Global scientific research on social participation of older people from 2000 to 2019: A bibliometric analysis

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Abstract

Background: Social participation is an indicator of successful ageing and important determinant of health outcomes. As more studies have been conducted on social participation of older people, a comprehensive and quantitative analysis of the current literature will contribute to a better understanding of the main and novel issues and improve existing geriatric care services in this domain. However, limited bibliometric analysis was employed in this research field. Therefore, we conducted this study to investigate the research trend and quantitatively and comprehensively characterise the landscapes of publications on social participation of older people via bibliometric analysis methods.

Methods: Data were obtained from the Web of Science Core Collection in January 2020. CiteSpace 5.5.R2 and VOSviewer software packages were used to generate knowledge maps and analyse the publication outputs, countries/regions, institutions, journals, research hot spots and research frontiers.

Results: A total of 7,029 publications between 2000 and 2019 were retrieved, and the publication number per year continues to increase. The United States held a leading position in this research field, and Duke University was the most productive institution. Co-cited reference cluster analysis and keyword co-occurrence analysis showed that research hot spots contained factors of healthy ageing, quality of life, psychological problems and health status, especially dementia, function (including cognitive function) and frailty. Burst detection of keywords revealed that social participation, social support, instrumental activity, frailty and loneliness have been new research frontiers since 2015.

Conclusions: By analysing publications over the past 20 years, we found publication trends and characteristics in this field. These findings will hopefully provide new insight into the scientific landscapes and further directions in the study of social participation of older people.
1 | INTRODUCTION

Populations around the world are rapidly ageing. It is estimated that by 2050, the world's population aged 60 years and older will total 2 billion, up from 900 million in 2015 (World Health Organization [WHO], 2018). Subsequent age-related diseases, decline of function and healthcare needs will no doubt impose a heavy burden on the family, nurses and other healthcare professionals and even society as a whole. Therefore, managing this demographic shift and promoting healthy ageing have become significant challenges worldwide.

For older people, social participation is regarded as an indicator of successful and healthy ageing, receiving considerable attention in recent research and policy reports. In 2002, the World Health Organization (WHO) policy framework proposed that enhancing social participation is a key component in response to ageing populations (WHO, 2002). Since social participation is a very broad concept that can take various forms, including leisure activities, meeting friends and volunteering, among others (Duppen et al., 2019), there is not yet a consensus regarding the definition. One commonly used definition of social participation focuses on a ‘person’s involvement in activities that provide interaction with others in society or the community’ (Levasseur, Richard, Gauvin, & Raymond, 2010). Moreover, synonymous concepts such as social engagement, participation and community involvement are frequently used interchangeably with social participation (Bowes & McColgan, 2013; Levasseur et al., 2010; Piškur et al., 2014). Understanding social participation has progressed significantly over the past 2 decades due to a large volume of meaningful studies in this field. Empirically, community participation promotes well-being and quality of life for older people according to activity theory (Tabet, 2016). The existing literature illustrated that social participation, physical exercise and volunteer work are associated with favourable health outcomes, such as lower mortality, better physical or cognitive performance, and improved psychological distress at older ages (Kikuchi et al., 2017; Owari, Miyatake, & Kataoka, 2018; Sala et al., 2019).

Although many studies have been conducted related to social participation of older people, relatively few outlined the trends or...
structure of research in this field. Some empirical and qualitative review articles were expert-dependent and to a certain degree limited to some bibliometric quantitative factors, such as publication trends and hot spots in this field.

Bibliometric analysis, a well-established information science research method, was recently used to determine trends in scientific research and quantitative analysis of published studies (Wang et al., 2019; Zyoud & Fuchs-Hanusch, 2017). This type of study enables scholars to characterise the current status of research fields and assists them in planning their research direction to predict research trends (Boudry, Baudouin, & Mouriaux, 2018; Chang, Huang, & Lin, 2015). Thus, to provide a relatively objective and systemic overview of research on social participation of older people, this study used bibliometric tools to delineate the basic landscape, identify the representative research power and recognise research frontiers in this field. Nurses are on the frontline of health care, and nurse-led research is increasingly recognised as a critical pathway to practical and effective ways of improving patient outcomes (Curtis, Fry, Shaban, & Considine, 2017). The results obtained in this study could provide a useful reference for researchers and nurses, inspiring their possible direction of further research and clinical practice of nursing older people.

2 | METHODS

2.1 | Data acquisition

The Web of Science Core Collection (WoSCC) comprised high-quality literature has been the most frequently used authoritative platform for scientific literature (X.-Q. Huang, Fan, Ying, & Chen, 2019). As synonymous concepts of social participation can be used interchangeably, the search terms in this study were collected from previous systematic reviews or meta-analyses to retrieve as many relevant resources as possible (Dalemans, de Witte, Lemmens, van den Heuvel, & Wade, 2008; Jiesisibieke et al., 2019; Shah, Frank, & Ehrlich, 2020). To further guarantee our reasonable selection of these terms and their relevant meanings, our team discussed them and invited suggestions from experienced specialists in the field of geriatric care and information specialists. Two investigators with experience in completing medical information retrieval conducted all of the searches independently and resolved controversial issues through discussion. We searched the WoSCC database in January 2020 using the following retrieval strategy: TS = ("social participation" OR "social involvement" OR "social engagement" OR "community participation" OR "community involvement" OR "community engagement" OR "activit* of daily living" OR "leisure activit*") AND TI = ("old* people" OR "old* adult*" OR "old* men" OR "old* women" OR "old* person" OR "old* population" OR elder* OR geriatric* OR ageing OR gerontol) (is the wildcard character representing any string); time span: 2000–2019; and language type: no restriction. The search results were further streamlined to original articles and reviews. All of the other document types, including editorial material, book reviews, retracted publications, proceedings papers, meeting abstracts, early access, corrections, news items, letters, book chapters and reprints, were excluded because they did not yield publications with sufficient study details and may not have been peer-reviewed (Brown, Gutman, Ho, & Fong, 2018) (Supplement S1). The search for keywords in abstracts and/or keywords yielded too many false-positive results that could have negatively affected the study’s validity (Sweileh, 2018), so we only retrieved ‘elderly’ and its synonyms in the title. To validate the results’ effectiveness, two authors independently reviewed the titles and abstracts of the top 100 most cited documents to access their relevance to the social participation of older people. A record was considered relevant if any terms were found in its title, abstract or keyword fields (Chen, Dubin, & Kim, 2014b). The results showed that 95 publications (95%) on average were closely related to and considered conforming to the scope of this study, indicating that our retrieval terms and strategies were appropriate (Fu, Sun, He, Liu, & Jing, 2019).

2.2 | Data analysis

Bibliometric mapping is a quantitative approach that visualises various bibliometric factors of scientific publications conducted in the form of different networks (Damar, Bilik, Ozdagoglu, Ozdagoglu, & Damar, 2018). In this study, VOSviewer was employed to analyse the co-authorship feature of countries/regions and institutions. To map the network of keyword co-occurrence, information on author keywords with an occurrence frequency no less than 30 were chosen for visualisation using VOSviewer 1.6.14 software.

CiteSpace, which is specifically designed to conduct an analytic process of visualising and analysing scientific literature based on the JAVA platform, has been used to conduct several hundred scientometrics studies (Chen, Dubin, & Kim, 2014a). To comprehensively understand the research trend particularly research hot spots and fronts in the research field, we assessed the distribution of popular journals in the research field of social participation of older people, analysed co-cited reference networks, and detected burst keywords using CiteSpace 5.5.R2. A cluster analysis was also conducted based on co-citation analysis to identify the thematic concentration. The impact factor (IF) of each journal was determined according to the 2018 Journal Citation Reports.

3 | RESULTS

3.1 | Literature distribution

3.1.1 | Characteristics of publication outputs

A total of 7,029 publications indexed by the WoSCC were identified using the retrieval strategy. Among these publications, 6,699 (95.31%) were original articles and 330 (4.69%) were reviews. Regarding the
publication languages, most (94.21%) were in English, followed by Portuguese (1.54%), Spanish (1.42%) and German (1.22%) (Supplement S2). From 2000 to 2019, the number of publications on social participation of older people increased annually (Figure 1). Of note, over the past 5 years, more than 500 papers were published each year.

### 3.1.2 Distribution of countries/regions

Over the past 20 years, 103 countries/regions worldwide have contributed to research on social participation of older people. The top 10 countries published 5,878 papers on social participation of older people as indexed in the WoSCC, accounting for 83.62% of the total number of publications (Table 1). The United States published the most reports in terms of social participation of older people, accounting for 31.88% (n = 2,241) of the total, followed by Japan (n = 573), the UK (n = 454), Canada (n = 449) and Australia (n = 420). Brazil and China were the only two developing countries among the top 10 most productive countries, demonstrating their considerable academic progress over the past 2 decades. Studies from the United States, Italy, the UK and Canada overperformed regarding the citation frequency per article.

Country co-authorship analysis reflects the degree of communication between countries and influential countries in this field (Zheng & Wang, 2019). A total of 44 nodes representing countries/regions that published at least 10 reports related to this domain are shown in Figure 2. The distance and thickness of the line between the nodes denote the strength of collaboration among these countries/regions. The stronger links and closer nodes illustrate closer cooperation between two countries. With the largest nodes and densest links in the co-authorship map, the United States (40 links, 795 total link strength) played an irreplaceable leading role and closely cooperated with many countries in this research field. The co-authorship results also showed that the UK (39 links, 418 total link strength) had higher link strength than others, followed by the Netherlands (31 links, 289 total link strength), Australia (37 links, 286 total link strength), Italy (29 links, 281 total link strength), Canada (35 links, 277 total link strength), Germany (27 links, 254 total link strength),

| Rank | Country (region) | Counts | Per cent (%) | Citations | Citations per article |
|------|------------------|--------|--------------|-----------|----------------------|
| 1    | USA              | 2,241  | 31.88        | 80,227    | 35.80                |
| 2    | JAPAN            | 573    | 8.15         | 7,667     | 13.38                |
| 3    | ENGLAND          | 454    | 6.46         | 14,188    | 31.25                |
| 4    | CANADA           | 449    | 6.39         | 12,491    | 27.82                |
| 5    | AUSTRALIA        | 420    | 5.98         | 7,526     | 17.92                |
| 6    | BRAZIL           | 406    | 5.78         | 4,463     | 10.99                |
| 7    | PEOPLES R CHINA  | 354    | 5.04         | 3,844     | 10.86                |
| 8    | NETHERLANDS      | 335    | 4.77         | 9,553     | 28.52                |
| 9    | SWEDEN           | 325    | 4.62         | 7,746     | 23.83                |
| 10   | ITALY            | 321    | 4.57         | 10,913    | 34.00                |
3.2 | Productivity analysis of institutions

There were 6,682 research institutions involved in research related to social participation of older people over the past 20 years. However, only 353 institutions met the threshold of 10 publications as displayed in Figure 3 (one institution without a connection to the others is not shown). The entire network was divided into several institutional cooperation groups. The red nodes mainly indicate US educational or research institutions; pink nodes demonstrate institutions in Brazil; green and blue nodes indicate institutions in Europe, and yellow nodes represent institutions in Japan. As shown in Table 2, Duke University was the leading research institution and contributed to 134 (1.91%) documents, followed by the University of Pittsburgh with 127 articles (1.81%), University of California-San Francisco with 126 articles (1.79%), and Karolinska Institute with 118 articles (1.68%). Specifically, the University of Pittsburgh (63.92) ranked first with respect to citations per article, followed by Johns Hopkins University (63.47) and the University of California-San Francisco (59.88). Half of the top 10 active institutions were from the United States, indicating its specific advantage in this research field.

3.3 | Distribution of journals

Understanding journals is especially important because it can assist scholars in the retrieval of research papers related to a specific field. This study identified 1,572 journals that published articles on social participation of older people. Table 3 illustrates the top 10 most active journals along with their basic information such as quartile, impact factor and number of citations per paper. The impact factor and quartile scores were the most widely used indicators of a journal’s quality and rank and were listed based on the Journal Citation Reports (JCR). Three of the top 10 active journals were based in the United States, and additional three journals were from the UK. Among them, the Journal of the American Geriatrics Society was the most productive journal, with 326 publications comprising 4.64% of the documents. The second and third most productive journals were the Archives of Gerontology and Geriatrics and Journals of Gerontology Series A: Biological Sciences and Medical Sciences, accounting for 3.30% and 2.26%, respectively.

3.4 | The research hot spots and emerging trends based on keyword co-occurrence analysis

Keywords facilitate the concentration and refinement of core content and topicality of literature in the field (Chen, Dubin, & Kim,
As presented in Figure 4, the keyword co-occurrence network generated by VOSviewer contained 121 keywords and 2,829 co-occurrence links distributed in 6 clusters. These keywords were selected with a frequency of occurrence no less than 30 times, reflecting the range of research hot spots on social participation of older people. The size of the nodes was proportional to the occurrence of the terms, and the proximity of the terms represents their relatedness. We also identified the top 30 keywords in the data set according to occurrence counts (Table 4). The keywords with the highest frequency were elderly, activities of daily living, ageing, aged, disability, quality of life, depression and dementia, among others.

Keywords that occur at high frequencies can reflect research hot spots, whereas burst keywords with a strong surge of frequency during a certain period are considered indicators of frontier topics or emerging trends (Miao et al., 2017; Zheng & Wang, 2014a; Huang, Chen, & Zhou, 2020).
In the present study, keywords with strong citation bursts were explored using CiteSpace V, and a total of 52 strongest burst keywords were identified (Supplement S3). Figure 5 displays the keywords that had the most recent bursts and the years in which they appeared from 2010 onwards. The blue line represents the time interval, while the duration of the burst keywords is depicted as the red line. The keyword loneliness, which emerged in 2017, had the strongest burst (40.25), followed by cognition (21.24) and functional decline (15.58). Social participation, social support, instrumental activity, frailty, and loneliness were the most recent burst keywords since 2015.

3.5 | Co-cited reference cluster analysis

It has been proven that co-cited reference networks can capture research focused on the underlying scientific community (Chen, Hu, Liu, & Tseng, 2012). A co-cited reference network was therefore generated via CiteSpace based on the top 50 most cited references every 2 years (Figure 6) using keyword terms and a log-likelihood ratio (LLR) weighting algorithm to calculate the label of clusters. No pruning was employed in the calculation. As shown in Figure 6, the visualisation of the knowledge network consisted of 556 nodes and 1,979 co-citation links from 2000 to 2019. Each node in the figure equalled a cited reference, and the larger the node, the higher the citation frequency. The ‘tree rings’ with different colours represent the citation history, and citation bursts are marked by red rings (Chen, Dubin, & Kim, 2014a). The top 10 landmark co-cited references are summarised in Table 5 and were regarded as key articles in the knowledge evolution of social participation of older people. The co-cited times for the top 10 references were nearly consistent with the co-cited times per year. Among them, the node with the highest number of citations (73 citations) was a reference entitled ‘Frailty in elderly people’ published by Clegg, A in the Lancet in 2013. The second landmark reference was the World Report on Aging and Health 2015 (60 citations) published by the WHO.

According to Chen Chaomei, individual nodes in a network can be aggregated into clusters based on their interconnectivity, and each cluster represents a distinct specialty or thematic concentration (Chen, Dubin, & Kim, 2014b). In this study, co-cited references were classified into 16 clusters including prognosis, cognitive functioning, sarcopenic obesity, Alzheimer’s disease and frail elderly, among others. Furthermore, the largest 10 clusters shown in Table 6 were highly homogeneous or consistent because the silhouette scores of the largest 10 clusters were all above 0.7. The largest cluster 0 prognosis that contained 121 member references was also the earliest issue based on the cluster’s mean citation year. Cluster 1 cognitive functioning and cluster 9 successful ageing were relatively new clusters.

4 | DISCUSSION

In the present study, CiteSpace and VOSviewer were employed as quantified assessment tools to evaluate social participation of older people from 2000 to 2019. Our results showed that social participation of older people...
**FIGURE 4** Co-occurrence network of author keywords of publications on social participation of older people from 2000 to 2019 (with a threshold of 30 occurrences)

**TABLE 4** Top 30 representative keywords in terms of occurrences and total link strength

| No. | Keywords                             | Occurrences | Total link strength | No. | Keywords            | Occurrences | Total link strength |
|-----|--------------------------------------|-------------|---------------------|-----|---------------------|-------------|---------------------|
| 1   | Elderly                              | 1,596       | 2,826               | 16  | Rehabilitation      | 162         | 348                 |
| 2   | Activities of daily living           | 1,011       | 2,125               | 17  | Geriatric assessment| 136         | 277                 |
| 3   | Aging                                | 777         | 1,494               | 18  | Exercise            | 130         | 339                 |
| 4   | Aged                                 | 438         | 958                 | 19  | Functional status   | 128         | 263                 |
| 5   | Disability                           | 416         | 882                 | 20  | Social support      | 127         | 289                 |
| 6   | Quality of life                      | 347         | 681                 | 21  | Frail elderly       | 125         | 267                 |
| 7   | Depression                           | 322         | 769                 | 22  | Instrumental activities of daily living | 114 | 237 |
| 8   | Dementia                             | 319         | 687                 | 23  | Physical function   | 110         | 224                 |
| 9   | Cognitive impairment                 | 229         | 512                 | 24  | Cognitive function  | 101         | 210                 |
| 10  | Mortality                            | 220         | 473                 | 25  | Risk factors        | 99          | 251                 |
| 11  | Frailty                              | 202         | 445                 | 26  | Geriatrics          | 99          | 182                 |
| 12  | Social participation                 | 202         | 356                 | 28  | Social engagement   | 99          | 168                 |
| 13  | Physical activity                    | 199         | 433                 | 29  | Epidemiology        | 98          | 216                 |
| 14  | Cognition                            | 184         | 456                 | 30  | Falls               | 97          | 204                 |
participation of older people has attracted increasing research attention and this trend is likely to continue, as illustrated by the steady increase in the number of annual publications.

The United States maintains a leading position regarding research into social participation of older people, which was partially supported by the evidence that half of the 10 most productive scientific institutions were located in the United States, and three of the top 10 active journals with good quality (the average 5-year impact factor was 4.92) were based in the United States. Also, documents published by the United States had the highest average citations per article, providing further proof of its powerful academic impact. These results were roughly consistent with previous health-related bibliometric studies (Shen et al., 2018; Zhou, Tan, Qiu, Song, & Gao, 2018). A 2015 study showed that the United States had 6 of the top 10 productive institutions and the highest number of published articles on neurogenic bladder (Gao et al., 2015). We also found that developing countries/regions remained under-represented in the global research network, although Brazil and China made significant...
### Table 5: Top 10 most frequently co-cited references on social participation of older people during 2000–2019

| Title                                                                 | First Author | Journal                              | Year | Type   | Co-cited Times | Co-cited Times per year |
|-----------------------------------------------------------------------|--------------|--------------------------------------|------|---------|-----------------|-------------------------|
| Frailty in elderly people                                             | Clegg, A     | Lancet                               | 2013 | Article | 73              | 10.43                   |
| World report on ageing and health 2015                               | Morley, JE   | J Am Med Dir Assoc                   | 2015 | Report  | 60              | 12                      |
| Sarcopenia: European consensus on definition and diagnosis: Report of the European Working Group on Sarcopenia in older People | Morley, JE   | J Am Med Dir Assoc                   | 2013 | Article | 50              | 7.14                    |
| World report on ageing and health 2015                               | Morey, JE    | J Am Med Dir Assoc                   | 2013 | Article | 33              | 7.43                    |
| Gait speed and survival in older adults                              | Cruz-Jentoft, AJ | Age Aging                           | 2010 | Article | 45              | 3.3                     |
| Frailty consensus: a call to action                                   | Morey, JE    | J Am Med Dir Assoc                   | 2013 | Article | 33              | 3.3                     |
| World report on ageing and health 2015                               | JAMA         | JAMA-J Am Med Assoc                  | 2011 | Article | 33              | 3.3                     |
| Effect of structured physical activity on prevention of major mobility disability in older adults: The JACES Cohort Study | Kanamori, S  | JACES Cohort Study                   | 2014 | Article | 30              | 3.5                     |
| Loneliness and social isolation as risk factors for mortality in community-living elderly people: a systematic literature review | Holt-Lunstad, J | PLOS ONE                           | 2015 | Review  | 29              | 5.8                     |
| Risk factors for functional status decline in community-living elderly people: a systematic literature review | Stuck, AE    | Soc Sci Med                          | 1999 | Review  | 28              | 1.4                     |

Progress in the research field and ranked sixth and seventh, respectively, in terms of publication numbers.

Scientific collaborative networks are a hallmark of contemporary academic research (Conkova, Fokkema, & Dykstra, 2018). The country co-authorship map reflected that international cooperation in this research field was quite common. European countries such as the UK, the Netherlands and Italy not only had relatively high productivity but also close international cooperative relationships as indicated by higher co-authorship link strengths. This indicated that the geographical advantage was likely an important influencing factor in international research collaboration, which may lead to further changes in academic status. Additionally, the co-authorship network of institutions highlighted several institutional collaboration groups, such as the close partnerships with Duke University, the University of Rochester and Johns Hopkins University. However, these institutions’ international collaboration was relatively weaker than intranational collaborations, which may be related to the lack of mature cooperation policies between national scientific communities. Scientists are no longer independent players, so additional measures are necessary to foster international collaborations among institutions, which may also assist developing countries to increase research capacity.

Among the 10 most productive journals, nearly all were in the geriatrics and gerontology JCR category. The journals also covered the nutrition and dietetics, psychiatry, psychology and multidisciplinary categories, indicating that geriatrics necessarily involves multidisciplinary cooperation. When considering the impact of a journal, all of the top 10 active journals had an IF >2.0, and 33.3% (3/10) of the top 10 most productive journals had a 5-year IF >5.0, demonstrating the high quality of the publications.

Regarding article keywords, as the retrieval terms, it is unsurprising that activities of daily living, social participation and elderly were the most frequent keywords. Generally, research areas related to social participation of older people were extensive. To more accurately ascertain the research direction, we comprehensively analysed the keyword co-occurrence networks, the top 30 high-frequency keywords and the clusters of co-cited references and summarised several popular research topics as follows: the predominant topics in the literature over the past 20 years were classified into healthy ageing, quality of life, psychological problems such as depression, and health status of older people (Table 4 and Figure 6).

One popular health status topic is the relationship between dementia and social participation. Dementia is a syndrome, usually with a chronic or progressive nature, in which there is deterioration in cognitive function (i.e. the ability to process thoughts) beyond what might be expected from normal ageing (WHO, 2019). Several recent longitudinal studies reported that social participation may reduce the risk of dementia onset (Nemoto et al., 2017; Zhou, Wang, et al., 2018), which could provide an important option for better prevention, treatment and care for older people with dementia.

The function has been globally recognised as a marker of health status in older adults (Fisher, Graham, Krishnan, & Ottenbacher, 2016). Our research found a group of keywords focusing on the
health status and function of older people, such as disability, functional status, physical function, instrumental activities of daily life and cognitive function. Among the top 10 most frequently co-cited references (Table 5), some reports also focused on the effects of social participation on the prevention of mobility disability, gait speed or functional decline in older adults (Kanamori et al., 2014; Pahor et al., 2014; Studenski et al., 2011). A population-based cross-sectional survey found that promoting social participation among older adults could contribute to increasing physical activity, with potential benefits for chronic diseases (Kikuchi et al., 2017). Thus, as common forms of social participation, exercise and physical activity were also high-frequency co-occurrence keywords (Table 4). Combining the keywords in Table 4 with clusters 1 and 6 in Figure 6, as an important part of the functional system, cognitive function has also become a research hot spot. Focusing on cognitive function and social participation, it was reported that participation in some social activities could preserve cognitive function or decelerate further cognitive decline in older people. This view was supported by many recent cross-sectional or longitudinal studies (Fu, Li, & Mao, 2018; Sakamoto et al., 2017; Tomioka, Kurumatani, & Hosoi, 2018). Kyle J. Bourassa et al. found that social participation can predict two domains of cognitive functioning (memory and executive function), and the relative magnitude of this effect was comparable to physical health, depression and physical activity levels, which further elucidated the longitudinal association between social participation and cognitive function (Bourassa, Memel, Woolverton, & Sbarra, 2017).

Another popular topic related to health status that deserves further attention was frailty in older adults as illustrated by the representative keyword ‘frailty’ and ‘frail elderly’. Cluster 4 in the co-cited reference network also demonstrated that ‘frail elderly’ played an important role in this research area. As a common geriatric syndrome with a high prevalence in older adults, frailty is usually considered progressive age-related deterioration in physiological systems that can lead to extreme vulnerability to stressors and carry an increased risk of adverse outcomes including hospitalisation and mortality (Anderson-Hanley et al., 2018; Beard et al., 2016). Among the top 3 most highly co-cited references, two emphasised the research topic of frailty. Over the past 20 years, numerous definitions of frailty have been proposed, and measurement methods and potential causes have also been discussed. Of note, although frailty causes disability and restrictions on older people’s engagement in leisure activities, it is still a manageable condition (Granbom, Kristensson, & Sandberg, 2017). Interventions should target those who are pre-disabled to prevent dependency. Previous gerontological studies documented that participation in social activities has protective effects against adverse frailty outcomes (Duppen et al., 2019; Granbom et al., 2017), although the reason why such an intervention works on frail older people is unclear.

Burst keywords detected by CiteSpace are considered important indicators of research frontiers or emerging topics over time (Yang, Wang, Wang, Yang, & Bian, 2019). As presented in Supplement S3, hip fracture, physical disability, functional status and prevention seemed to attract the most attention of peer researchers in the past 20 years, while social participation, social support, instrumental activity, frailty and loneliness have attracted research interest since 2015. This implies that researchers gradually paid more attention to psychosocial health instead of only focusing on physical symptoms or mental health of older adults. This transitioning trend might be related to the conceptual framework for action on the social determinants of health proposed by the World Health Organization (WHO, 2010). After all, social participation is an important method and a potentially modifiable factor to achieve healthy ageing.

Overall, this study’s findings provide encouraging data on the research progress of social participation in older people. However, to promote social participation and successful ageing, it is necessary to identify why social participation is beneficial to health and ascertain the exact mechanisms or mediators. Based on the scientific landscapes we identified in this study, future research should consider improving understanding, measurement and monitoring of social participation. Furthermore, the potential for participation-based adjunctions to clinical nursing, especially in primary care settings where quality of life can be enhanced, remains to be explored. This implies that when caring for older people, particularly those with limited social participation due to disability, frailty, loss of a spouse or chronic

| Cluster ID | Size | Silhouette | Mean (year) | Label (TFIDF) | Label (LLR) | Label (MI) |
|------------|------|------------|-------------|---------------|-------------|------------|
| 0          | 121  | 0.9        | 1997        | Daily living activities | Prognosis | Metamemory |
| 1          | 77   | 0.852      | 2014        | Adults         | Cognitive functioning | Cognitive functioning |
| 2          | 74   | 0.785      | 2004        | Activities     | Sarcopenic obesity | Assessment instruments |
| 3          | 64   | 0.868      | 2005        | Alzheimer's disease | Alzheimer's disease | Southern Thailand |
| 4          | 56   | 0.876      | 2010        | Daily living   | Frail elderly | Score system |
| 5          | 46   | 0.87       | 2000        | Disability evaluation | Disability evaluation | Locomotor activity |
| 6          | 37   | 0.86       | 2009        | Daily living   | Mild cognitive impairment | Assessment and classification |
| 7          | 29   | 0.9        | 2006        | Daily living   | Elderly highlanders | Metabolic syndrome |
| 8          | 20   | 0.935      | 2003        | Social participation | Self-rated health | Outcomes |
| 9          | 11   | 0.976      | 2013        | Successful ageing | Successful ageing | Lesbian |
disease, nurses should formulate effective and tailored interventions to foster their social participation, thereby improving their health status and quality of life.

This study had limitations that merit mention. Although the WoSCC is a very authoritative database, some relevant articles might still have been missed when the WoSCC was used as the only database. In this study, we also attempted to identify overall research landscapes in terms of social participation of older people, but further efforts and studies are still needed to fully understand the details.

5 | CONCLUSIONS

In conclusion, this literature review has depicted scientific landscapes including publication numbers, countries, institutions, journals, hot spots and emerging trends over the past 20 years using bibliometric methods. The United States has a leading position in research into social participation of older people. International collaboration should be further promoted and strengthened. The Journal of the American Geriatrics Society is the most productive journal in terms of social participation of older people. The hot spots of retrieved literature covered aspects of healthy ageing, quality of life, psychological problems and health status, especially dementia, function (including cognitive function) and frailty, as well as their relationships with social participation of older people. Social participation, social support, instrumental activity, frailty and loneliness have become research frontiers over the past 5 years. These findings will help scholars better understand current research progress and predict future directions related to social participation of older people. Furthermore, by providing objective and reliable data on older people’s social participation, nurses should pay close attention to the development of scientific research in this field to maintain good health status of older people by motivating them to actively participate. This will not only contribute to healthy ageing and social values of older people, but the professional identity of nurses and other healthcare practitioners will also improve after helping older people.

Implications for practice

- Social participation is strongly associated with physical and psychological problems and the well-being of older people.
- Understanding research landscapes in terms of social participation of older people will add new insight into how to achieve healthy aging.
- Related professionals, especially nurses and many other health care practitioners, should transfer and adopt research knowledge related to social participation into the practice of caring for older people.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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**SUPPORTING INFORMATION**

Additional supporting information may be found online in the Supporting Information section.

Supplement S1-S2

Supplement S3

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