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Needs for nurses to provide spiritual care and their associated influencing factors among elderly inpatients with stroke in China: A cross-sectional quantitative study

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Abstract

Objectives. To investigate the spiritual care needs and associated influencing factors among elderly inpatients with stroke, and to examine the correlations among spiritual care needs, spiritual well-being, self-perceived burden, self-transcendence, and social support.

Methods. A cross-sectional quantitative design was implemented, and the STROBE Checklist was used as the foundation of the study. A convenience sample of 458 elderly inpatients with stroke was selected from three hospitals in China. The sociodemographic characteristics questionnaire, the Nurse Spiritual Therapeutics Scale, the Functional Assessment of Chronic Illness Therapy—Spiritual Well-being, the Self-Perceived Burden Scale, the Chinese Self-Transcendence Scale, and the Perceived Social Support Scale were used. Descriptive statistics, correlation, Student's *t*-test, ANOVA, non-parametric, and multiple linear regression analyses were used to analyze the data.

Results. The total score of spiritual care needs was 29.82 ± 7.65. Spiritual care needs were positively correlated with spiritual well-being ($r = 0.709$, $p < 0.01$), self-transcendence ($r = 0.710$, $p < 0.01$), and social support ($r = 0.691$, $p < 0.01$), whereas being negatively correlated with self-perceived burden ($r = -0.587$, $p < 0.01$). Religious beliefs, educational level, residence place, disease course, spiritual well-being, self-perceived burden, self-transcendence, and social support were found to be the main influencing factors.

Significance of results. The spiritual care needs were prevalent and moderate. It is suggested that nurses should enhance spiritual care knowledge and competence, take targeted spiritual care measures according to inpatients' individual personality traits or characteristics and differences of patients, reduce their self-perceived burden and improve their spiritual well-being, self-transcendence and social support in multiple ways and levels, so as to meet their spiritual care needs to the greatest extent and enhance their spiritual comfort.

Introduction

Stroke, also known as "cerebrovascular accident," is a common acute cerebrovascular disease, with high morbidity, recurrence, mortality, and disability, and has become the second leading cause of death and the main cause of disability worldwide (Labovitz, 2020; Logroscino and Beghi, 2021). With the accelerating process of population aging, the incidence of stroke increases at an annual rate of 8.7%, and its morbidity and disability rate increases with age. At present, it has become the main cause of hospitalization for the elderly over 65 years old (Schafer et al., 2019). With the continuous development of China's population aging process, the proportion and incidence of elderly patients with stroke are gradually increasing, and the disability rate of stroke among people over 80 years old is as high as 57.3% (Yu et al., 2020). In the process of disease diagnosis, treatment and rehabilitation, most elderly stroke patients not only have to overcome complications such as language disorders and limb hemiplegia, but also suffer from the burden of family, economy, society, and other pressures. Worrying about life and death coupled with the shortage of social support system are more likely to suffer spiritual distress and pain of different degrees of body-mind-society-spirit integrity than young and middle-aged patients, such as anxiety, depression, the self-perceived burden increased, self-efficacy and happiness decreased, and the fear of death (Kim et al., 2015). More importantly, studies have reported that the elderly usually have the need to find the meaning and value of

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life, hope and strength, forgiveness and other needs, that is, spiritual care needs (Ayik et al., 2021).

Spirituality is derived from the Latin word "Spiritus," which means breathing, courage, strength, energy and soul, and usually endowed with the spirit of life (Lazenby, 2010). Spiritual care refers to the provision of care measures or activities for individuals according to their culture and beliefs by listening, accompanying or discussing the meaning and value of life with patients according to the assessment results of individual spiritual needs and pains (Ayik et al., 2021; Johnson et al., 2021). At present, the definition of spiritual care needs has not reached a consensus. The most commonly used definition currently refers to the expectation and needs of each individual to find the meaning, value, and purpose in life, as well as the need to feel the connection between himself and the present, others, God/holiness, faith, and nature (van Nieuw et al., 2021).

Background

The World Health Organization (WHO) called for attention to patients' spiritual well-being and spiritual care needs in 1998, and added spiritual well-being as one of the components of health (Dhar et al., 2011). At present, the spiritual care needs of patients with chronic diseases (such as heart failure) have been recognized and affirmed at the policy level (Chang et al., 2020). The Practice Guide for Hospice Care (Trial) (2017) issued by the National Health Commission of the PRC in 2017 stated that hospice care should include providing spiritual care for patients. Several studies have shown that providing spiritual care and meeting patients' spiritual care needs can relieve pain, improve physical function, promote patients' spiritual well-being, soothe the negative emotions, and reduce their self-perceived burden, thereby improving treatment effect and care compliance, as well as their life and death quality (Bandeali et al., 2020; Ripamonti et al., 2018).

At present, there are many studies on the spiritual care needs of stroke patients abroad. These studies show that stroke patients generally hope that nurses can care about their spiritual care needs and provide corresponding spiritual care (Mohamed et al., 2015; Moorley et al., 2016). Cowey (2012) rightly put forward that the hospice care of acute stroke patients needs to provide spiritual care for patients. However, the research on spiritual care needs in China started late, with few related research, most of which focus on patients with advanced cancer, heart failure, mental patients, and so on, which are influenced by sociodemographic, disease-related, and psychosocial factors. In contrast, there are few studies on the spiritual care needs of stroke patients, with mainly qualitative studies and few quantitative studies reported. Two qualitative studies in China have found that stroke patients have multi-theme spiritual care needs, such as "sudden physical disability affects spiritual troubles" and "contradictory family and social ties connections" (Jia, 2007; Huang and Yang, 2010). By interviewing and evaluating a patient with the first stroke from four aspects, Yang (2012) found that patient's spiritual needs were unsatisfied. At present, there is insufficient attention to the spiritual care needs of elderly stroke patients in China. In addition, the spiritual care education of nurses in China is still in its infancy and has not received adequate attention. Many factors jointly limit the improvement of nurses' spiritual care perceptions and competence, leading to the mismatch with patients' spiritual care needs, and in consequence, their spiritual care needs were rarely met (Bar-Sela et al., 2019; Liang et al., 2016; Eriksson et al., 2015).

Objectives

The objectives of this study are (1) to investigate the spiritual care needs and associated influencing factors among elderly inpatients with stroke; (2) to examine the correlations among spiritual care needs, spiritual well-being, self-perceived burden, self-transcendence, and social support; and (3) to provide a theoretical basis for the formulation targeted spiritual care interventions of elderly inpatients with stroke in China.

Methods

Study design and setting

A cross-sectional and quantitative design was employed, and the equator checklist document in this study was issued by Strengthening the Reporting of Observational Studies in Epidemiology (STROBE).

Participants and sample

The convenience sampling was used to recruit elderly inpatients with stroke from three hospitals in China. Respondents met the following criteria, respectively. Inclusion criteria: (1) meeting the diagnostic criteria of stroke in "Diagnostic Points of Major Cerebrovascular Diseases in China (2019)" (Zeng and Pu, 2019), and is confirmed by CT or MRI; (2) 60 years old and above; (3) able to communicate effectively and complete questionnaires independently or with help; and (4) informed and agreed to participate. Exclusion criteria: (1) cannot cooperate due to other serious organic disease (such as renal failure and malignant tumor) and (2) have participated or participating in similar research.

According to Kendall's (1975) sample estimation method, five to ten times of the entries were taken as the sample size in this study. There were 12 items in NSTS, 12 items in FACIT-Sp-12, 10 items in SPBS, 15 items in CSTS, and 12 items in PSSS. A total of 61 items need to be analyzed, and considering 5% invalid questionnaires, so the sample size ranges from 321 to 442, and 458 participants were included in this study.

Data collection

Participants were recruited from three hospitals in China from May to November 2021. Firstly, the investigation was conducted with the prior approval of the university and hospital administrators. And verbal and written consent was obtained from the participants who met the inclusion criteria. As the participants answered the questionnaires, the researchers were able to seek answers to any questions concerning the questionnaires. When the patients could not read the questions, the researchers helped the patients through reading the questions. The questionnaires were filled in approximately 15–20 min using a face-to-face interview and paper/pencil. The precaution was taken to protect the privacy of the participants, and only researchers have access to the data. Additionally, researchers recalled questionnaires on the spot, checked whether there was any defect, and made corrections in time. Finally, 458 valid questionnaires were collected.

Instruments

The spiritual needs model of chronic diseases patients established by Büssing et al. (2010) was used in this study, which includes

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four core dimensions: connection, peace, meaning/purpose, and transcendence. These are further attributed to the underlying categories of social, emotional, existential, and religious needs of patients, as shown in Figure 1.

The sociodemographic characteristics questionnaire was developed by the researchers to identify the demographic, individual, and socioeconomic characteristics of the patients in accordance with the literature, including 17 items (such as gender and age), as shown in Table 1.

The Nurse Spiritual Therapeutics Scale (NSTS; Taylor and Mamier, 2005; Xie et al., 2017) was used to assess needs for nurses to provide spiritual care. It consists of 5 dimensions and 12 items, including "sharing self-perception," "helping thinking," "creating a good atmosphere," "exploring spiritual beliefs," and "helping religious practice." And the Cronbach's α was reported as 0.792, which calculated in this study was 0.853. The items in the scale, which is a 4-point Likert type, with the 1–4 scores indicating a range from "never" to "strongly." The total score of NSTS was 12–48, with 12–24 being mild needs, 25–36 being moderate needs, and 37–48 being severe needs, with a higher score indicating higher needs for nurses to provide spiritual care.

The Functional Assessment of Chronic Illness Therapy—Spiritual Well-being (FACIT-Sp-12; Brady et al., 1999; Liu et al., 2016) was used to assess spiritual well-being, which is the most effective measuring tool of spiritual well-being of patients with chronic disease. There are 3 dimensions and 12 items in FACIT-Sp-12, including "peace," "meaning," and "faith." And the Cronbach's α was reported as 0.711–0.920, which calculated in this study was 0.913. The items in the scale, which is a 5-point Likert type, are scored between 0 and 4 points (0: not needed at all and 5: strongly needed). The total score of SPBS was 0–48, in which a higher score indicating a better spiritual well-being.

The Self-Perceived Burden Scale (SPBS; Cousineau et al., 2003; Wu and Jiang, 2010) was used to assess self-perceived burden. There are 3 dimensions and 10 items in SPBS, including "physical burden," "emotional burden," and "economic burden." The Cronbach's α was 0.910, which calculated in this study was 0.923. Likert 5 rating method was used, with the 1–5 scores indicating a range from "never" to "always." The total score of SPBS was 10–50, with a higher score indicating a heavier self-perceived burden.

The Chinese Self-Transcendence Scale (CSTS; Reed, 1991; Zhang et al., 2014) was used to assess self-transcendence. A total of 15 items were included and the Cronbach's α was 0.892, which calculated in this study was 0.907. Likert 4 rating method was used, with the 1–4 scores indicating a range from "never" to "extremely." The total score of CSTS was 15–60, with a higher score indicating a higher self-transcendence.

The Perceived Social Support Scale (PSSS; Zimet et al., 1990; Wang et al., 1999) was used to assess perceived social support. There are 3 dimensions and 12 items in PSSS, including "family support," "friend support," and "other support." The Cronbach's α was reported 0.880, which calculated in this study was 0.917.

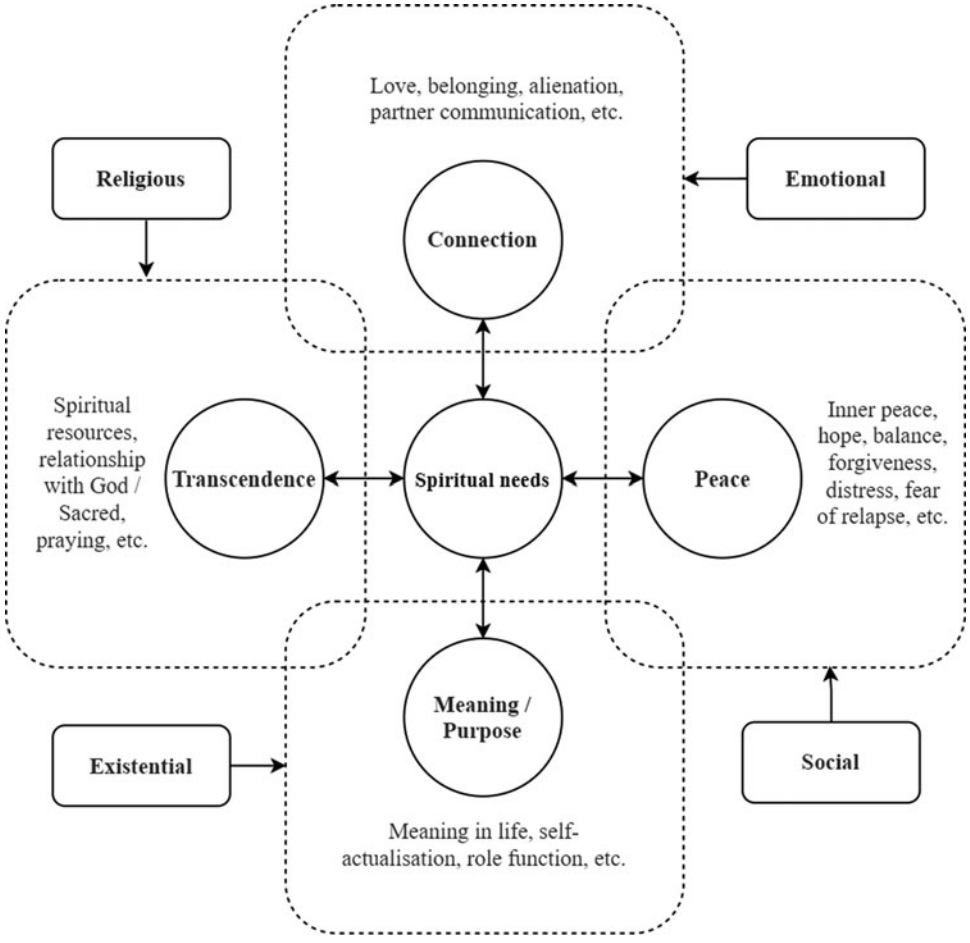

Fig. 1. The spiritual needs model of patients with chronic diseases.

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Table 1. Sociodemographic characteristics and the scores of NSTS based on sociodemographic differences among elderly inpatients with stroke ($n = 458$)

Characteristics	*n*	%	M (Q, R)	*Z/H*	*p*-value
Gender				−0.830	0.406
Male	327	71.4	28(23, 33)		
Female	131	28.6	29(24, 37)		
Age (years)				145.666	<0.001*
60–69	223	48.7	28(21, 30)		
70–79	157	34.3	29(23, 32)		
80–89	58	12.6	41(37, 43)		
≥90	20	4.4	43(42, 45)		
Nationality				−1.034	0.301
Han	412	90.0	29(23, 33)		
Minority	46	10.0	30(23, 40)		
Religious beliefs				−14.132	<0.001*
With	73	15.9	41(37, 43)		
Without	385	84.1	28(22, 30)		
Marital status				22.055	<0.001*
Unmarried	26	5.7	20(18, 24)		
Married	354	77.3	29(25, 32)		
Divorced	31	6.8	21(19, 27)		
Widowed	47	10.2	42(39, 43)		
Education level				264.572	<0.001*
Primary school and below	31	6.8	19(18, 21)		
Junior school	135	29.5	26(20, 29)		
High school/Secondary school	208	45.4	30(28, 32)		
Junior college	65	14.2	41(40, 43)		
Bachelor degree and above	19	4.1	43(42, 44)		
Residence place				−11.489	<0.001*
City/town	384	83.8	30(28, 37)		
Rural area	74	16.2	20(19, 22)		
Residence status				−5.928	<0.001*
Living alone	73	15.9	21(19, 31)		
Living with others	385	84.1	30(27, 34)		
Monthly income per capita (RMB)				3.759	0.289
<1,000	38	8.3	27(20, 29)		
1,000–2,999	235	51.3	29(22, 31)		
3,000–4,999	112	24.5	29(23, 33)		
≥5,000	73	15.9	30(27, 34)		
Medical payment methods				2.709	0.439
Urban employee medical insurance	319	69.7	30(29, 35)		
Urban and rural residents medical insurance	110	24.0	29(22, 31)		
Self-financed	12	2.6	28(22, 30)		
Others	17	3.7	28(21, 29)		
Type of stroke				88.066	<0.001*
Hemorrhagic stroke	44	9.6	42(39, 43)		

(*Continued*)

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Table 1. (*Continued.*)

Characteristics	*n*	%	M (Q, R)	*Z/H*	*p*-value
Ischemic stroke	378	82.5	29(22, 31)		
Mixed stroke	36)	7.9	41(30, 43)		
Disease course (years)				227.807	<0.001*
<0.5	203	44.3	24(39, 43)		
~0.5	146	31.9	30(22, 31)		
~1	79)	17.2	39(30, 43)		
≥2	30	6.6	43(39, 43)		
Number of episodes				−10.902	<0.001*
First episode	235	51.3	26(21, 30)		
Recurrence	223	48.7	32(29, 41)		
Number of chronic diseases				5.370	0.147
≤1	139	30.3	28(22, 31)		
2–3	281	61.4	30(28, 35)		
4–5	33	7.1	30(29, 35)		
>5	5	1.2	33(30, 36)		
Number of medications				3.802	0.284
≤1	47	10.3	27(21, 30)		
2–3	264	57.6	29(23, 31)		
4–5	95	20.7	30(28, 34)		
>5	52	11.4	31(29, 35)		

*$p < 0.01$, *Z*: Mann–Whitney *U*-test, *H*: Kruskal–Wallis H test.

7-point Likert was used, with the 1–7 scores indicating a range from "strongly disagree" to "strongly agree." The total score of PSSS was 12–84, with a higher score indicating higher perceived social support.

Statistical analysis

The raw data were recorded and checked by two researchers using Epidata 3.1 software, and the data were then statistically analyzed by using SPSS 21.0 version program. The normality test, which included skewness, kurtosis, and histograms, was used to examine whether the scores of numerical variables were normally distributed. Descriptive statistics were used to describe sociodemographic characteristics of participants. Mean ± Standard deviation [M (SD)] and [M (Q, R)] were used to describe the measurement data in accordance with normal distribution or non-normal distribution, respectively. Student's *t*-test, ANOVA, correlation, and non-parametric analyses were performed to assess the relationships among sociodemographics, spiritual care needs, and other variables. Multiple linear regression was conducted to assess whether the variables predicted the spiritual care needs.

Ethical considerations

Ethical approval for conducting this study was obtained from the ethics committees of hospitals. After granting the official permission from hospital managers, the participants were approached by the researchers. A consent form for volunteer participation was completed by the participants. The participants were given the right to decide whether to participate in the study or not. Anonymity was ensured as the questionnaire contained no marks, names, or numbers that could identify participants. The questionnaires were anonymous and confidential, and the data obtained are only used for academic research.

Results

A total of 458 patients were recruited in this study, including 327 males (71.4%) and 131 females (28.6%), with an average age of 71.25 ± 8.51. And 223 (48.7%) aged 60–69, 157 aged 70–79 (34.3%), 58 (12.6%) aged 80–89, and 20 aged ≥90 (4.4%). And other sociodemographic characteristics were shown in Table 1.

The total score of spiritual care needs among the 458 elderly inpatients with stroke was 29.82 ± 7.65, which was moderate. The number of inpatients who were mild, moderate, and severe with the spiritual care needs were 28 (6.1%), 379 (82.7%), and 51 (11.2%), respectively. And among 5 dimensions, the average scores of dimension from high to low created a good atmosphere (2.86 ± 0.65), sharing self-perception (2.48 ± 0.66), helping thinking (2.46 ± 0.68), exploring spiritual beliefs (2.36 ± 0.70), and helping religious practice (1.93 ± 0.74). And the total scores of FACIT-Sp-12, SPBS, CSTS, and PSSS were 35.90 ± 6.57, 35.65 ± 7.33, 35.91 ± 8.64, and 49.57 ± 10.08, respectively.

According to the results of single factor analysis, inpatients with different ages, religious beliefs, marital statuses, education levels, residence places, residence statuses, types of stroke, disease courses, and number of episodes had statistical significance in

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Table 2. The correlations among NSTS, FACIT-Sp-12, SPBS, CSTS, and PSSS in elderly inpatients with stroke ($n = 458$, r)

Items	NSTS total score	Sharing self-perception	Helping thinking	Creating a good atmosphere	Exploring spiritual beliefs	Helping religious practice
FACIT-Sp-12 total score	0.709*	0.694*	0.676*	0.616*	0.575*	0.610*
Meaning	0.597*	0.586*	0.566*	0.511*	0.497*	0.509*
Peace	0.588*	0.579*	0.554*	0.501*	0.471*	0.516*
Faith	0.717*	0.699*	0.690*	0.634*	0.565*	0.611*
SPBS total score	−0.587*	−0.586*	−0.565*	−0.445*	−0.528*	−0.644*
Physical burden	−0.581*	−0.581*	−0.560*	−0.441*	−0.518*	−0.536*
Emotional burden	−0.550*	−0.549*	−0.528*	−0.414*	−0.500*	−0.515*
Economic burden	−0.539*	−0.540*	−0.521*	−0.406*	−0.483*	−0.495*
CSTS total score	0.710*	0.698*	0.675*	0.633*	0.569*	0.591*
PSSS total score	0.691*	0.678*	0.655*	0.625*	0.535*	0.581*
Family support	0.663*	0.651*	0.631*	0.608*	0.506*	0.536*
Friends support	0.671*	0.658*	0.632*	0.608*	0.522*	0.570*
Other support	0.663*	0.650*	0.629*	0.588*	0.516*	0.572*

*$p < 0.01$.

NSTS score difference, as shown in Table 1. Table 2 shows that spiritual care needs were positively correlated with spiritual well-being ($r = 0.709$, $p < 0.01$), self-transcendence ($r = 0.710$, $p < 0.01$), and social support ($r = 0.691$, $p < 0.01$). While they were negatively correlated with self-perceived burden ($r = -0.587$, $p < 0.01$), the results of multiple linear regression analysis from Table 3 revealed that religious beliefs, education level, residence place, disease course, spiritual well-being, self-perceived burden,

Table 3. A multiple linear regression of spiritual care needs among elderly inpatients with stroke ($n = 458$)

Variables	*B*	*SE*	*β*	*t*-value	*p*-value
Constant	7.785	2.103	–	3.702	<0.001**
Age	−0.252	0.186	−0.028	−1.354	0.176
Religions beliefs	−1.143	0.421	−0.062	−2.714	0.007*
Marital status					
Married	0.561	0.556	0.031	1.009	0.220
Divorced	0.106	0.650	0.003	0.163	0.447
Widowed	0.645	0.692	0.026	0.931	0.271
Education level	0.944	0.207	0.113	4.565	<0.001**
Residence place	−1.413	0.385	−0.068	−3.674	<0.001**
Residence status	−0.110	0.460	−0.005	−0.240	0.810
Type of stroke					
Ischemic stroke	−0.020	0.448	−0.001	−0.045	0.964
Mixed stroke	0.356	0.547	0.013	0.651	0.515
Disease course	0.806	0.250	0.098	3.227	0.001*
Number of episodes	0.322	0.363	0.021	0.885	0.377
FACIT-Sp-12 total score	0.397	0.043	0.341	9.263	<0.001**
SPBS total score	0.065	0.027	0.062	2.385	0.017*
CSTS total score	0.262	0.037	0.296	7.053	<0.001**
PSSS total score	0.111	0.028	0.146	3.930	<0.001**

*$p < 0.05$.
**$p < 0.01$, $R = 0.849$, $R^2 = 0.721$, adjusted $R^2 = 0.713$, $F = 57.685$.

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self-transcendence, and social support were the main influencing factors, which could explain 71.3% ($R = 0.849$, $R^2 = 0.721$, adjusted $R^2 = 0.713$, $p < 0.01$).

Discussion

In this study, the total score of NSTS among 458 elderly inpatients with stroke was 29.82 ± 7.65, and the average score of entries was 2.49 ± 0.64. The number of inpatients who were mild, moderate, and severe with the spiritual care needs were 28 (6.1%), 379 (82.7%), and 51 (11.2%), respectively. Comparison of domestic normative scores shows that the overall spiritual care needs among elderly inpatients with stroke were prevalent and generally moderate (Xie et al., 2017). The reasons for this may be as follows. Firstly, quality of life of elderly inpatients with stroke is seriously affected by the psychological, economic, and social burdens caused by the pain, stigma, and functional impairment. In addition, spiritual care in China is still in its infancy, there is still a lack of systematic spiritual care education model, and nurses have low awareness of spirituality and spiritual care, resulting in a mismatch between their competence and patients' needs in spiritual care (Li et al., 2017). Last but not least, most of the elderly stroke inpatients may fail to realize that spiritual care is an "excellent living" care method that can mobilize positive emotions, promote spiritual comfort, and improve the quality of life. The total score of NSTS was lower than several domestic studies on cancer patients, such as breast cancer (Liu et al., 2019), gastric cancer (Cai and Wang, 2018), and end-stage lung cancer (Shen and Dong, 2018). The reason for this may be that, compared with the elderly inpatients with stroke, cancer patients have higher spiritual distress and pain, and they hope to overcome and get rid of the pain and hardship, and they are eager to seek help and spiritual comfort from families and friends, and obtain confidence and perseverance to adhere to treatment (Sastra et al., 2021). Of the five dimensions, the highest score was 2.86 ± 0.65 for "creating a good atmosphere," indicating that inpatients wish the nurses to provide them with a solitary environment, bring some humor, and be exposed to positive things and ideas as well as encouragement from others to enhance their confidence so that they could perceive the meaning of faith, death, life and family, and overcome fear and experience inner peace. The lowest score was only 1.93 ± 0.74 in the dimension of "helping religious practice" which may be due to the fact that 385 (84.1%) of the patients in this study had no religious beliefs, and the non-religious patients were more resistant to religious practices.

The results of this study showed that inpatients with religious beliefs had a higher spiritual care needs than those without religious beliefs ($B = -1.143$, $p < 0.01$), which was consistent with the findings of Li et al. (2017). The reasons may be as follows. Religious beliefs, as an important part of spiritual care needs, is itself an expression of spirituality, which is at the highest level of the conceptual framework of spirituality. Its manifestations mainly include participating in religious activities, reading related books, etc., finding the meaning and value of eternal life, and regaining peace and comfort through continuous transcendence and integration (O'Brien et al., 2019). Studies have shown that religious beliefs are related to the mental health of patients, and that patients with religious beliefs are more likely to accept the truth of the disease and believe that prayer is a process of obtaining power from God as a post-traumatic growth experience, which can divert attention from physical symptoms, enhance the resistance to disease, and relieve self-pressure (Shi et al., 2012). Therefore, nurses should pay more attention to the religion-related components of spiritual care needs and provide appropriate spiritual care measures.

The results of this study showed that inpatients with higher education level had a higher spiritual care needs than those with lower education level ($B = 0.944$, $p < 0.01$), which was similar to the results of Büssing et al. (2015) while being contrary to the findings of Li et al. (2017). The reasons for this may be as follows. Inpatients with higher education level are better at maintaining physical, psychological, and social well-being than those with lower education level. They are more proactive and efficient in learning about illnesses, and they can sensitively detect spiritual troubles and needs. In this process, they are good at using all resources available to carry out positive psychological suggestions and adjustments to maintain the overall spiritual health and spiritual peace. Therefore, nurses should provide inpatients with disease-related knowledge and information as well as psychological support using easy-to-understand methods according to their individual characteristics.

As shown in this study, inpatients living in cities/towns had a higher spiritual care needs than those living in rural areas ($B = -1.413$, $p < 0.01$), which was consistent with the results of Wang (2020) and van Nieuw et al. (2020). The reasons for this may be that, the overall medical level in cities is higher than rural areas, and inpatients living in cities/towns tend to be more educated, and they are better able to gain a deeper understanding of diseases and significance of spiritual care for disease treatment and mental health. As a contrast, medical resources in rural areas are limited, patients have heavier disease burden, and patients need to consider more to receive good medical services, which are relatively difficult. All these lead to patients easily ignoring the importance of spirituality.

As shown in the current investigation, inpatients with longer disease courses had a higher spiritual care needs than those with shorter disease courses ($B = 0.806$, $p < 0.01$), which was consistent with the results of Chan et al. (2016). The reasons may be as follows. The shorter the course of disease is, the less patients think about the meaning of life. They will not actively seek spiritual strength and sustenance, resulting in lower spiritual care needs. However, with the treatment progress of the disease, inpatients receive greater impact from physiological, psychological, and role changes due to various sequelae (such as paralysis and slurred speech), and are easier to consider death-related issues and become increasingly fearful of death (Logroscino and Beghi, 2021). They will strive to find their own spiritual strength to actively cope with the disease, thus generating higher spiritual care needs. Therefore, nurses should pay more attention to patients' psychological and spiritual support, and help them regain spiritual comfort at the end of the disease or even the end of their life.

The results of this study showed a positive correlation between spiritual well-being and spiritual care needs, which means that the higher spiritual well-being is, the higher their spiritual care needs are ($r = 0.709$, $p < 0.01$), which was consistent with the research conducted by Zhang (2018). Research by Liu et al. (2019) and Wang (2020) also showed that spiritual well-being was a predictive indicator of patients' spiritual care needs. The reasons for this may be as follows. Inpatients with better spiritual well-being can treat their current plight with a peaceful and harmonious mentality, find strength and comfort in their beliefs or spiritual beliefs, have a more thorough understanding of illness and life, and have a more clear picture about the meaning and purpose

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of life (Büssing et al., 2015). Inpatients in this category are more willing to tell nurses about their spiritual life, explore the relationships among themselves, nature, life and the spiritual power they believe in, and obtain spiritual support through a variety of ways, which was consistent with Kamijo and Miyamura (2020) who reported that patients with higher spiritual well-being attach more importance to the communication and contact with their families, friends, and nurses, and are more likely to agree with the significance of meeting spiritual care needs.

This study also showed that spiritual care needs were negatively correlated with self-perceived burden, that is, the heavier self-perceived burden is, the lower spiritual care needs are ($r = -0.587$, $p < 0.01$). Self-perceived burden is the empathic concern that results from an individual's disease and care needs affecting others, resulting in decreased guilt, burden, and self-perception (Ren et al., 2016). The reason for this may be that, the heavier self-perceived burden, the stronger the sense of guilt, and they have physical and psychological problems. In addition, the dysfunction, image change, and limited activities directly caused by stroke lead to a huge psychological gap in patients, and they are more likely to have negative emotions, and unable to face the disease, their families, and the society positively. As a result, their confidence in overcoming disease gradually decreases, blocking harmony at the spirituality level and ultimately making the spiritual care needs significantly lower. Studies have shown that psychological factors can alleviate or aggravate the symptoms of the disease by affecting the mental health of patients, thus affecting the onset, progression, and prognosis of disease, and ultimately determining the quality of life (Liang and Zhang, 2020). Therefore, nurses should meet inpatients' spiritual care needs by strengthening communication with them and reducing self-perceived burden through a variety of effective emotional intelligence interventions (such as life review therapy, music therapy, and nostalgia therapy).

The results of this study showed a positive correlation between self-transcendence and spiritual care needs, namely, the higher self-transcendence is, the higher spiritual care needs are ($r = 0.710$, $p < 0.01$). Self-transcendence refers to the different ways to improve individual's ability to achieve continuous transcendence in the face of life events, so that self-actualization reaches a higher level, which is inseparably linked to the mind, psychology, and spirit (Bajjani-Gebara et al., 2019). The reasons for this may be as follows. Stroke inpatients with a higher self-transcendence level often deal with problems in different ways. When faced with physical pain and various negative emotions, they can analyze the essential issues, and use all favorable factors (such as interpersonal relationships, and family support) to deal with them positively, so as to enhance self-confidence and self-esteem, and thus achieve spiritual harmony. Therefore, nurses should improve their self-transcendence through a variety of effective psychological intervention measures, improve their understanding of the significance of life fundamentally, so as to meet their own spiritual care needs in the process of achieving self-transcendence.

As shown in this study, spiritual care needs were positively correlated with social support, that is, the higher social support is, the higher spiritual care needs are ($r = 0.691$, $p < 0.01$), which was similar to the results of Erichsen and Bussing (2013). Social support is one of the potential resources for patients to face disease stress, which not only provides buffer and protection for themselves, but also helps them to maintain a good emotional experience (Sharrief et al., 2017). The reasons may be as follows. The more social support patients receive, the more they can give vent to all kinds of negative emotions to their caregivers, and are willing to communicate with others about their feelings and ideas. In the process, they feel spiritual support and strength from their caregivers. As a result, the utilization of social support is increased, so that their confidence in treatment is increased. Therefore, nurses should provide inpatients with multi-faceted support (such as patient exchange meetings) in a targeted manner, feel love from caregivers, so as to meet their spiritual care needs.

Strengths and limitations

The study has several limitations. Firstly, the study was conducted using a convenience sampling method, and only 458 elderly inpatients with stroke were selected from three hospitals in China, which may mean that the sample is not being representative enough and the findings are somewhat one-sided and cannot be generalized. In addition, due to the differences and abstractness of "spirituality" cultures between the East and the West, there may be some deviations of results. It is recommended that assessment suitable for Chinese cultural background should be adopted and include more patients in different regions in future research.

Conclusion

This study found that the 458 elderly inpatients with stroke had moderate spiritual care needs, and religious beliefs, education level, residence place, disease course, spiritual well-being, self-perceived burden, self-transcendence, and social support were the main factors affecting spiritual care needs. It is suggested that nurses should strengthen learning of spiritual care knowledge, improve their spiritual care competence, take targeted spiritual care measures according to patients' individual characteristics and differences, reduce self-perceived burden, and improve spiritual well-being, self-transcendence and social support to meet their spiritual care needs to the maximum and enhance their spiritual peace.

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Author contributions.
Zhangyi Wang contributed to the work design, data collection, data acquisition, data analysis, data interpretation, draft the article, revise important intellectual content of the article, and the final approval of the version to be submitted. Haomei Zhao contributed to the work design, analysis, data acquisition, data interpretation, draft the article, and the final approval of the version to be submitted. Yue Zhu and Siai Zhang contributed to the analysis of the work, data interpretation, draft the article, and the final approval of the version to be submitted. Luwei Xiao and Haiqin Bao contributed to the analysis of the work, data interpretation, draft the article, and the final approval of the version to be submitted. Zhao Wang, Yue Wang and Xuechun Li contributed to the analysis of the work, data interpretation, writing of the article, and final approval of the version to be published. Yajun Zhang and Xiaoli Pang contributed to the data interpretation, revise important intellectual content of the article, and the final approval of the version to be submitted.

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