

## **Scoping Review Protocol**

# ***Exploring Disaster Preparedness: A Scoping Review of Adult and Continuing Education Approaches in International Civil Protection Research***

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## Scoping Review Protocol

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#### **1. Purpose of the Protocol**

To conduct systematic literature reviews effectively, “an *a priori* protocol must be developed before undertaking the scoping review” (Peters et al., 2020, p. 413; emphasis in original). This is crucial because the protocol defines the objectives, methods and reporting of the review in advance, thereby facilitating the transparency of the process (Peters et al., 2020, p. 41). The protocol must specify the inclusion and exclusion criteria for source selection, as well as what data are relevant and how they will be extracted and presented (Peters et al., 2020, p. 41). Therefore, the protocol serves as a plan for the review and “is important in limiting the occurrence of reporting bias” (Peters et al., 2020, p. 41). This scoping review protocol is based on the Joanna Briggs Institute (JBI) Reviewer's Manual for Scoping Reviews (Peters et al., 2020) and the associated PRISMA-ScR Checklist (PRISMA extension for scoping reviews) (Tricco et al., 2018, p. 470). The PRISMA-ScR checklist was developed by a research team and revised by the advisory board through several Delphi rounds, workshops and working groups as needed (Tricco et al., 2018). Although the checklist was developed according to the guidelines of the QUATOR (Enhancing the QUALity and Transparency Of health Research) network, it serves as a guide for all scoping reviews, aiming “to help readers (including researchers, publishers, commissioners, policymakers, health care providers, guideline developers, and patients or consumers) develop a greater understanding of relevant terminology, core concepts, and key items to report for scoping reviews” (Tricco et al., 2018, p. 467). Therefore, the PRISMA scR checklist also guides the present scoping review to meet the methodological requirements of a scoping review and promote the reliability, validity and transparency of the research process. Any deviations from the protocol in the scoping review are clearly highlighted and explained. An overview of the checklist can be found at Tricco et al. (2018).<sup>1</sup>

#### **2. Description of each item**

##### **2.1. Title (Item 1)**

The requirement for the title is to be able to identify the article as a scoping review (Tricco et al., 2018, p. 471). This was met by the composition of the title, with a description of the content at the beginning and a subsequent characterisation of the article as a scoping review. The title of the article on the scoping review is: “Exploring Disaster Preparedness: A Scoping Review

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<sup>1</sup>The checklist is also available as a download: <http://www.prisma-statement.org/Extensions/ScopingReviews>

of Adult and Continuing Education Approaches in International Civil Protection Research". In this way, the title of the scoping review also meets the requirement to reflect not only the intention to systematise past research but also to identify options for future research.

## **2.2. Abstract / Structured summary (Item 2)**

The requirements for the abstract are to "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" (Tricco et al., 2018, p. 471). These principles determine the abstract of the article on the scoping review:

Hazards are becoming increasingly complex around the world due to the interdependence of social, economic and environmental systems, compounded by factors such as climate change. As a result, the disaster preparedness phase is becoming increasingly important. On the one hand, adults are expected to have disaster preparedness skills to anticipate and respond to potential disasters in private and professional contexts. In this context, it becomes clear that learning processes are necessary for disaster preparedness, which is a starting point for educational initiatives. On the other hand, different levels of competence and consequently different approaches to preparing the population are evident in different countries and regions and at different points in time. In order to analyse these processes and their development, the perspective of adult education is helpful, going beyond the existing studies on general public awareness of disaster preparedness and the focus on informing people. This scoping review therefore examines the available international research on disaster preparedness, particularly from the perspective of adult and continuing education. For the scoping review, selected online literature databases were screened for scientific and grey literature that was published between 1945 and 2024 and also relates to this period in terms of content. It shows that research on the topic of disaster preparedness in relation to adult education is growing, although often with a focus on the professional context rather than that of the general adult population. Furthermore, research priorities seem to be influenced by a temporal, local and political context, but are moving towards a holistic approach to disasters. However, adult education often seems to be neglected, except in specific professional contexts. In addition to presenting the findings, the paper discusses them in the light of four key messages and identifies avenues for future research.

## **2.3. Introduction (Items 3 & 4)**

### **2.3.1. Rationale (Item 3)**

In this section, "the rationale for the review in the context of what is already known" (Tricco et al., 2018, p. 471) is described. At the same time, it is explained why the research question, "How does international research on disaster prevention address the topic of preparedness in adult education and continuing education?" is suitable for the approach of a scoping review.

Due to current developments, such as climate change being recognised as "the single greatest threat facing livelihoods and well-being" (Teixeira & Crawford, 2022, p. 1), many countries are at a tipping point, making it increasingly difficult to avoid disasters (Teixeira & Crawford, 2022, p. 1). As a result, civil protection becomes relevant, with the aim of "preparing for crises and disasters, avoiding them as far as possible, or minimising their consequences" (Lacher & Rohs, 2023, p. 1). Within civil protection, there are political measures such as the Sendai Framework for Disaster Risk Reduction (UNISDR, 2015), which prioritises "enhancing disaster

preparedness for effective response and to ‘Build Back Better’ in recovery, rehabilitation and reconstruction” (UNISDR, 2015, p. 7). This priority highlights the urgent need to strengthen disaster preparedness in the face of increasing disaster risks and growing exposure of people and assets (UNISDR, 2015, p. 21). This includes preparing for events, integrating risk reduction measures into emergency plans, and ensuring effective response and recovery capacities at all levels (UNISDR, 2015, p. 7). Consequently, preparedness measures are needed. Preparedness is defined as:

“The knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters.

Annotation: Preparedness action is carried out within the context of disaster risk management and aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response to sustained recovery.

Preparedness is based on a sound analysis of disaster risks and good linkages with early warning systems, and includes such activities as contingency planning, the stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation and public information, and associated training and field exercises. These must be supported by formal institutional, legal and budgetary capacities. The related term ‘readiness’ describes the ability to quickly and appropriately respond when required.

A **preparedness plan** establishes arrangements in advance to enable timely, effective and appropriate responses to specific potential hazardous events or emerging disaster situations that might threaten society or the environment.” (UNDRR n.d.; emphasis in original)

In this context, local preparedness is seen as an essential element of preparing for a disaster, both to minimise its impact and to respond to and recover from it (Levac et al., 2012, p. 725; Kitagawa et al., 2021, p. 2). According to the disaster management cycle (see Figure 1), preparedness as part of disaster risk management takes place after the acute response phase of a disaster and before the next disaster (post-disaster: recovery and pre-disaster: risk reduction).

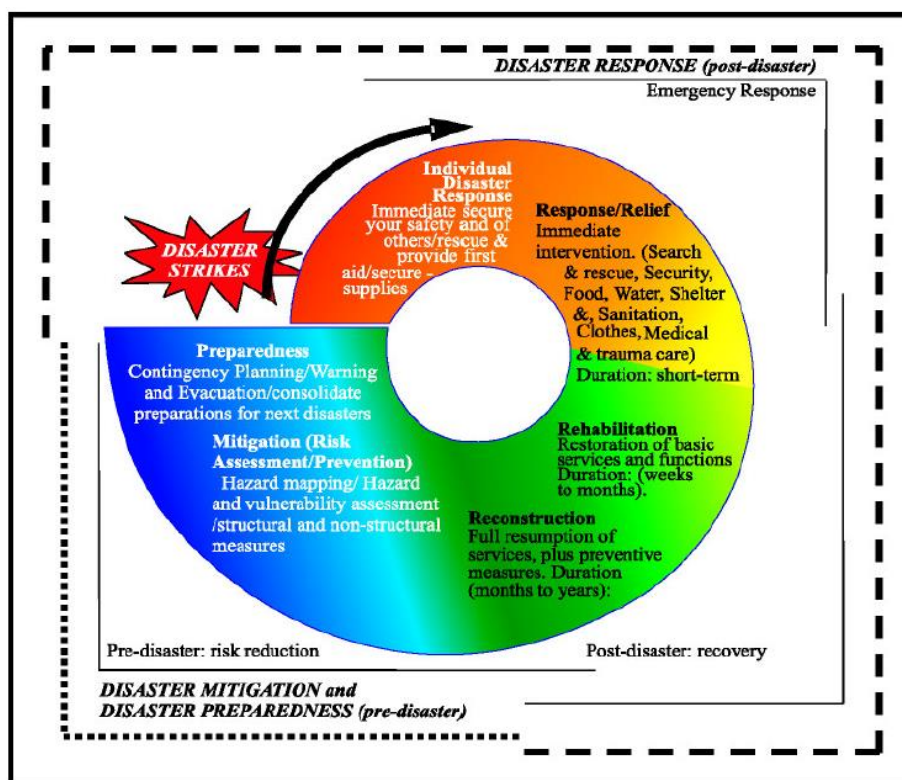


Figure 1: Disaster Management Cycle [Source: Khan et al. 2008, p. 47].

The definition of preparedness highlights the need for individuals to have knowledge and skills before, during and after a disaster. Meeting this requirement necessitates a learning process, which is a connection point for adult education. This is situated within disaster education as "sub-discipline in the field of education" (Kitagawa, 2021, p. 2). However, despite the growing global interest in disaster education, it is considered "a relatively 'new enquiry' in the field of education" (Kitagawa, 2021, p. 2). At the same time, studies show that national disaster education strategies differ mainly in terms of preparedness (Kitagawa et al., 2017). To date, the concept of preparedness has been approached primarily from a psychological perspective, investigating possible influences on preparedness (e.g. Paton, 2019). However, the existing literature suggests that preparedness should also be studied from an adult education perspective as part of disaster education. As scoping reviews provide a systematic approach "to map evidence on a topic and identify main concepts, theories, sources, and knowledge gaps" (Tricco et al., 2018, p. 467), this approach can be considered effective in addressing the research question: "How does international research on disaster prevention address the topic of preparedness in adult education and continuing education?"

### 2.3.2. Objectives (Item 4)

The requirement that is placed on the objectives section is as follows: "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” (Tricco et al., 2018, p. 471).

The “PCC’ mnemonic (population, concept, and context)” (Peters et al. 2021, p. 6) was used to define the population, concept, and context. **Fehler! Verweisquelle konnte nicht gefunden werden.**Table 1 provides an overview.

population	adults
concept	preparedness in relation to adult education and continuing education
context	international research on civil protection

Table 1: PCC-mnemonic for the present study

The use of the PCC framework provides transparency to the reader by highlighting the focus and context of the review (Peters et al., 2021, p. 6). In this review, the target population is adults (with the exclusion of research focused on children). The concept of readiness is central, but specifically in the context of adult and further education (not, for example, psychology). In addition, the review considers international studies on the topic (not limited to specific countries). This is particularly relevant due to the aforementioned differences in national preparedness strategies (Kitagawa et al., 2017). The guiding research question of the scoping review is derived from the PCC framework.

## 2.4. Methods (Items 5-13)

### 2.4.1. Protocol and registration (Item 5)

This protocol is freely available at KLUEDO<sup>2</sup>. A reference to the protocol will be added to the scoping review article.

### 2.4.2. Eligibility criteria (Item 6)

The eligibility criteria for assessing the suitability of sources within the scoping review are outlined and justified below. These criteria were established prior to the search process in order to conduct meaningful test searches.

Eligibility criteria for the Scoping Review	
Language	English <i>Rationale:</i> Allows for the inclusion of international perspectives.
Publication date	1945 to present <i>Rationale:</i> 1945 marked a historical rupture with a reordering of the political system. Searches up to the current year

<sup>2</sup> <https://kluedo.ub.rptu.de/home>

	make it possible to analyse developments and record the current situation.
Content Temporal Reference	from 1945 to present ( <i>Rationale</i> : see Publication timeframe)
Manuscript types	all (including grey literature) <i>Rationale</i> : Publication structures vary between disciplines, so research articles, reports and books listed in scientific databases are all potentially relevant (Heck et al., 2023).
Context	Literature related to <ul style="list-style-type: none"> <li>• Adult education / Continuing education</li> <li>• Disaster / Civil protection / Preparedness</li> </ul> <i>Rationale</i> : Focus of the research question

Table 2: Eligibility criteria for the Scoping Review

### 2.4.3. Information sources (Item 7)

This section details the sources of information used in the final search strategy. It is assumed that disaster preparedness is researched not only from an educational perspective, but also from an interdisciplinary perspective, as it affects subjects in other disciplines. This guided the selection of databases, which are the only sources of information for this scoping review. The studies by Gusenbauer & Haddaway (2019) and Heck et al. (2023) served as references. A detailed rationale for the selection of databases can be found in the scoping review article. Identification and access to the databases were carried out via the digital library (DigiBib) of the University of Kaiserslautern-Landau (RPTU).

Scopus and Web of Science (WoS), as interdisciplinary databases with a large collection of literature from the natural sciences, were used as information resources. Discipline-specific databases were also used:

- Education/Pedagogy: ERIC, Education Source
- Psychology: APA PsycInfo
- Medicine: PubMed
- Economics: EconLit
- Political Science: Political Science Complete

This selection is the final version. Additional databases were tested during the pilot searches and were partially excluded due to small result sets. This and the timing of the searches are explained below.

#### 2.4.4. Search (Item 8)

The search strategy aimed to be as comprehensive as possible, given time and financial constraints, to identify both published and unpublished (grey or hard-to-find) primary sources of evidence and review articles (Peters et al., 2020, p. 48). Any limitations in the scope and comprehensiveness of the search strategy are detailed and justified.

The search strategy was determined in a multistep process. First, a search was conducted in ERIC and Scopus using relevant search terms, which represents the **first step** in the development of the search strategy, as it represents “an initial limited search of at least two appropriate online databases relevant to the topic” (Peters et al., 2020, p. 418). It was then determined that there were no relevant systematic reviews on the topic. Appropriate search terms were then generated from the existing literature on the topic and its keywords, and tested in pilot searches of the selected databases. This is the **second step** in the development of a search strategy: “all identified keywords and index terms should then be undertaken across all included databases” (Peters et al., 2020, p. 418). Titles, abstracts and keywords were screened during the search process. Boolean operators were used in the search and the publication period was limited to the years 1945 to 2024, as specified in the eligibility criteria (see chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**). Furthermore, an English language restriction was applied for reasons of feasibility and to focus on international research. The development of the search strategy is explained below. The search strings are exemplary for the Scopus database.

The first test search was performed on 11 January 2024 with the following search string:

```
TITLE-ABS-KEY("adult education" OR "further education" OR "continuing education"
OR "further training" OR "training" OR "lifelong learning" OR "adult learning") AND TI-
TLE-ABS-KEY("civil defence" OR "civil defense" OR "civil protection" OR "civil contin-
gencies" OR "emergency management" OR "homeland security" OR "disaster risk re-
duction" OR "disaster risk management" OR "disaster relief" OR "emergency relief" OR
"disaster*" OR "catastrophe" OR "emergency" OR "hazard") AND TITLE-ABS-
KEY("Preparedness" OR "Emergency Preparedness" OR "Disaster Preparedness" OR
"Prevention" OR "mitigation" OR "disaster education" OR "emergency education") AND
PUBYEAR > 1944 AND PUBYEAR < 2025 AND ( LIMIT-TO ( LANGUAGE,"English" ) )
```

As the pilot search in Scopus alone yielded 11,506 results, the terms “disaster\*”, “catastrophe”, “emergency” and “hazard” were removed from the search string as they generated rather un-specific but numerous results. However, the term “disaster training”, which WoS had identified as an appropriate keyword, was added. The following search string was then used to search all databases on 10 January 2024:

```
TITLE-ABS-KEY("adult education" OR "further education" OR "continuing education"
OR "further training" OR "training" OR "lifelong learning" OR "adult learning") AND TI-
TLE-ABS-KEY("civil defence" OR "civil defense" OR "civil protection" OR "civil
```

contingencies" OR "emergency management" OR "homeland security" OR "disaster risk reduction" OR "disaster risk management" OR "disaster relief") AND TITLE-ABS-KEY("Preparedness" OR "Emergency Preparedness" OR "Disaster Preparedness" OR "Prevention" OR "mitigation" OR "disaster education" OR "emergency education" OR "disaster training") AND PUBYEAR > 1944 AND PUBYEAR < 2025 AND ( LIMIT-TO ( LANGUAGE,"English" ) )

This search resulted in a total of 2,970 hits including duplicates in the databases:

Database	Number of results
Scopus	1,341
Web of Science	1,196
ERIC	29
PubMed	299
PSYINDEX	1
APA PsycArticles	0
APA PsycInfo	75
Political Science Complete	22
EconLit	7
pollux	0
overall	2970

Table 3: Overview of the number of results of the second test search

Due to the low number of hits, the databases PSYINDEX (1 hit) and APA PsycArticles (0 hits) as well as pollux (0 hits) were excluded from further searches.

Because of limited resources and an initial title review, which revealed many publications that were not relevant to the topic, the search string was further optimised. On 16 January 2024 and 24 January 2024, a total of eight test searches were carried out with different search strings in all selected databases, during which various terms were removed from the search string and the results were reviewed. Other relevant terms identified in the results and from discussions with experts were included in the search string. Other terms that produced a large number of unspecific results were deleted. This results in the final search string:

TITLE-ABS-KEY ( "adult education" OR "further education" OR "continuing education" OR "further training" OR "training" OR "adult learning" ) AND TITLE-ABS-KEY ( "civil defence" OR "civil defense" OR "civil protection" OR "civil contingencies" OR "home-land security" OR "disaster risk reduction" OR "disaster relief") AND TITLE-ABS-KEY ("Disaster Preparedness" OR "disaster education" OR "disaster training" OR "emergency education" OR "Risk Awareness" OR "Risk Literacy") AND PUBYEAR > 1944 AND PUBYEAR < 2025 AND ( LIMIT-TO ( LANGUAGE,"English" ) )

The first part of the search string included terms explicitly related to adult education. The second part of the search string included civil protection terms with synonyms and spellings (sometimes used nationally). In the third part of the search string, the terms were optimised so that hits related to disasters were found instead of, for example, everyday emergencies. The use of the search terms 'risk awareness' and 'risk literacy' is based on the recommendation of an expert. In addition, the Education Source database was included as a source of information, as the use of subject-specific databases is recommended in the literature (Heck et al., 2023). The final search is explained in the Scoping Review article.

#### **2.4.5. Selection of sources of evidence (Item 9)**

Hits found in the databases are first imported into a shared, cloud-based citavi<sup>3</sup> project. Where available, the title, first and last name(s) of the author(s), year of publication, abstract, DOI and journal name, volume and issue number were imported. If possible, the full text of the publications has also been imported. Duplicates were then removed. For the remaining hits, a two-step process is carried out by two reviewers who are familiar with the project and therefore with the inclusion criteria: First, the publications are screened on the basis of the title and abstract. This is done in two rounds. The articles are then categorised on the basis of their titles and abstracts in order to sort out the expected large volume of literature. This also takes into account the aim of a scoping review, as "a 'scoping review' is characterised as a broad-brush approach to finding the most notable studies in the field, minimal attempts to evaluate them for quality, a rudimentary attempt at synthesis (perhaps through listing, tabulation or mapping), and an analysis that caricatures the quantity and distribution of the literature" (Booth et al., 2016, S. 23). For this purpose, an inductive categorisation is carried out. The work and discussion of the two reviewers promotes intercoder reliability, which "required in qualitative content analysis for assuring quality" (Burla et al., 2008, p. 113). The literature resources found can be accessed either via Open Access or via licences provided by RPTU. Another route is via DigiBib, the RPTU library, which offers additional options for accessing literature, such as inter-library loan or information on the holdings of other libraries. If access to the relevant literature is not possible through these channels, personal contact is made with the relevant

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<sup>3</sup> <https://www.citavi.com/en>

authors, to politely request access to a publication. The steps involved (time spent searching the databases, search strategy) are recorded in a Microsoft Word file.

#### **2.4.6. Data charting process (Item 10)**

To extract relevant data from the identified full-text publications, these are fed into the reference management software citavi. citavi offers the possibility to import full-texts into the software and to save notes, paraphrases and summaries (Swiss Academic Software GmbH, 2020). In this way, inductive categorisation can be supported for the content analysis of the full texts. A detailed description of the evaluation can be found in the scoping review article.

#### **2.4.7. Data items (Item 11)**

The variables for which data were collected are based on the research question of the scoping review. As a broad overview of the research field is sought, concepts of preparedness in relation to adult education and training in international research on civil protection are collected in all types of publications. The research approach (theoretical, quantitative, qualitative) does not initially play a role. Discussions on the topic are also included.

#### **2.4.8. Critical appraisal of individual sources of evidence (Item 12)**

Does not apply to the review carried out.

#### **2.4.9. Synthesis of results (Item 13)**

The full texts are imported into citavi along with the relevant bibliographic data. Here, inductive categories and subcategories can be formed and the literature analysed in terms of content and structure (Kuckartz & Rädiker, 2022).

### **2.5. Results (Items 14-18)**

#### **2.5.1. Selection of Sources of Evidence (Item 14)**

The process of selecting the literature found and screened is realised using the PRISMA flowchart (see Tricco et al., 2018; see Scoping Review article, Figure 2). This visualises the steps of identifying and searching the databases, the two-step screening process based on the selection criteria, and the final data corpus. Relevant sources are selected by two reviewers.

#### **2.5.2. Characteristics of sources of evidence (Item 15)**

The sources found were categorised in the scoping review article according to key characteristics (e.g. publication date, content, type).

#### **2.5.3. Critical appraisal within sources of evidence (Item 16)**

All types of literature (including grey literature) are included in the review. The characteristics (theoretical, empirical, conceptual) and scientific quality (e.g. through peer review,

transparency of the (methodological) process) are assessed and the respective proportions of the literature corpus are determined.

#### **2.5.4. Results of individual sources of evidence (Item 17)**

The relevant data from the included sources are reported in the scoping review article in relation to the guiding research question and research interest.

#### **2.5.5. Synthesis of results (Item 18)**

The results of the scoping review are reported on the basis of the research question in the scoping review article. A table is used, among other things, to give the reader a quick overview.

### **2.6. Discussion (Items 19-21)**

#### **2.6.1. Summary of evidence (Item 19)**

The results are summarised and discussed in the scoping review article after the research question has been restated, based on the synthesis of the results and the associated tables (see section 2.5.5).

#### **2.6.2. Limitations (Item 20)**

The scoping review article discusses the limitations and errors of the scoping review. This promotes transparency in research and can serve as a stimulus for improving the methodology of future reviews.

#### **2.6.3. Conclusions (Item 21)**

Based on the research question and the objectives (see section 2.3.2) the results are interpreted as part of the article on the scoping review. Potential implications and possible next steps are then developed.

#### **2.6.4. Funding (Item 22)**

The scoping review is part of the PREP research project funded by the Federal Office of Civil Protection and Disaster Assistance (BBK). However, this funding has no influence on the results of the scoping review, but only makes it possible to carry it out by means of personnel resources and funds for the procurement of literature (e.g. costs for inter-library loans, etc.).

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