

1 Materials and Methods

1.1 Collection and Selection of Articles

The search in the above-mentioned databases is done by searching for the different combinations of the following keywords :

(1-((("multi-agent" OR "Agent" OR "multi-agent system") ; ("holonic") ; ("hospital") ; ("Hybrid")); ("hospital group")) ; 2-((("multi-agent" OR "Agent" OR "multi-agent system"); ("epidem*" OR "pandem*") ; ("COVID-19") ; ("hospital"); ("hospital group")) ; ((3- ("hospital merger") OR ("hospital mergers") OR ("groupement hospitalier de territoire") OR ("Hospital Consolidations") OR ("Hospital Consolidation")) ; 4- ("hospital group") ; ("multi-agent" OR "Agent" OR "multi-agent system"))))

1.2 Exclusion criteria

The inclusion and exclusion criteria were defined as follows:

1. Some chapters of the book and conference papers were reviewed.
2. Editorial notes, letters to the editor or similar documents were not included.
- 3- The review papers and qualitative researchers were nevertheless useful.
- 4- Only articles in English have been included, except for 4 articles on the territorial hospital grouping in France.
- 5- For GHT excluded articles for: Health Policy services, law, public environmental, occupational health, health care sciences services and economics (that are repeated and/or very qualitative and/or not related to the technical part for GHT)

1.2.1 Collection and Selection of Articles

We use the Google Scholar and Web of Science databases to find research related studies. This is because these databases have the highest number of citations. This is why the quality of the research results is ensured because in these databases articles are well examined. This research was conducted between December 2022 and February 2023, starting with a pilot test to define the most appropriate keywords used in the literature to approach this topic. The search in the above mentioned databases is done by searching for the different notions: the hospital group of territory; hospital merger; Hospital consolidations; hospital group. We will note GHT all the following notions and assumed to be synonymous with it.

1.2.2 Determination of short-listed articles

The result of the combination of keywords produced a sum of 528 articles. Figure 1 below shows the articles collection and selection process by considering the five criteria. Then the titles and abstracts were read in detail in order to delete articles that were out of the scope of this review.

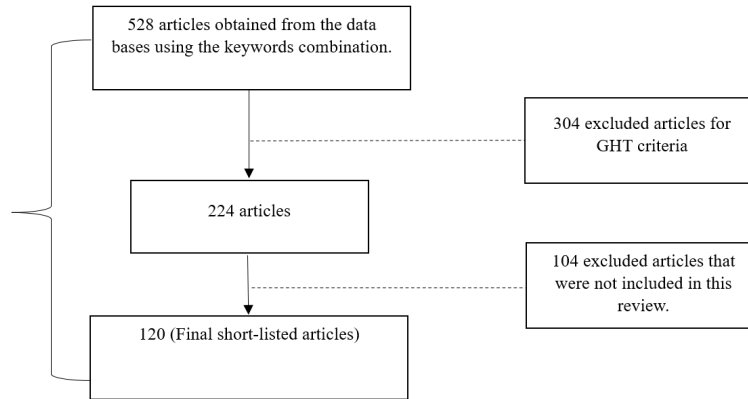


Fig. 1 Flowchart of the sequence followed for the literature review

2 GHT presence in articles by country

The figure below shows the percentage relative to GHT presence in articles by country according to all data articles, this percentage remains almost the same in the short-listed articles.

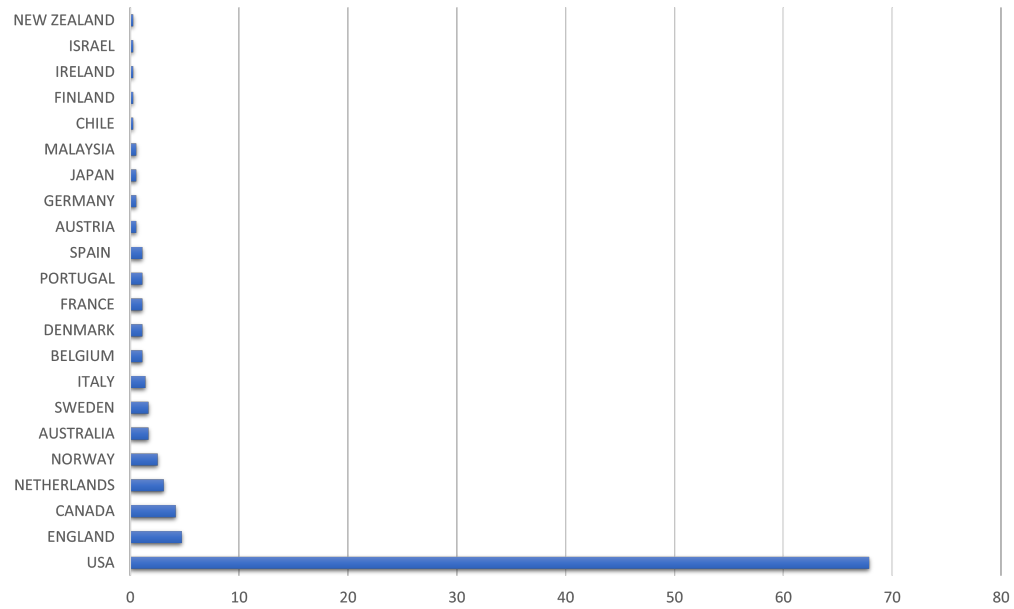


Fig. 2 Percentage relative to countries of GHT presence in articles

3 List of articles category

The articles mentioned in the reference are classified into four categories as shown in the table below.

Reference	GHT	Multi-agents and Holonic systems	Decision-making and hybrid control	COVID-19
[1]	*			
[2]	*			
[3]		*		
[4]	*			
[5]	*			
[6]	*			
[7]		*		
[8]		*		
[9,10,11]		*		
[12]		*		
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[14]		*		
[15]	*			
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[26]	*			
[27]	*			
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[48]	*	*	*	
[49]			*	
[50]				*
[51]		*		
[52]				*
[53]		*	*	
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[70]			*	*
[71]			*	*
[72]			*	*
[73]			*	*
[74]			*	*
[75]		*	*	*

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