Systematic Review on Factors Associated With Self-perceived Burden Among Cancer Patients

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Research Article

Keywords: cancer patients, self-perceived burden, risk factors, prevalence, systematic review

Posted Date: April 19th, 2022

DOI: https://doi.org/10.21203/rs.3.rs-1472131/v1

Abstract

Introduction: Cancer is the leading cause of death in the world. There was a high prevalence of high self-perceived burden (SPB) among cancer patients and this could bring adverse consequences on the physical and mental health of cancer patients, which can lead to suicide if not treated well. This review aims to determine the prevalence of SPB among cancer patients and its risk factors.

Methods: Published journals before September 2021, from five databases (PubMed, ScienceDirect, Springer, Cochrane, and CNKI) were be retrieved according to the keywords. The keywords used included cancer patients, terminally ill patients, cancer, SPB, self-perceived burden, self-burden, self-perceived, factor, predictor, associated factor, determinants, risk factor, prognostic factor, covariate, independent variable and variable. The quality of the inclusion and exclusion criteria was independently reviewed by three researchers.

Results: Out of 12712 articles, there are 22 studies met the eligibility criteria. The prevalence of SPB among cancer patients ranged from 73.2% to 100% from Malaysia, China, Canada. Most of them had moderate SPB. Out of the reported factors, age, gender, marital status, ethnicity, residence, educational level, occupational status, family income, primary caregiver, payment methods, disease-related factors, psychological factors and physical factors were mostly reported across the studies.

Conclusions: In conclusion, SPB prevalence is high in cancer patients. Therefore, hospitals, non-governmental organizations, relevant policy makers and communities can provide special programs for high-risk groups to provide psychological guidance or design corresponding interventions to reduce the SPB level of patients and improve the quality of life.

Introduction

Cancer is a major public health problem and a leading cause of death worldwide, and the incidence and mortality of cancer have been on the rise in recent years [1]. Cancer itself and its treatment have different degrees of influence on patients' physiological function, psychological state and quality of life [2,3,4]. During the long course of treatment, family members are the primary caregivers of cancer patients, who need to assist the patient with daily life and medical needs [5], as well as providing emotional support will cause cancer patients to feel like a burden on family members and this feeling is called self-perceived burden (SPB) [6]. Specifically, SPB is an empathic concern, for instance, patients feel worried, depressed, guilty, self-burden and other negative emotions due to they worry their illness and care needs affect the caregiver [7]. SPB is a multi-dimensional concept [6], including caring burden, economic burden, family burden, psychological burden, and treatment burden [8], eventually might increase the psychological burden of cancer patients, affect patients' quality of life and medical decision-making [9], and leading to suicidal thoughts and threaten patients' lives [10]. There was a study to prove that the suicide rate among cancer patients was about two times higher than the general population [11], where the suicide rate accounted for 0.5% of all causes of death among cancer patients [12].

In general, medical staff only pay attention to the treatment effect on cancer patients, ignoring the psychological factors, such as SPB of cancer patients. Add the info about the prevalence or mean of SPB from other studies. Several studies have reported the factors associated with SPB, including sociodemographic factors are age, gender, residence, marital status, educational level, occupational status, household income, primary caregiver group [13,14,15,16,17,18,19,20], disease-related factors are stages of cancer, types of cancer, treatment methods [13,21,22,23] and other related factors are medical payment methods, social support, coping strategies [24,25,26,27]. Conducting a systematic review on this topic could aid to summarize the results from all the studies scientifically could arouse medical staff's attention to the psychological state of cancer patients and enable relevant departments to formulate intervention policies to reduce SPB in cancer patients and reduce suicide rate of cancer patients.

Materials And Methods

A systematic review of observational studies on the self-perceived burden and its predictors among cancer patients published until September 2021 was conducted to identify these reports. Five electronic databases were used for this systematic review, including PubMed, ScienceDirect, Springer, Cochrane, and CNKI.

Eligibility criteria

This study includes the following criteria: [1] Published journal, [2] Journal with English version or Chinese version, [3] Journal with cross-sectional study, [4] Journal with study population on cancer patients, [5] Journal related to self-perceived burden among cancer patients, [6] Cancer patients as a clear definition of the study [7] Articles with the keywords detailed in Table 1.

The keywords used were patients (cancer patients **OR** terminally ill patients **OR** cancer) **AND** self-perceived burden (SPB **OR** self-perceived burden **OR** self-burden **OR** burden **OR** self-perceived) **AND** factor (factor **OR** predictor **OR** associated factor **OR** determinants **OR** risk factor **OR** prognostic factor **OR** covariate **OR** independent variable **OR** variable), as shown in Table 1.

Selection of literature (screening and eligibility)

Through comprehensive literature retrieval of five electronic databases, relevant kinds of literature were identified by keywords and recorded in Table 1. Unpublished articles, duplicate articles, studies in languages other than English or Chinese, and irrelevant articles were excluded from this review. In the remaining records, the three reviewers (BYL, DW, PYL) further filtered the list of articles that met the criteria by title, abstract and keywords and deleted irrelevant studies and critical articles.

As shown in Figure 1, among the 12,712 potential articles, 92 duplicate records, 4 without available full-text articles and 8 articles such as conference minutes and books were excluded. Among the remaining 12,608 articles, 12,547 irrelevant articles were excluded according to title, abstract and keywords, and 6 irrelevant research populations and 10 qualitative studies were excluded. This screening process resulted

in 45 articles that met the eligibility criteria. The relevant data of each study including the authors, year of the study, study design, study population, sample size, methodology or instrument used, SPB score or SPB level, risk factors and outcomes were recorded.

The remaining studies were then screened from the full text to ensure compliance. A total of 24 articles were further excluded, including 9 articles with inconsistent research methods, 4 articles without a clear definition of the study population, and 10 articles without clear risk factors. A total of 22 studies met all eligibility criteria for this review. The selection and extraction of articles are based on the preferred report item statements of Systematic Review and Meta-analysis (PRISMA), as shown in Figure 1.

Of the 22 studies conducted on cancer patients, 15 studies reported SPB prevalence among cancer patients. Due to the different measurement questionnaires used in the selected studies, meta-analysis cannot be performed in this systematic review.

Results

In 22 articles, the study countries were from China (19 articles), Malaysia (1), the United States (1) and Canada (1). The population were breast cancer patients (1), cervical cancer patients (1), nasopharyngeal cancer patients (1), lung cancer patients (4), urinary cancer patients (1), bladder cancer patients (1), colorectal cancer patients (1), colon cancer patients (1) and other cancer types of patients (11). The total sample size of all articles was 3999, with a minimum sample size was 60 and a maximum sample size was 429 participants.

Prevalence of SPB

According to the 15 articles, the prevalence of SPB ranged from 73.2% to100%, from Malaysia (1), Canada (1) and China (13) [14,18,19,20,28,29,30,31,32,33,34,35,36,37,38]. Studies from the United States [39] and six studies in China reported the mean value of SPB, ranging from 29.44 ± 8.98 to 37.11± 5.15 [16,21,22,23,24,40].

Risk factors for SPB

Risk factors of SPB from 22 articles could be divided into four categories, including sociodemographic factors such as age, gender, marital status, ethnicity, residence, educational level, occupational status, family income, primary caregiver and payment methods [14,16,18,19,20,21,22,24,28,30,31,32,33,34,35,36,37,38,40]. The second category is disease-related factors, which include duration of disease, type of cancer, number of difficult chronic diseases, treatment method, metastasis, number of metastases, surgery was performed, number of hospitalizations, number of chemotherapy and radiation treatments and complication [16,18,20,21,22,24,30,31,34,37]. The third category is physical factors, which include radiation dermatitis, radiation proctitis, radiation cystitis, pain, weakness, dyspnoea, the quality of sleep, diet, self-care situation, grade of ulcerative fish reflex injury and daily life ability [29,31,34,37,38]. The fourth category is psychological factors, which include loss of

control, loss of dignity, hopelessness, depression, loss of interest, anxiety, desire for death, suicidal ideation, depression or anxiety disorder, resilience, posttraumatic growth and social support [23,28,29,32,33].

Discussion

This review study showed that the prevalence of SPB reported in cancer patients was varied depending on countries, for instance, the prevalence in Malaysia was 73.2% [28], China was 87.12%-100% [14,18,19,20,30,31,32,33,34,35,36,37,38], while that in developed country Canada was 76.7% [29]. A total of 14 articles of the studies came from developing countries, limiting generalizability because 13 articles of the studies came from China. The SPB prevalence in China was higher than in other countries, where economic burden might be the main reason that affected the increase of SPB [41]. Although the vast majority of patients have corresponding health care in China, the patient expectations and the actual reimbursement level there is still a certain gap, there is still a large part of the charge in the related health care expenses, this part of the cost borne by their family completely, in the long run, will no doubt cause huge economic pressure to ordinary families, so the patients still feel the economic burden is very heavy [16]. Compared with Canada, the financial burden of cancer patients is often lower due to their access to free health care [6].

Gender, marital status, residence, educational status, occupational status, family income, payment method and primary caregivers were the sociodemographic factors mostly reported by several studies [14,16,18,19,20,21,22,24,29,30,31,32,33,34,37,40], which might be caused by the characteristics of females and their family roles. Female patients are emotionally fragile and take care of their children, the elderly and the housework in the family. Cancer has caused a major change in the role of female patients, making them unable to participate in and exercise social role responsibilities, exercise family responsibilities and maintain the normal life of the family, so females have a higher SPB [42]. Higher SPB was found among married patients [18,29], but three studies showed contrasting results, suggesting higher SPB among widows [16,24,33]. It might be because they lack the care of a spouse. Three studies showed that the SPB of people living in rural areas was higher than that of urban areas, which might be related to their living environment, inconvenient transportation, and long-distance from hospitals [30,32,34].

People with higher education have lower SPB [14,16,22], this might be people with higher educational levels have more knowledge of medical treatment and treatment information and have a better understanding of the disease. They could obtain medical knowledge and treatment information from various channels and seek help from various sources, thus improving their disease awareness level and reducing SPB levels to a certain extent [43]. The reason for the low SPB among employed patients is that they pay less attention to the disease due to their work needs, and work at the same time to realize their value, creating an environment for patients to share with others, so that they have more access to family, social support [17].

The lower the monthly household income the higher the economic burden will be leading to the rise of SPB, which is the main concern is not enough money for treatment [16,18,19,24,31,33,34]. However, the impact of medical payment methods on the SPB of cancer patients is ultimately the impact of medical costs. Self-payment patients bear the highest medical costs, so the economic pressure is also the greatest [18,24,31,33,34]. But, one study did not mention the economic burden [7], which might be related to the different medical systems in different countries. In some countries, the government pays all the expenses of patients, so cancer will not bring economic pressure to patients. It can be seen that the superiority of the medical system can reduce the SPB of cancer patients [18]. In terms of primary caregivers, SPB was higher among spousal patients [19,20]. Patients have higher SPB if their spouse act as primary caregiver, with the possibility of cancer patients, might worry that their spouse will not have the energy to care for their children or parents [17].

Disease-related factors that have mostly been reported were duration of cancer, stages of cancer, types of cancer and treatment methods. The longer duration of cancer was associated with the higher the SPB [16,22,24], this might be because with the progression of the disease, cancer recurrence and metastasis occur, and patients are hospitalized frequently with exacerbation of the disease, leading to the increase of SPB in patients [24]. Some studies show that the SPB of stage IV was higher than that of other stages [16,18,24], which might be the more advanced the cancer is, the less likely it is to be cured, the fear of death in many patients makes SPB worse [13]. One study showed that breast cancer patients had higher SPB, which might be because breast cancer surgery can lead to changes in body image [21]. Surgery combined with chemotherapy or radiotherapy had the highest SPB, this might be due to the trauma of surgery as well as the adverse effects of radiation or chemotherapy, which aggravate the patient's physical burden and lead to the increase of SPB [24].

In this review, on the physical factors, the main factor leading to the elevation of SPB was pain. Pain affects about 70% of advanced cancer patients, and more than half of cancer patients experience moderate or severe pain [44]. Psychological factors were positively correlated with SPB. For example, loss of control, loss of dignity, hopelessness, anxiety, depression, loss of interest, might be increased SPB, resulting in cancer patients' desire to die and had suicidal ideation [29]. However, resilience, posttraumatic growth and social support were negatively correlated with the SPB [23,28,32,33]. Patients with high SPB levels often have feelings of self-blame and guilt, are reluctant to communicate with family members or friends, and refuse others' help, which leads to low social support.

Conclusions

In conclusion, SPB prevalence is high in cancer patients. SPB is a complex concept, which is influenced by many factors. In addition to known sociodemographic factors (gender, marital status, residence, educational level, occupational status, family income and primary caregivers), disease-related factors, psychological factors and physical factors, there may be other potential risk factors that contribute to elevated SPB in cancer patients. Therefore, by understanding the SPB level of cancer patients, hospitals, non-governmental organizations, relevant policy makers and communities can provide special programs

for high-risk groups to provide psychological guidance or design corresponding interventions to reduce the SPB level of patients and improve the quality of life.

Declarations

Funding

No funding.

Conflicts of Interest

None of the authors has any potential financial conflicts of interest related to this manuscript.

Availability of data and material

The authors confirm that the data supporting the findings of this study are available within the article.

Code availability

Not applicable.

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Ethics approval

Not applicable.

Consent to participate

Not applicable.

Consent for publication

Not applicable.

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Tables

Table 1: The literature is searched by using the following keywords:

Factor **OR** predictor **OR** associated factor **OR** determinants **OR** risk factor **OR** prognostic factor **OR** covariate **OR** independent variable **OR** variable
AND
Cancer patients **OR** terminally ill patients **OR** cancer
AND
SPB **OR** self-perceived burden **OR** self-burden **OR** burden OR self-perceived

Table 2: Summary of the selected studies

Author & Year	Study Population & Sample Size	Methodology/ Instrument	SPB score/ SPB level	Factors
China				
Zhang et al. (2019)	Colorectal cancer patients (157)	Self-Perceived Burden Scale Questionnaire (Simmons, 2007	34.81±6.82. Moderate level.	-Posttraumatic growth -Resilience
Liu et al. (2021)	Lung Cancer During Chemotherapy (345)	Self-Perceived Burden Scale for Cancer Patients Questionnaire (SPBS-CP) (Ren et al., 2013)	66.08±18.83. There were 4 no obvious SPB (1.2 %), 70 mild SPB (20.3 %), 114 moderate SPB (33.0 %), and 157 severe SPB (45.5 %).	-Cancer staging, -Mode of payment
Luo et al. (2021)	Cervical cancer administered with radiotherapy (110)	Self-Perceived Burden Scale for Cancer Patients Questionnaire (SPBS-CP) (Ren et al., 2013)	43.13 ± 16.65, Mild to moderate level. There were 44 (40%), 28 (25.5%), and 9 (8.2%) patients with mild, moderate, and severe SPB.	-Residence -Family per capita monthly income -Payment method -Metastasis -Radiation dermatitis -Radiation proctitis -Pain
Zhang et al. (2018)	Old cancer patients (240)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	37.11±5.15. Moderate level.	-Marital status -Economic income -Treatment -Number of complicated chronic diseases -Cancer staging -Course of the disease

				-Medical payment method
Qian et al. (2013)	Cancer patients (120)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	34.08±9.18. Many 87.5% of patients had a moderate level.	-Occupational status -Per capita household income -Marital status -Medical payment method -Quality of life
Wang et al. (2016)	Lung cancer patients (121)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	28.82±7.80. Mild SPB.	-Gender -Educational level -Occupational status -Primary caregiver -Gender -Duration of care -Caregiver health status -Time of illness -Treatment
Chen &Tao (2016)	Cancer patients (287)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	29.69 ± 7.37. Moderate level. The incidence rate of SPB was 87.12%.	-Household income -Primary caregiver -ECOG
Yang et al. (2014)	Cancer patients (286)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	21± 6. Mild level. There were 23.8% had no obvious SPB, 43.1% had mild SPB, 27.9% had moderate SPB 5.2% had severe SPB.	-Educational level -KPS scores -Residence -Gender of caregivers -Social support

Wang et al. (2017)	Advanced cancer patients (139)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	35.83±5.59. Moderate level. There were 0.7% had no obvious SPB, 10.8% had mild SPB, 66.2% had moderate SPB, and 22.3% had severe SPB.	-Gender -Education level -Family health care burden
Bai & Lu (2017)	Middle-aged cancer patients undergoing chemotherapy (95)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	30.3±7.8. Moderate level.	-Gender -Caregiver gender -Diagnoses -Admission -Number of chemotherapies -Caregiver -Working status -Caregiver care duration
Zhi et al. (2015)	Cancer inpatient undergoing chemotherapy (108)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	90.00 ± 12.20. Severe SPB was 41.67%, moderate SPB was 30.56%, and mild SPB was 27.78%.	-Whether or not the operation -Number of chemotherapies -Occupational status -Educational level -Primary caregiver -Caregiver health status
Zuo et al. (2021)	Old cancer patient (325)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	30.99±10.36. No obvious SPB was 17.8% (13.69±3.58), mild SPB was 16.0% (24.95±2.74), moderate SPB was 40.6% (32.88± 2.93), severe SPB was 25.5% (43.34±3.81).	-Gender -Education level -Occupational status -Marital status -Family income

				-Medical expense -Reimbursement category -Social support
Wu & Jiang (2010)	Cancer patient (153)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	29.44±8.98. Moderate level.	-Occupational status
Xiao et al. (2020)	Lung cancer patient (140)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	32.80±9.04. Moderate level.	-Gender -Age -Marital status -Education level -Occupational status -Family per capita monthly income -Duration of disease, stage of disease -Operation before chemotherapy -Number of chemotherapies -Number of different types of metastasis -Payment method of medical expenses -Caregiver's physical condition -Self-management efficacy

Zhang &Liu (2021)	Lung cancer patients receiving chemotherapy (245)	Self-Perceived Burden Scale for Cancer Patients Questionnaire (SPBS-CP) (Ren et al., 2013)	65.88 ± 17.83. There was no obvious SPB (1.6%), mild SPB (16.7%), moderate SPB (33.8%) and severe SPB (47.8%).	-Payment method
Wu (2019)	Breast cancer patients (60)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	30.81±7.73. Several 6.7% had no obvious SPB, 25.0% had mild SPB, 51.65% had moderate SPB, and 16.7% had severe SPB.	-Social support
Xu et al. (2021)	Colon cancer patients undergoing chemotherapy (232)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	31.89± 8.08. No burden was 10. 78%, the mild SPB was 26. 29%, moderate SPB accounted for 43. 97% and the severe SPB was 18. 97%.	-Education -Residence -Payment method -Sleep quality -Diet -Self-care -complications -Per capita monthly income of the family
Yin et al. (2016)	Nasopharyngeal cancer (117)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	33.18±4.54. Moderate level.	-Occupational status -Caregiver working status -Number of chemotherapies -Complications -Grade of oral mucosal reflex injury -Whether the caregiver is willing -Whether the financial situation is

				sufficient to cover medical expenses
Lu et al. (2018)	Bladder cancer (115)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	38.71 ± 12.59. A number of 90.4% had different levels of SPB.	-Marital status -Family per capita monthly income -Daily living ability
Malaysia				
Ting et al. (2020)	Urologic cancer patients (429)	Self-Perceived Burden Scale Questionnaire (SPBS) (Cousineau et al. (2003)	A total of 73.2% (314) had high SPB (total score 21 to 50).	-Ethnicity -Financial dependents, -ECOG, -Financial dependents, -Perceived social support
USA				
Simmons (2007)	Cancer patients (106)	Self-Perceived Burden Scale Questionnaire (Simmons, 2007)	21.41±8.92.	-Financial satisfaction
Canada				
Wilson (2005)	Terminally ill cancer patients (69)	A 13-item Structured Interview of Symptoms and Concerns Questionnaire (SISC) (Wilson et al., 2004)	Only 16 participants (23.2%) reported that they experienced no sense of burden. There were 27 individuals (39.1%) who reported a minimal to mild concern, and 26 (37.6%) who reported moderate to extreme levels of distress around being a burden to others.	-Married -Pain – -Weakness -Dyspnoea -Loss of control -Loss of dignity -Hopelessness-Depression -Loss of interest -Anxiety

		-Desire for death -Suicidal ideation - Depression or anxiety disorder

Table 3: Factors associated with SPB from systematic review (n=22 articles)

Factors	Results (highest risk SPB group)
Sociodemographic factors	
Age	Younger age (<40 years old) [16]
Gender	Female [16,21,33]
Marital status	Widowed [16,24,33]
	Married [18,29]
Ethnicity	Respondents of Dayak Sarawak [28]
Residence	Rural area [30,32,34]
Educational level	Master and above [20]
	Junior high school and below [34]
	Junior high school [32]
	Illiteracy [33]
	Primary school and below [14,16,22]
Occupational status	Unemployed [16,18,22]
	Resignation [20,40]
	Retirement [37]
Household income	<3000 yuan [31]
	<2000 yuan [19,24]
	1000 yuan [16,18]
	<501-1000 yuan [33]
	<5000 yuan [34]
Financial dependents	Those with financial dependents were significantly more likely to have high SPB than those who did not [28].
Whether the financial situation is sufficient to cover medical expenses	No [37]
Financial toxicity	Respondents who experienced subjectively FT was significantly more likely to have high SPB [28].
Financial burden	Very heavy burden [14]
Payment methods	Self-payment [18,24,31,33,34]

	New rural cooperative medical care [16,30,35]
Caregiver	
Primary caregiver	Spouse [19,20]
Gender of primary caregiver	Female [16]
	Male [21,32]
Health status of caregivers	Fair [22]
	Poor [16,20]
Caregiver working status	Employed [21,37]
Take care of the time	≥7 years [22]
	>3 years [21]
Whether the caregiver is willing	Yes [37]
Disease-related factors	
Disease diagnosis	Breast cancer [21]
Duration of disease	>3 year [24]
	4-6 years [22]
	6-<12 months [16]
Cancer stage	Stage III [30]
	Stage □ [16,18,24]
Number of complicated chronic diseases (species)	□3 [24]
Treatment methods	Surgery + radiotherapy/chemotherapy [24]
	Surgery + radiotherapy [22]
Metastasis	Yes [31]
Number of different transfer types	≥ 3 [16]
Whether or not the operation	No [16]
	Yes [20]
Hospitalization	6-12 times [21]

Number of chemotherapies	6-12 times [21]
	>6 times [20]
	7-12 times [16]
Number of chemotherapy complications	3 [37]
Complications	Yes [34]
Physical factors	
Radiation dermatitis	>2 [31]
Radiation proctitis	>2 [31]
Radiation cystitis	>2 [31]
Pain	Yes [31]
	r=0.24, p<0.05 [29]
Weakness	r=0.26 p<0.05 [29]
Dyspnoea	r=0.27, p<0.05 [29]
The quality of sleep	Poor [34]
Diet	Poor [34]
Self-care situation	Unable to self-care [34]
Grade of oral mucosal reflex injury	1 [37]
Daily life ability	B = 1.613, SE = 0.714, beta = 0.205, t value = 2.258, p = 0.031[38]
Psychological factors	
Loss of control	r=0.45, p<0.01 [29]
Loss of dignity	r=0.49, p<0.01 [29]
Hopelessness	r=0.46 p<0.01 [29]
Depression	r= 0.39, p<0.01 [29]
Loss of interest	r= 0.36, p<0.01 [29]
Anxiety	r=0.38, p<0.01 [29]
Desire for death	r=0.35, p<0.01 [29]
Suicidal ideation	r=0.27, p<0.05 [29]
Depression or anxiety	High burden [29]

disorder, n (%)	
Resilience	B= -0.941, Beta=-0.337, t value=-4.449, p≤0.001[23]
Posttraumatic growth	B= -0.461, Beta= -0.210, t value=-2.673, p=0.008[23]
Social support	Those who had low perceived social support were significantly more likely (OR = 6.82, 95% CI 2.35–19.77, p<0.001) to have high SPB [28].
	r value=-0.169，p=0.005 [32]
	Social support is generally [33]
ECOG	Those with an ECOG-PS rating of 1(OR = 6.52, 95% CI 3.57–11.92, p<0.001) or a rating of 2–4 (OR = 18.32, 95%CI 7.28–46.08, p<0.001) were significantly more likely to have high SPB than those with a rating of 0 [28].
	3~4 [19]
KPS scores	70 [32]

Figures

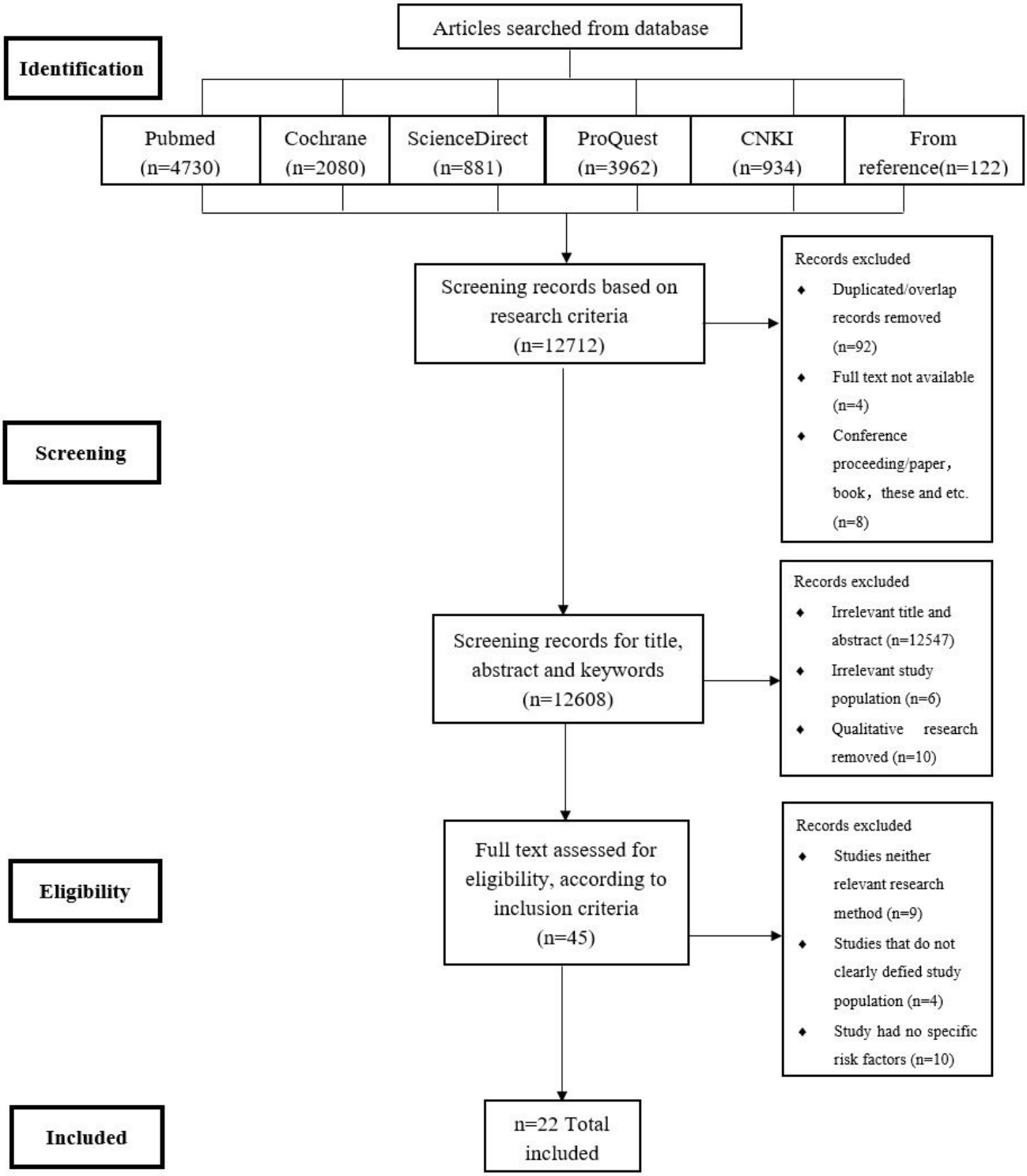

Figure 1

Flowchart of the systematic review process