisma-extension-scoping-reviews-prisma-scr-checklist-explanation).

**Appendix 1.** MEDLINE search strategy for data sources reporting sepsis awareness, knowledge, and information seeking behaviors among patients, public, and healthcare professionals.

1. exp Sepsis/
2. exp Shock, Septic/
3. (sepsis or (septic\* adj3 shock\*)).tw.
4. 1 or 2 or 3
5. exp Information Seeking Behavior/
6. exp Information Literacy/
7. exp Consumer Health Information/
8. exp Patient Education As Topic/
9. exp Education, Medical/
10. exp Education, Professional/
11. exp Education, Continuing/
12. exp Health Communication/
13. (information adj seeking adj behavior).tw.
14. (information adj literacy).tw.
15. (consumer adj health adj information).tw.
16. (patient adj (knowledge\* or  education)).tw.
17. (professional\* adj5 (knowledge\* or educat\* or training)).tw.
18. (provider\* adj5 (knowledge\* or educat\* or training)).tw.
19. ((physician\* or resident\* or fellow\* or registrar\* or nurs\* or doctor\* or physiotherap\* or therapist\* or surgeon\* or practitioner\*) adj5 (knowledge\* or educat\* or training)).tw.
20. (("Allied Health Occupation\*" or "Health Occupation\*" or “Allied Health\*”) adj5 (knowledge\* or educat\* or training)).tw.
21. (health adj communication).tw.
22. (information adj need\*).tw.
23. (information adj seeking).tw.
24. or/5-23
25. exp Attitude to Health/
26. exp Health Knowledge, Attitudes, Practice/
27. exp Health Promotion/
28. exp Health Literacy/
29. exp Health Education/
30. exp Awareness/
31. (health adj promotion).tw.
32. (health adj literacy).tw.
33. (knowledge adj2 attitude\* adj2 perception\*).tw.
34. (knowledge adj2 attitude\* adj2 practice\*).tw.
35. (public adj health adj campaign).tw.
36. campaign.tw.
37. ((education\* or training) adj program\*).tw.
38. World Sepsis Day.tw.
39. Surviving Sepsis Campaign.tw
40. (health adj education).tw.
41. exp Attitude of Health Personnel/
42. (knowledge adj7 sepsis).tw.
43. (awareness adj4 sepsis).tw.
44. (sepsis adj initiative).tw.
45. or/25-44
46. 24 or 45
47. 4 and 46

**Supplementary Table 2.** Study characteristics

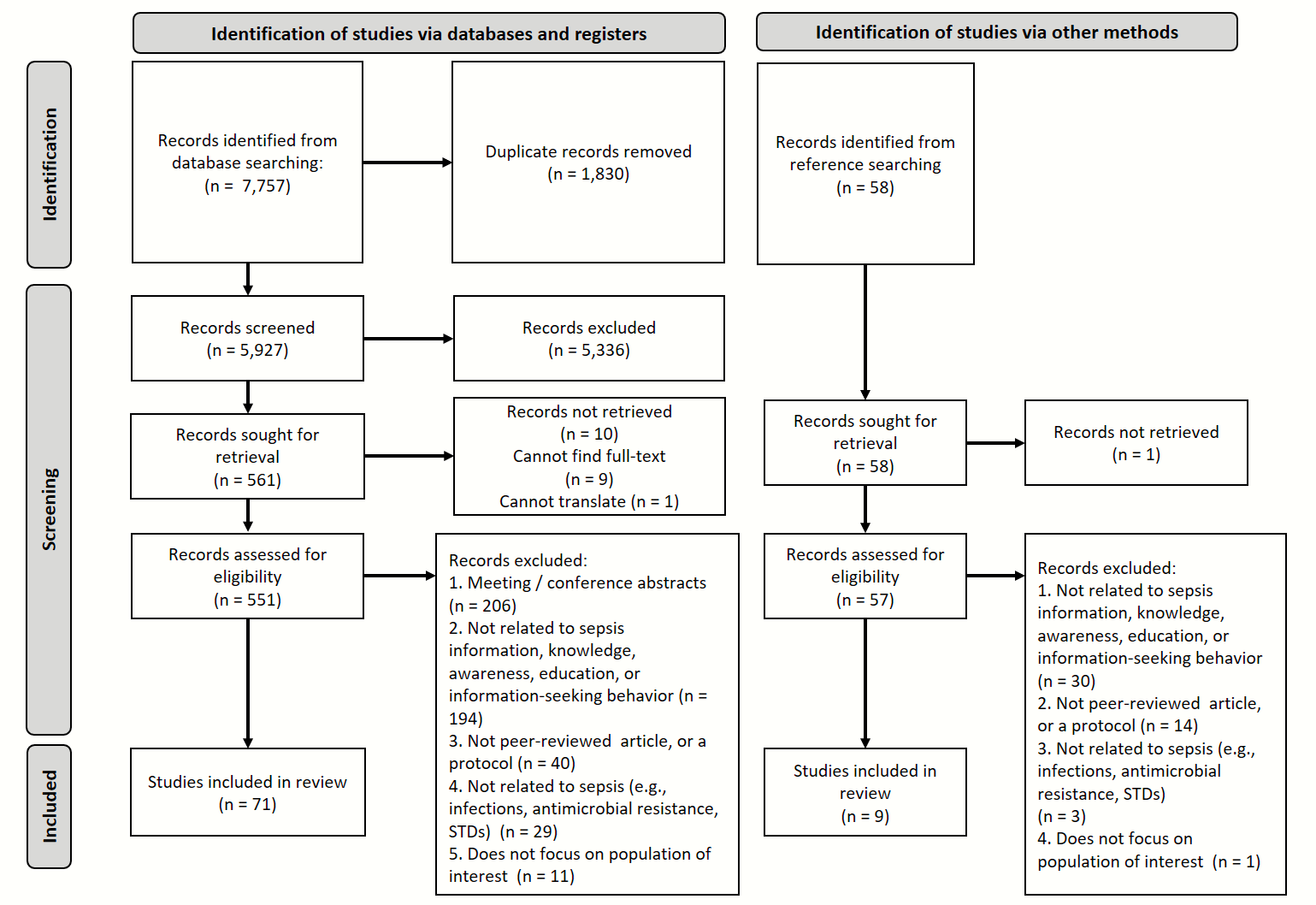
|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Study**  **(Year)** | **Continent (Country)** | **Population (n)** | **Study**  **Design** | **Sepsis**  **Awareness** | **Definition** | **Signs** | **Mode/**  **information seeking** | **Mortality** | **Risk factors** | **Conclusions** |
| **Healthcare Providers** | | | | | | | | | | |
| Adegbite (2021)1 | Africa  (Gabon) | HCP  (115) | Cross-sectional | 🗶 | ✓ | ✓ | 🗶 | 🗶 | 🗶 | Most health workers from seven health facilities in Gabon, Africa have never heard of the Sepsis-3 definition, with only half able to select the valid definition of sepsis ("sepsis is a life-threatening organ dysfunction caused by a dysregulated host response to infection"). A higher proportion of physicians were able to select the correct answers when compared to nurses and nurse assistants. |
| Baez  (2013)2 | North America (USA) | HCP  (226) | Cross-sectional | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | 🗶 | Poor understanding of the principles of diagnosis and management of sepsis was observed in this cohort, suggesting the need for enhancement of education. |
| Breuer (2018)3 | North America (USA) | HCP  (302) | Cross-sectional | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | There are deficits in healthcare professional's ability to identify sepsis correctly and confidently, with RTs reporting more discomfort than other healthcare professionals. |
| Breuer (2020)4 | North America (USA) | HCP  (245) | Prospective | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | Multidisciplinary curriculum including electronic resources and a poster campaign improved sepsis-related knowledge and attitude among pediatric practitioners. |
| Brizuela  (2020)5 | Multiple  (46 low, middle, and high-income countries Africa, Asia, Eastern Mediterranean, Europe, Latin America) | HCP  (2188 surveys (1155 baseline, 1033 post campaign) | Pre-post-test | ✓ | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | The STOP SEPSIS! awareness campaign contributed to healthcare professionals having heard of maternal sepsis and reporting more confidence in making right decisions. |
| Brizuela  (2019)6 | Multiple  (53 low, middle- and high-income countries Africa, Asia, East Mediterranean, Europe, Latin America) | HCP  (13) | Qualitative content analysis/  survey | ✓ | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | There was low knowledge of identification of maternal sepsis and low perception of confidence in making right decisions regarding maternal sepsis, except for nurses who, while reporting low levels of overall knowledge, reported higher levels of confidence, perception of availability of resources, and feeling of support for making the right decisions, compared to physicians. Overall, the main factors influencing healthcare professional awareness were training and qualifications, and the region to which they belonged. |
| Brostoff  (2010)7 | Europe  (UK) | HCP  (26) | Cross-sectional survey | 🗶 | ✓ | ✓ | 🗶 | 🗶 | 🗶 | The ability of FY1 physicians to identify sepsis is poor, necessitating an intervention to increase their ability to recognize sepsis. |
| Calderon  (2021)8 | North America  (USA) | HCP  (724) | Quality improvement-Mixed methods (qualitative interviews & knowledge survey) | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | A multi-intervention strategy including education webinars, virtual and on-site one-to-one coaching, facilitation of peer-to-peer sharing of sepsis information, and patient education tools resulted in a substantial increase in nursing staff sepsis knowledge. |
| Evans  (2015)9 | North America (USA) | HCP  (156) | Pre-post-test | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | The mobile, online game was successfully disseminated worldwide, and it improved local learners’ knowledge, skills and attitudes related to sepsis identification and management. |
| Gehrke-Beck  (2021)10 | Europe (Germany) | HCP  (14) | Qualitative (nested in an RCT) | 🗶 | 🗶 | 🗶 | 🗶 | ✓ | 🗶 | The education component of the intervention for GP provided a knowledge booster for dealing with patients’ post-sepsis. Barriers include finding time for GPs to attend the sessions and this should be considered. Proper training will put GPs in a strong position to care for patients’ post-ICU. |
| Ghazal (2019)11 | Asia  (Saudi Arabia) | HCP  (198) | Cross-sectional | ✓ | ✓ | ✓ | 🗶 | 🗶 | 🗶 | More than half of the participants were aware of the term “sepsis.” However, none of the first-degree providers had a higher understanding level of sepsis signs and symptoms.  Less than half of the participants were able to correctly define sepsis, especially EMTs when compared to paramedics. |
| Goulart  (2019)12 | South America (Brazil) | HCP  (30) | Descriptive, Cross-sectional | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | 🗶 | Nurses do not have sufficient knowledge about the sepsis-3 definitions and updates of surviving sepsis campaign (SSC). |
| Hanaa  (2017)13 | Africa  (Egypt) | HCP  (90) | Descriptive exploratory research design | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | There is a knowledge deficit amongst nurses in several key areas of SIRS/sepsis recognition, knowledge of systemic inflammatory response syndrome and sepsis. |
| Harley  (2019)14 | Oceania  (Australia) | HCP  (14) | Qualitative design  (semi-structured interviews) | 🗶 | ✓ | ✓ | 🗶 | 🗶 | 🗶 | Nurses interviewed in this study often struggled to recognise and escalate patients with sepsis and were unable to identify sepsis screening and diagnostic tools.  Organisational factors were identified as a significant barrier to recognising and responding to patients with sepsis in the ED. |
| Harley  (2021)15 | Oceania  (Australia) | HCP  (237) | Cross-sectional | 🗶 | ✓ | ✓ | 🗶 | 🗶 | 🗶 | Australian nursing student’s had significant gaps in knowledge. Knowledge was minimal on paediatric sepsis. There also are significant gaps in the teaching of sepsis, including recognition and response to sepsis undermining the potential use of physiological parameters that inform screening tools, guidelines, and pathways. |
| Hasan  (2020)16 | Asia  (Iraq) | HCP  (50) | Descriptive survey design | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | 🗶 | Overall, neonatal nurses were fairly knowledge about prevention of sepsis. Educational attainment and training course affected knowledge. |
| Hewamalage (2019)17 | Asia  (Sri Lanka) | HCP  (81) | Descriptive Cross-sectional | 🗶 | ✓ | ✓ | 🗶 | 🗶 | ✓ | Seventy three percent of the nurses had an overall good knowledge on neonatal sepsis and the rest had a satisfactory knowledge. Knowledge deficiencies were identified regarding risk factors for neonatal sepsis, initial action upon identification of sepsis and the cues in identifying sepsis. No significant association was found between the knowledge on neonatal sepsis and the institute of training or duration of exposure. However, some degree of association was tracked between the unit of work and knowledge on sepsis. |
| Jeffery  (2014)18 | North America  (USA) | HCP  (242) | Cross-sectional, quantitative, descriptive, correlational, design  Survey | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | Participants were able to recognize septic shock but were unable to identify the earlier stages of the sepsis continuum. Nurses feel comfortable recognizing the signs/symptoms of this disease state, yet they may not actually have the required knowledge to be correct in their assessment. |
| Kaur  (2014)19 | Asia  (India) | HCP  (60) | Pre-post-test | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | The present study demonstrates the effectiveness in improving the knowledge regarding puerperal sepsis among female health workers. It is recommended that such teaching interventions should be regularly planned and implemented for puerperal sepsis among health workers in enhancing their knowledge, so that they become able to identify and manage puerperal sepsis cases at earliest stage. |
| Maczuga  (2020)20 | Europe  (Poland) | HCP  (100) | Cross-sectional | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | 🗶 | The general knowledge of nurses of sepsis is quite good. Most of the respondents answered correctly to questions about definition of sepsis and septic shock, causes of sepsis and relevant laboratory parameters. Unfortunately, more detailed questions, about diagnostic criteria, or chances of complete cure, caused more difficulties. Some responders lack up-to-date knowledge about sepsis and septic shock. |
| McMenamin  (2013)21 | Europe  (UK) | HCP  (NA) | Social media review | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | Twitter is an example of a global platform upon which interested individuals or institutions can disseminate innovations, guidelines, and clinical expertise. |
| Melech  (2016)22 | South America (Brazil) | HCP  (92) | Field Study with quantitative approach | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | Knowledge about sepsis, severe sepsis, and septic shock by professionals of nursing and medicine working the urgent and emergency units is still restricted and should be expanded. |
| Mulders  (2021)23 | Europe  (Netherlands) | HCP  (229) | Cross-sectional | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | Even though various screening tools exist to improve sepsis recognition, most GPs use gut feeling to diagnose sepsis. GPs are frequently not familiar with the ‘sepsis-criteria’ used in hospital settings and recognition of sepsis varied greatly between GP. |
| Muñoz  (2018)24 | South America (Brazil) | HCP  (59) | Cross-sectional | 🗶 | ✓ | ✓ | 🗶 | 🗶 | 🗶 | Though medical residents of a university hospital report knowing the consensus on sepsis, their level of knowledge related to sepsis and septic shock were unsatisfactory. |
| Obaid  (2016)25 | Asia  (Iraq) | HCP  (64) | Cross-sectional | 🗶 | ✓ | ✓ | 🗶 | 🗶 | ✓ | More than half of the nurses have acceptable level of knowledge about neonatal sepsis and how to prevent it, with a significant positive association between nurses' sepsis knowledge and their educational level, years of experience, or prior sepsis training. |
| Olander  (2021)26 | Europe  (Sweden) | HCP  (19) | Qualitative | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | Experience is an important influence in the assessment and suspicion of a patient having sepsis (in line with a previous study about RNs in the ED and sepsis).  Staff develop an ability over time to make assessments of patient signs and symptoms that remind them of previous similar patients, although they had difficulties specifying particular signs or symptoms that make them suspect sepsis but instead needed to look at the broad picture including patient's life story.  They also found assessment difficult when signs and symptoms were vague and not confirmed by guidelines (may indicate need for more knowledge regarding interpretation of vague signs and to follow guidelines less strictly). |
| Olowokere  (2018)27 | Africa (Nigeria) | HCP  (300) | Cross-sectional | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | Most healthcare professionals had a good level of knowledge on the causes, signs, prevention, and management of neonatal sepsis. There was significant association between the respondents' knowledge of neonatal sepsis and their profession and institution. |
| O'Shaughnessy  (2017)28 | North America (USA) | Pre-survey:  Hospital 1: 34/44 (77.3)  Hospital 2: 17/28 (63.5)  Post-survey:  Hospital 1: 34/44 (77.3)  Hospital 2: 19/28 (67.9) | Quality improvement/pre-post survey | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | Education of nursing and allied health staff is paramount to successful screening. Screening improved, adherence to provider notification improved and nursing knowledge related to sepsis identification improved. |
| Park  (2017)29 | Asia  (South Korea) | HCP  (255) | Cross-sectional | ✓ | ✓ | ✓ | 🗶 | 🗶 | 🗶 | Appropriate knowledge and perceptions regarding sepsis care were insufficient among EMS personnel in Korea. EMS personnel who were actively willing to be involved in sepsis care before hospital arrival showed better knowledge and perception of sepsis compared to those who did not. |
| Peltola  (2013)30 | Africa  (Malawi) | HCP  (115) | Cross-sectional | 🗶 | ✓ | ✓ | 🗶 | 🗶 | ✓ | Malawi healthcare professionals are not aware of the Surviving Sepsis Campaign. More training measures such as a special sepsis course on World Sepsis Days may help improve Malawi healthcare professional knowledge. |
| Poeze  (2004)31 | Multiple  (France, Germany, Italy, Spain, UK, North America [USA]) | HCP  (1058) | Cross-sectional | 🗶 | ✓ | ✓ | 🗶 | ✓ | 🗶 | Most physicians consider sepsis a leading cause of ICU mortality and are aware of the lack of a common definition of sepsis. |
| Polito  (2017)32 | North America (USA) | HCP  (329) | Cross-sectional | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | This study highlights several areas for improvement in prehospital sepsis care: 1) Education and training for first responders, 2) Protocol development, and 3) Coordination of EMS sepsis screening with prehospital communication to the receiving ED. Future studies should incorporate these findings into improvement efforts. |
| Praharaj  (2020)33 | Asia  (India) | HCP  (120) | Pre-post-test | 🗶 | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | Students had moderate knowledge on neonatal sepsis and have less knowledge in some areas of neonatal sepsis. Thus, a self-instructional module was used to improve the knowledge of students so they can practice it in the hospital. |
| Qasim  (2020)34 | Asia  (Iraq) | HCP  (60) | Pre-post-test | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | Nurses-midwives knowledge about puerperal sepsis is poor but improved after implementation of an educational program about prevention of puerperal sepsis. |
| Robson (2007)35 | Europe  (UK) | HCP  (73) | Cross-sectional | 🗶 | ✓ | ✓ | 🗶 | 🗶 | 🗶 | Some ward nurses had poor knowledge of the signs and symptoms of sepsis. Targeted education interventions are needed to raise sepsis awareness. |
| Seymour  (2012)36 | Asia  (Japan) | HCP  (786) | Cross-sectional | ✓ | ✓ | 🗶 | 🗶 | ✓ | 🗶 | Most EMS personnel had heard of sepsis and the majority correctly identified sepsis as having greater hospital mortality than stroke, myocardial infarction, or trauma. Knowledge of sepsis was less among EMTs compared to paramedics. |
| Shen  (2014)37 | Asia  (Taiwan) | HCP  (59394) | Matched cohort study | ✓ | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | Physicians are less likely than controls to develop or die of severe sepsis, implying that medical knowledge, higher disease awareness, and easier healthcare access in physicians may help reduce their risk of severe sepsis and associated mortality. |
| Shime  (2015)38 | Asia  (Japan) | HCP  (208) | Cross-sectional | ✓ | ✓ | ✓ | ✓ | ✓ | 🗶 | There is a need to educate prehospital healthcare professionals to improve their knowledge of sepsis which may, in turn, improve sepsis morbidity and mortality. |
| Shime  (2012)39 | Asia  (Japan) | HCP  (558) | Cross-sectional | ✓ | ✓ | 🗶 | ✓ | ✓ | 🗶 | There is room for improving knowledge about sepsis for lay people and for health care personnel who are not critical care professionals. |
| Silva  (2017)40 | South America (Brazil) | HCP  (80) | Cross-sectional | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | Nursing staff in a Brazilian hospital had a lack of knowledge of Sepsis, with 40% identifying the concept of sepsis according to the Instituto Latino Americano de Sepse, necessitating additional training. |
| Stamataki  (2014)41 | Europe (Greece) | HCP  (835) | Cross-sectional | 🗶 | 🗶 | ✓ | 🗶 | ✓ | 🗶 | Knowledge of systemic inflammation and sepsis is only satisfactory among Greek registered nurses both at college and university level and among ICU and non-ICU personnel. There is a need for continuous updating of educational programmes. |
| Storozuk  (2019)42 | North America  (Canada) | HCP  (312) | Cross-sectional | 🗶 | ✓ | ✓ | 🗶 | ✓ | ✓ | Nurses had a limited knowledge of sepsis definitions, general sepsis knowledge and treatment of sepsis. Educational programs are necessary to enhance nurses’ existing sepsis knowledge. |
| Van den Hengel  (2016)43 | Europe (Netherlands) | HCP  (216) | Cohort | ✓ | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | Knowledge of ED nurses concerning SIRS and sepsis rises proportionately with the level of ICUs in hospitals. Regular sepsis education should be emphasized in hospitals with low exposure rate to sepsis. |
| Woods  (2019)44 | North America (USA) | HCP  (574) | Pre-post-test with an eLearning intervention | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | The implementation of an online learning module increased the sepsis knowledge of pediatric healthcare providers up to three months after completion of the module. Some challenges were reported in finding and incentivizing time for providers to complete the online module. |
| Woolley (2020)45 | Europe  (UK) | HCP  (357) | Cross-sectional survey | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | While a majority of dental health care professionals were aware of sepsis, far fewer reported that they had the knowledge to recognize, or confidence to manage sepsis, in practice. This study demonstrates that there are gaps in education and training for sepsis management for dental professionals. |
| Yousefi  (2012)46 | Asia  (Iran) | HCP  (64) | Quasi-experimental; 2 groups, 3 stages | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | Use of an education program increased ICU nurses’ knowledge and attitude towards sepsis. Short education sessions may be a feasible way to increase knowledge in the nursing profession. |
| Ziglam  (2006)47 | Europe (Scotland) | HCP  (133) | Descriptive - Cross-sectional questionnaire (1999) & interview survey (2003) | 🗶 | ✓ | ✓ | 🗶 | 🗶 | 🗶 | There were few junior doctors that could correctly identify the correct definitions for the various stages of sepsis. This indicates a need for more training and education in the curriculum. |
| **Patients** | | | | | | | | | | |
| Belgundkar  (2021)48 | Asia  (India) | Patients  (40) | Pre-post-test | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | Post natal mothers gained knowledge when compared to previous knowledge (before nurse intervention). |
| Bray  (2021)49 | North America (USA) | Patients  (NR) | Quality improvement project (rapid cycle) | 🗶 | ✓ | ✓ | 🗶 | 🗶 | 🗶 | Nurse provisioned sepsis education with teach-back improved patients with sepsis knowledge on body temperature to report, ways to prevent infection, definitions, and signs of sepsis to recognize. |
| Chhetri  (2018)50 | Asia (Nepal) | Patients  (130) | Cross-sectional | 🗶 | ✓ | ✓ | 🗶 | 🗶 | ✓ | Most past natal mothers had a moderate level of knowledge of sepsis. There was significant association between the level of knowledge and age. |
| Clarke  (2015)51 | Europe (UK) | Patients  (32) | Qualitative interviews | 🗶 | 🗶 | ✓ | ✓ | 🗶 | 🗶 | There are substantial gaps in patient willingness to seek medical attention upon neutropenic sepsis symptom onset. Strategies such as improving patient education, support, and pre-hospital management may prevent delays in neutropenic sepsis care. |
| Doherty  (2021)52 | Europe (UK) | Patients  (NA) | Leaflet creation | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | A pamphlet created to increase awareness of sepsis in people with learning disabilities may prevent avoidable deaths from sepsis among people with learning disabilities. |
| Gallop  (2015)53 | Europe (UK)/North America (USA) | Patients  (39) | Qualitative | ✓ | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | Patients hospitalized with sepsis and their caregivers lacked awareness of diagnosis and understanding of severe sepsis, including information about what to expect during recovery after sepsis. |
| Kumar  (2019)54 | Asia  (India) | Patients  (100) | Cross-sectional | 🗶 | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | Health education programs on prevention of puerperal (postpartum) complication can improve the knowledge of postnatal and aid the same by decrease the incidence of puerperal (postpartum) complications. |
| Haith-Cooper  (2020)55 | Europe (UK) | Patients  (15) | Qualitative | ✓ | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | After viewing DAISI all participants could recall key messages and thought it was an acceptable and culturally appropriate tool for sepsis education. Participants were positive that the intervention was a good tool for women in their post-natal period to reduce risk of sepsis. |
| Higgins  (2008)56 | Europe (UK) | Patients  (57) | Quality Improvement Initiative | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | Patients were satisfied with an alert card designed to provide information about signs and symptoms of neutropenic sepsis. Implementation of the card has resulted in collaboration between HCPs and raised awareness of the susceptibility of this group to life-threatening complications. |
| Nguyen  (2017)57 | Europe (France) | Patients  (146)  Surrogates  (169) | Longitudinal Prospective study | ✓ | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | Sepsis remains a relatively unknown term to the public. Proxies of patients with sepsis are mostly likely to engage in health-related internet utilization if they have used the internet for health-related searches prior, and as a tool to enhance discussions with physicians. |
| Schorr  (2018)58 | North America (USA-Cooper University & Drexel University) | Patients  (9) | Descriptive research design | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | The CDC’s Sepsis Fact Sheet is an effective educational tool that may be used to increase patients’ and caregivers’ knowledge of sepsis (understandability). Additionally, the findings demonstrate that the fact sheet effectively supports patients’ and caregivers’ abilities to respond appropriately to signs and symptoms of sepsis, including awareness of when to seek medical assistance (actionability). The appraisal noted some improvements were necessary in providing a summary, removing distracting images and simplifying some language. |
| Wilkes  (2008)59 | Oceania (Australia) | Patients  (62) | Cross-sectional survey | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | Over half of participants surveyed had good knowledge of sepsis risks after splenectomy (as the removal of the spleen impacts your immune system). However, there are still knowledge deficiencies that could be addressed with additional patient education. |
| Schmidt  (2016)60 | Europe (Germany) | Patients  (291) | Randomized controlled trial | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | Among survivors of sepsis or septic shock, the use of a primary-care-focused team-based intervention, compared with usual care, did not improve mental health related quality of life, and did not change primary care physician care. |
| **Public** | | | | | | | | | | |
| Al-Orainan  (2020)61 | Asia  (Saudi Arabia) | Public  (1354) | Cross-sectional | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Public awareness of sepsis and knowledge of sepsis symptoms and risk factors is low among the public of the city of Jeddah in Saudi Arabia, compared to their knowledge of stroke and acute myocardial infarction. Level of education is associated with a higher awareness and knowledge. |
| Bhagwanjee  (2013)62 | Multiple countries (93 countries) | Public  (NR) | Descriptive | 🗶 | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | The success of the first ever World Sepsis Day on September 13, 2012 was favorable, with the website receiving 132,000 hits and the involvement of local, national, and international organizations. |
| Bohm  (2015)63 | Europe  (Sweden) | Public  (29) | Qualitative content analysis | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | During communication between a caller and emergency medical dispatcher, callers expressed signs of sepsis by describing patient deterioration, physical signs and symptoms, and difficulty contacting the patient. |
| Eitze  (2018)64 | Europe  (Germany) | Public  (1401) | Cross-sectional | ✓ | ✓ | ✓ | 🗶 | ✓ | 🗶 | Even though awareness is increasing for the term sepsis, definition, and early symptoms are not commonly known in the elderly. Causes of sepsis are mostly misattributed to wound infection only. The majority of the elderly population is unaware that immunization may prevent sepsis.  Further awareness and educational campaigns for the public are needed to reduce the huge burden of sepsis. |
| Kerrigan  (2018)65 | Europe  (Ireland) | Public  (1004) | Cross-sectional | ✓ | ✓ | 🗶 | 🗶 | 🗶 | 🗶 | Irish public awareness about sepsis is much lower than that for other medical conditions such as heart attack, asthma, or breast cancer. Whilst every disease is important, there is an urgent need for sepsis awareness campaigns among the population, as research shows that rapid, effective sepsis treatment is associated with better outcomes. |
| Kundu  (2017)66 | Asia  (India) | Public  (NR) | Media review | 🗶 | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | Interest in sepsis-related searches remain quite low in India compared to global  averages over the last 1 year. |
| Melhammar  (2015)67 | Europe (Sweden) | Public  (1001) | Cross-sectional online survey | ✓ | ✓ | 🗶 | 🗶 | 🗶 | 🗶 | Knowledge of sepsis in Sweden is low. Targeting the lack of sepsis awareness may improve outcomes for sepsis patients by reducing the prehospital delay and by raising interest for funding for research in this area. |
| Moretti  (2019)68 | South America  (Brazil) | Public  (1986) | Cross-sectional | ✓ | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | The  lack of knowledge of the population about the term “sepsis” is directly related to the social status of the individuals interviewed, indicating lack of access to information about this disease and health care. In contrast, the nomenclature “generalized infection” is still widely reported to refer to a serious infectious condition, and the term “acute myocardial infarction” was known by most of the participants included in the sample, indicating greater access to information on this illness" |
| Oermann  (2007)69 | NR | Public  (NR) | Media review | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | Five quality websites were identified to provide educational material on sepsis to patients and their families. |
| Park  (2014)70 | Asia  (Korea) | Public  (1081) | Cross-sectional | ✓ | ✓ | 🗶 | ✓ | ✓ | 🗶 | There is poor awareness of sepsis in the Korean public when compared to knowledge about stroke and acute myocardial infarction. |
| Phua  (2013)71 | Asia  (Singapore) | Public  (1067) | Cross-sectional (telephone) | ✓ | ✓ | 🗶 | ✓ | ✓ | 🗶 | There is poor public awareness and knowledge of sepsis in Singapore. More concerted efforts are required to improve public awareness of sepsis. |
| Rodriguez-Angulo  (2012)72 | North America  (Mexico) | Public  (56) | Randomized controlled trial | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | The community-based educational intervention did not significantly improve Mayan pregnant women’s knowledge on the warning signs for sepsis. |
| Rubulotta  (2009)73 | Multiple  (Italy, Spain, UK, France, & USA) | Public  (6021) | Cross-sectional | ✓ | ✓ | 🗶 | ✓ | ✓ | 🗶 | There is poor public awareness about the existence of sepsis. |
| Savelkoel  (2018)74 | NR | Public  (NR) | Pre-post-test | 🗶 | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | World Sepsis Day has an important impact on digital awareness, which could be objectified with Google Trends. |
| Yahaya  (2013)75 | Africa  (Nigeria) | Public  (400) | Cross-sectional | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | ✓ | Despite low amounts of completed secondary and tertiary education, this population of mostly farmers was able to recognize risks of sepsis and identify risk factors. Respondents recognized situations when medical attention should be sought. |
| **Mixed/NA** | | | | | | | | | | |
| Gehrke-Beck  (2017)76 | Europe  (Germany) | Mixed  (32) | Qualitative  (nested in a randomized controlled trial) | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | There may be some benefits to case management by trained professionals, where patients appreciate the connection to ongoing care, but there may not be a significant difference in care by their GP, even when their GP is aware of the education and case management. |
| Jabaley  (2019)77 | Multiple  (Worldwide) | NA | Retrospective mixed-methods time series | 🗶 | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | Sepsis and septic shock Wikipedia pageviews are correlated with relevant online and print news media coverage, which often featured celebrities and other high-profile individuals. Correlates related to sepsis awareness campaigns were less frequent in number and associated with lower total pageview counts. The majority of users accessed sepsis information on Wikipedia via search engines. |
| Jabaley  (2018)78 | Multiple  (Global) | NA | Retrospective time series design | 🗶 | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | Online information-seeking about sepsis via Google occurred globally and increased between 2012 and 2017. Media coverage appears to be a primary driver of sepsis information-seeking online. Information-seeking behaviors related to sepsis were contemporaneous with awareness campaigns and high- profile media events, such as celebrity deaths |
| Rush  (2020)79 | Europe  (UK) | NA | Literature search/  Qualitative analysis | 🗶 | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | Sepsis reporting in newspapers usually involves children who suffered death or disability because of sepsis or healthcare system errors. |
| Rush  (2019)80 | Europe  (UK) | NA | Literature search/  Qualitative analysis | 🗶 | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | Sepsis was presented in the context of its current impact within UK healthcare, driven by both systemic and individual failings in diagnosis and management. Proposed solutions focused on empowering the public through greater awareness, emphasising the difference that early antibiotic treatment has on an outcome. The majority of articles identified individuals that had been personally affected, often children or celebrities, frequently identifying where action or inaction of health professionals contributed to negative outcomes. |

**Abbreviations:** Center for Disease Control and Prevention, CDC;Emergency Department, ED;Emergency Medical Services, EMS; Emergency Medical Technician, EMT; general practitioner, GP; healthcare professional, HCP; intensive care unit, ICU; NA, not applicable; registered nurse, RN; respiratory therapist, RT; United Kingdom, UK; United States of America, USA.

**Supplementary Table 3.** Patient, public, and healthcare professional sepsis education materials

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Mode of education** | | | | | **Impact** | | **Reference** |
|  | In-person | Print materials | Electronic | Online | Social media | Knowledge | Acceptability |  |
| *Patient* | | | | | | | | |
| Pre-natal women | Nurse intervention program (45-minute session) | - | - | - | - | ↑ | - | 48 |
| Adult hematology patients | - | "Red Book"-pamphlet routinely provided to all UK patients prior to starting chemotherapy | - | - | - | - | ↑ | 51 |
| Learning disability community | - | Pamphlet on how to spot sepsis in adults or children | - | - | - | - | - | 52 |
| ICU patients | Trained ICU nurses provided education after discharge from the ICU | - | - | - | - | - | ↔ (mixed reactions) | 76 |
| Post-natal women | - | - | Digital Animation in Service Improvement (DAISI)-an avatar of a postnatal woman that describes behavior changes that could reduce the change of sepsis and who to contact if you had symptoms of sepsis | - | - | ↑ | ↑ | 55 |
| Oncology patients | - | Alert Card-One side contains advise to the patient about what to do if they become unwell and the other side information for healthcare professionals who may have to treat the patient | - | - | - | - | ↑ | 56 |
| Discharged ICU patients | Case manager-training of patients (60-minutes) eight days after ICU discharge, followed by monthly telephone contact | - | - | - | - | - | - | 60 |
| Patient | - | Centers for Disease Control and Prevention's Sepsis Fact Sheet | - | - | - | - | ↑ | 58 |
| *Public* | | | | | | | | |
| General public | - | - | - | Evaluated quality of the content of 30 sepsis websites, based on Health on the Net criteria for medical and health websites | - | - | ↑ | 69 |
| Pre-natal women | Participatory workshops with group and didactic support | - | - | - | - | ↑ | - | 72 |
| *Healthcare professional* | | | | | | | | |
| Nurses, physicians, respiratory therapists | - | Posters/badge-sized versions-sepsis screening or recognition | - | Webpage-"Stop Septic Shock" | - | ↑ | - | 4 |
| Healthcare professionals from low, middle, and high-income countries | - | Posters, infographics on maternal sepsis prevention, and identification and management (translated into multiple languages) | - | World Sepsis Congress (presentations, podcasts, available in multiple languages) | "STOP Sepsis" campaign | ↑ | ↑ | 5 |
| Nurse leaders from nursing home | - | Posters on sepsis & antibiotic use & sepsis stoplight and self-management tool | - | Webinars on the identification & treatment of sepsis. | - | ↑ | ↑ | 8 |
| Nurses and physicians | - | - | - | Website: Sepstris (Sepsis+Tetris)-education on early sepsis identification and management | - | ↑ | ↑ 61,000 visits worldwide | 9 |
| ICU physicians | Trained ICU nurses provided education after discharge from the ICU | Handout with key items | - | - | - | ↑ | ↑ | 10,76 |
| UK healthcare professionals | - | - | - | - | Twitter-Surviving Sepsis Campaign | - | - | 21 |
| Nursing students | - | Information booklet on the definition, cause, and risk factors of neonatal sepsis | - | - | - | ↑ | - | 33 |
| Nurses working in delivery rooms | Educational program (no details) | - | - | - | - | - | - | 34 |
| Nurses and physicians | - | - | - | Online learning module | - | ↑ | - | 44 |
| ICU & ER nurses | 8-hour workshop | Educational pamphlet (provided at end of workshop) | - | - | - | ↑ | - | 46 |
| Female healthcare professionals | Structured teaching program (no details) | - | - | - | - | ↑ | - | 19 |
| Nurses | Presentations on sepsis pathophysiology, signs/symptoms, etc. with discussion | - | - | - | - | ↑ | - | 28 |

Sepsis education materials that improve sepsis knowledge or are acceptable are indicated with an upwards arrow (↑).



**Supplementary Figure 1.** PRISMA-ScR

**Appendix 2.** Reference list of included studies.

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