

Chinese Version of VEINES-QOL/Sym Questionnaire in Chinese Patients with Deep Venous Thrombosis: Cultural Adaptation and Psychometric Properties

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Abstract: Purpose: To verify the psychometrical properties of the Chinese-version VEnous INsufficiency Epidemiological and Economic Study-Quality of Life/Symptoms (VEINES-QOL/Sym) questionnaire, in Chinese patients with deep venous thrombosis. Methods: The English-version VEINES-QOL/Sym questionnaire was translated into Chinese by forward-translation, back-translation and cultural adjustment, and approved by the original authors. It was administered to patients with deep venous thrombosis of the two local hospitals in Nanchong from Jul 2017 to Jan 2018. The internal consistency reliability and construct validity of the Chinese version of VEINES-QOL/Sym questionnaire were evaluated. Main outcome measures were as follows: Reliability was tested using Cronbach's alpha coefficient, internal consistency reliability, retest reliability, split-half reliability. Validity was verified by structure validity, content validity and criterion-related validity. Results: In pilot study, a total of 132 participants completed the questionnaire. In validity sample, a total of 335 participants completed the questionnaire. The Chinese-version VEINES-QOL/Sym questionnaire has 25 items. And it had good internal consistency and stability (Cronbach's α coefficients ranging from 0.877-0.930, split-half coefficients ranging from 0.792-0.913 and retest coefficients ranging from 0.891-0.987). The Chinese-version VEINES-QOL/Sym summary score had good criterion-related validity in the PCS (physical component summary) and MCS (mental component summary) of Chinese-version SF-36 (0.801 and 0.792). Four factors emerged from exploratory factor analysis, which named symptoms (Q1a-i, Q6), physical functioning (Q2, Q3a-d), role-physical (Q4a-d, Q5) and mental health (Q7a-e) respectively. Conclusions: This questionnaire was shown to be reliable and valid in the Chinese language. We propose that the Chinese-version VEINES-QOL/Sym is a useful tool for local use.

Keywords: VEINES-QOL/Sym; Deep venous thrombosis; Quality of life; SF-36; Questionnaire; Validity; Reliability

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1. Introduction

Deep venous thrombosis (DVT) is a common and unresolved issue associated with substantial morbidity which reported of 70–140 cases/100,000 persons in one year^[1].

There is a large body of evidence which shows that patients with DVT have adverse clinical outcomes, such as mortality and recurrence, especially in the first six months^[2,3]. Hence, the assessment of adverse clinical outcomes in patients with DVT is significant. Currently, studies narrowly focus on physical symptoms and factors. Clinicians and researchers were rarely focused on self-reported quality of life in patients. Indeed, both objective and subjective instruments should general appeal in assessing the impact of DVT. Quality of life (QoL) is a multidimensional concept and has been used to mean lots of different things^[4,5]. The instruments of QoL involve both generic and disease-specific instruments^[6]. The former are used to evaluate outcome in people from all walks of life, whereas the latter have good sensitivity and specificity in detecting the feeling and experience of specific disease in patient^[7]. The 36-item Short Form Health Survey questionnaire (SF-36), the EuroQol-5D (EQ-5D) and the Nottingham Health Profile questionnaire (NHP) are widely used generic quality of life instruments in clinicians and researchers. Meanwhile, disease-specific quality of life measures, which vastly used, are the VEnous INsufficiency Epidemiological and Economic Study-Quality of Life/Symptoms questionnaire (VEINES-QOL/Sym) and the chronic venous insufficiency quality of life questionnaire (CIVIQ). To date, researchers used both generic and disease-specific instruments to evaluating the health status in patients with

DVT^[8-9].

The VEINES-QOL/Sym questionnaire, as the one of commonest instrument, also is a patient self-reported outcomes instrument used in evaluating patients with DVT^[2, 10]. It has been used in epidemiological studies and clinical intervention studies to comprehensively evaluate the symptoms and quality of life in patients with DVT, which provide references in disease treatment, prevention of recurrence and other aspects. The questionnaire developed by Lampling was constructed based on literature review, standard translation procedures, expert review and pilot study^[11]. Until now, it has been translated into a variety of languages, including Turkish, Norwegian, Dutch, Swedish, French (to use in Belgium and France), French Canadian (to use with French-speaking patients in Canada), Persian and Italian, having good validity, reliability and acceptability^[2,3,6,8,11-14]. However, the VEINES-QOL/Sym questionnaire has not yet been validated in Chinese patients with DVT. Research of DVT in Chinese patients with a useful tool is of particular interest to assessment the complex factors in physical and mental. The present study aimed to validating the Chinese version of the VEINES-QOL/Sym questionnaire and exploring its psychometric properties and applicability.

So, according to literature recommendation, we adopt the procedures of forward-translation, back-translation and cultural adjustment in this study^[15].

2. Materials and Methlds

2.1 Patients

Medical database was searched for the diagnosis of deep venous thrombosis from 2 hospitals in Nanchong: Affiliated Hospital of North Sichuan Medical College and Affiliated Nanchong Central Hospital of North Sichuan Medical College in Nanchong, China, from Jul 2017 to Jan 2018. An agreement and the approval of the research ethics committee from 2 hospitals and the North Sichuan Medical College was obtained before the implementation of the study.

The inclusion criteria for participants who were (1) had a confirmed diagnosis of deep vein thrombosis of the lower extremities in outpatient service, (2) 18 years or older, (3) able to complete questionnaire by independently reading or the help of researcher, and (4) be will to participate in this study and not participate in other similar studies at the same time. Participants who were mental disease, cognitive impairment, disturbance of consciousness or at the end of life were excluded.

2.2 VEINES-QOL/Sym questionnaire

The VEINES-QOL/Sym questionnaire is a 26-item questionnaire, with the items divided to measure the sub-constructs of symptoms and quality of life^[11]. The former contains 10 items evaluating the frequency of symptoms from patients with deep venous thrombosis, whereas the latter contains 25 items (involving all items of the questionnaire except Question 2) assessing the overall effect of deep venous thrombosis on the quality of life in patients^[11]. The format of the SF-36 was used in the questionnaire, rated on 2-point to 7-point, high scores indicating better outcomes^[11]. To easily understand the range of scores, raw scores were firstly transformed to z score equivalents (mean, 0; standard deviation, 1), and then z score equivalents were transformed to T scores (mean, 50; standard deviation, 10)^[11].

For the current study, Brislin's model of translation was used to translate the original English version into Chinese.

First, the English version of the VEINES-QOL/Sym questionnaire was translated into Chinese by two independent translators (researcher A and researcher B) who are Chinese native speakers, forming Chinese version 1 and Chinese version 2. Then, researcher C organized translators to discuss, compared the differences between the two versions, and jointly determined the two versions as a translation version (Chinese version A).

Second, the questionnaire was translated from Chinese to English by an English native translator who was fluent in Chinese and was blinded to the English version questionnaire, forming English version B.

Third, an expert committee consisting of previous researchers and three bilingual experts (1 linguists, 1 nursing specialist, 1 medical specialist) who were Chinese native speakers and fluent in English compared the English and Chinese versions, jointly discussed and modified any inconsistencies, forming the Chinese version B.

Forth, cultural adaption of Chinese version B was carried out by advisory specialist and cognitive debriefing interviews. Researchers conducted advisory specialist with 14 domestic experts (including 5 clinical medical experts, 5 clinical nursing experts and 4 psychological experts). Meanwhile, researchers conducted cognitive debriefing interviews with 10 DVT patients. And then, researchers collected all kinds of opinions, discussed and revised the items with understanding differences. By cultural adaption, it was revised to form the VEINES-QOL/Sym prediction questionnaire. Then, psychometrics methods were used in the prediction questionnaire.

2.3 SF-36 questionnaire

36-item Short Form Health Survey questionnaire (SF-36) is a self-assessment questionnaire involving 36 items with 8 dimensions: physical functioning (PF), role-physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role-emotional (RE) and mental health (MH)^[16]. The above eight dimensions are divided into physical component summary (PCS) and mental component summary (MCS)^[16]. The PCS is account for the total score of PF, RP, BP and GH dimensions which is reflect the state of physical health, while the MCS accounting for the total score of VT, SF, RE and MH dimensions which is reflect the mental health status. The Chinese-version SF-36 has good reliability and validity in Chinese^[17].

2.4 Data collection

Participates were searched from Affiliated Hospital of North Sichuan Medical College and Affiliated Nanchong Central Hospital of North Sichuan Medical College in Nanchong, between Jul 2017 and Jan 2018. The number of outpatients per year is about 2.86 million in the 2 hospitals. In pilot study, 132 outpatients with DVT were asked to complete the VEINES-QOL/Sym questionnaire by face to face survey. In validation sample survey, 335 outpatients with DVT were asked to complete the VEINES-QOL/Sym and SF-36 questionnaires by face to face survey. If a questionnaire was incomplete, to complete all missing items, outpatients were asked to take

home the questionnaire and return it at the next visit. Demographic and clinical data of patients were collected from medical records, including gender, age, education and diagnosis.

2.5 Statistical analysis

Demographic or clinical characteristics were expressed as proportions or medians and ranges. Internal consistency reliability, retest reliability, split-half reliability, structure validity and content validity were used in the pilot sample (n=132). The criterion-related validity was used in validation sample (n=335). P-Values of <0 .05 were considered statistically significant.

3. Results

3.1 Questionnaire Modification

Questionnaire modifications included item wording modification and item exclusion.

3.2 Item wording modification

Owing to understanding difficultly for patients, a comment was added at the end of the item. The item “Restless legs” was modified to “Restless legs (It refers to the discomfort such as leg soreness during rest, which can be eliminated after exercise)”.

Due to the cultural differences between Chinese and western, in the west, weddings take a long time to stand in a church. However, weddings in China are usually held in a hotel, where guests sit and watch the ceremony. So we deleted “wedding”. The item “Social or leisure activities in which you are standing for long periods (e.g. parties, weddings, taking public transportation, shopping, etc...)” was modified to “Social or leisure activities in which you are standing for long periods (e.g. parties, taking public transportation, shopping, etc...)”

3.3 Item exclusion

Item that represented only one item loaded on the factor was excluded. The item, “At what time of day is your leg problem most intense?”, was excluded for this reason.

3.4 Patients

In pilot study, 47.7% were male patients, 56.1% were primary school or below education level, 65.2% were left lower extremity DVT and the range of age was 18-77(n=132). In validation sample, 51% were male patients, 51.9% were primary school or below education level, 59.1% were left lower extremity DVT and the range of age was 18-79 (n=335). The details of demographic and clinical characteristics were listed in Table 1.

Tables1 Demographic and clinical characteristics of patients with deep venous thrombosis

	Pilot Sample (n=132)		Validation Sample (n=335)
Characteristic	n (%) or median (range)		n (%) or median (range)
Gender			
Male	63(47.7)		171(51)
Female	69(52.3)		164(49)
Education			
Primary school or below	74(56.1)		174(51.9)
Junior high school	45(34.1)		112(33.4)
Senior high school	10(7.6)		36(10.7)
College	2(1.5)		10(3.0)
Bachelor degree or above	1(0.8)		3(0.9)
Diagnosis			
Left lower extremity DVT	86(65.2)		198(59.1)
Right lower extremity DVT	27(20.5)		75(22.4)
Both lower extremities DVT	19(14.4)		62(18.5)
Age, years	59.3(18-77)		57.7(18-79)

Abbreviations: DVT: deep vein thrombosis.

Psychometric characteristics

Validity

Structure validity

Bartlett’s χ^2 test of sphericity was significant (2927.438, $P<0.001$) and the KaiserMeyer-Olkin measure of sampling adequacy was acceptable (0.882). It means that the data is fit for the factor analysis. We used the exploratory factor analysis (EFA) in our study. Through principal component analysis with oblique rotation, the results of the EFA revealed 4 eigenvalues greater than 1.0, which explained 69.85%. The cutoff point of 0.40 was usually used to examine standardized factor loadings [12]. Four factors emerged from the 25 items with all item loadings greater than 0.40. So, the four factors were named symptoms (Q1a-i, Q6), physical functioning (Q2, Q3a-d), role-physical (Q4a-d, Q5) and mental health (Q7a-e) respectively, which implied the VEINES-QOL/Sym questionnaire had good structure validity (Tables2).

Tables2 Factorial structure of the Chinese version of the VEINES-QOL/Sym questionnaire (n=132)

	Factor loading
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Item	Factor 1	Factor 2	Factor 3	Factor 4
Q1a Heavy legs	0.783			
Q1h Itching	0.782			
Q1b Aching legs	0.751			
Q6 How much leg pain have you had during the past 4 weeks?	0.745			
Q1f Restless legs (It refers to the discomfort such as leg soreness during rest, which can be eliminated after exercise)	0.743			
Q1c Swelling	0.713			
Q1d Night cramps	0.698			
Q1e Heat or burning sensation	0.665			
Q1g Throbbing	0.602			
Q1i Tingling sensation(e.g. pins and needles)	0.573			
Q4c Were limited in the kind of work or other activities		0.953		
Q4b Accomplished less than you would like		0.949		
Q4a Cut down the amount of time you spent on work or other activities		0.943		
Q4d Had difficulty performing the work or other activities (for example, it took extra effort)		0.864		
Q5 During the past 4 weeks, to what extent has your leg problem interfered with your normal social activities with family, friends, neighbors or groups?		0.577		
Q7a Have you felt concerned about the appearance of your leg(s)?			0.896	
Q7d Have you been worried about bumping into things?			0.895	
Q7e Has the appearance of your leg(s) influenced your choice of clothing?			0.817	
Q7c Have you felt a burden to your family or friends?			0.808	
Q7b Have you felt irritable?			0.785	
Q3c Social or leisure activities in which you are standing for long periods (e.g. parties, weddings, taking public transportation, shopping, etc...)				0.832
Q3b Daily activities at home (e.g. housework, ironing, doing odd jobs/repairs around the house, gardening, etc...)				0.803
Q2 Compared to one year ago, how would you rate your leg problem in general now?				0.784
Q3a Daily activities at work				0.702
Q3d Social or leisure activities in which you are sitting for long periods (e.g. going to the cinema or the theater, travelling, etc...)				0.629

3.5 Content validity

The S-CVI value of the summary score was 0.97, the S-CVI values of the dimensions were 0.96-0.99, and the I-CVI values of all items were 0.86-1.00 in the Chinese-version VEINES-QOL/Sym questionnaire, indicating good content validity (Tables3, Tables4).

Tables3 Scale-level content validity index (S-CVI) for each item of the Chinese version of the VEINES-QOL/Sym questionnaire(n=132)

Dimension	S-CVI
Sym	0.97
PF	0.99
RP	0.97
MH	0.96
VEINES-QOL/Sym-SS	0.97

Abbreviations: VEINES-QOL/Sym-SS: VEINES-QOL/Sym summary score; Sym: symptoms; PF: physical functioning; RP: role-physical; MH: mental health.

Note: Each S-CVI was calculated based on 14 experts' ratings of item relevance.

Tables4 Item-level content validity index (I-CVI) for each item of the Chinese version of the VEINES-QOL/Sym questionnaire(n=132)

Item	I-CVI
Q1a Heavy legs	0.93
Q1b Aching legs	1.00
Q1c Swelling	1.00
Q1d Night cramps	1.00
Q1e Heat or burning sensation	1.00

Q1f Restless legs (It refers to the discomfort such as leg soreness during rest, which can be eliminated after exercise)	0.86
Q1g Throbbing	1.00
Q1h Itching	1.00
Q1i Tingling sensation(e.g. pins and needles)	0.93
Q2 Compared to one year ago, how would you rate your leg problem in general now?	0.93
Q3a Daily activities at work	1.00
Q3b Daily activities at home (e.g. housework, ironing, doing odd jobs/repairs around the house, gardening, etc...)	1.00
Q3c Social or leisure activities in which you are standing for long periods (e.g. parties, weddings, taking public transportation, shopping, etc...)	1.00
Q3d Social or leisure activities in which you are sitting for long periods (e.g. going to the cinema or the theater, travelling, etc...)	1.00
Q4a Cut down the amount of time you spent on work or other activities	0.93
Q4b Accomplished less than you would like	1.00
Q4c Were limited in the kind of work or other activities	1.00
Q4d Had difficulty performing the work or other activities (for example, it took extra effort)	0.93
Q5 During the past 4 weeks, to what extent has your leg problem interfered with your normal social activities with family, friends, neighbors or groups?	1.00
Q6 How much leg pain have you had during the past 4 weeks?	1.00
Q7a Have you felt concerned about the appearance of your leg(s)?	0.93
Q7b Have you felt irritable?	0.93
Q7c Have you felt a burden to your family or friends?	1.00
Q7d Have you been worried about bumping into things?	1.00
Q7e Has the appearance of your leg(s) influenced your choice of clothing?	0.93

Note: Each I-CVI was calculated based on 14 experts' ratings of item relevance.

3.6 Criterion-related validity

In this study, the Chinese-version SF-36 was used to test validity of the Chinese-version VEINES-QOL/Sym, high score of correlation coefficient indicating better criterion-related validity. The criterion-related validity between the Chinese-version VEINES-QOL/Sym summary score and the two summary scores of the Chinese-version SF-36(PCS and MCS) were 0.801 and 0.792 respectively, indicating good criterion-related validity. The correlation coefficients between 4 sub-questionnaires of VEINES-QOL/Sym and 8 dimensions of SF-36 were significant ($P < 0.01$), except the correlation coefficient between the sub-questionnaire "symptoms" and the dimension "general health" (Tables5).

Tables5 criterion-related validity between the Chinese version of the VEINES-QOL/Sym questionnaire and the SF-36 questionnaire(n=335)

SF-36 dimension	VEINES-QOL/Sym-SS	Sym	PF	RP	MH
PF	0.773 ^a	0.548 ^a	0.755 ^a	0.589 ^a	0.567 ^a
RP	0.643 ^a	0.377 ^a	0.592 ^a	0.670 ^a	0.477 ^a
BP	0.643 ^a	0.559 ^a	0.522 ^a	0.388 ^a	0.488 ^a
GH	0.216 ^a	0.000	0.213 ^a	0.274 ^a	0.315 ^a
VT	0.621 ^a	0.402 ^a	0.516 ^a	0.392 ^a	0.684 ^a
SF	0.746 ^a	0.501 ^a	0.697 ^a	0.597 ^a	0.595 ^a
RE	0.661 ^a	0.397 ^a	0.592 ^a	0.660 ^a	0.514 ^a
MH	0.548 ^a	0.340 ^a	0.384 ^a	0.346 ^a	0.689 ^a
PCS	0.801 ^a	0.533 ^a	0.733 ^a	0.689 ^a	0.620 ^a
MCS	0.792 ^a	0.499 ^a	0.688 ^a	0.662 ^a	0.715 ^a

Abbreviations: VEINES-QOL/Sym-SS: VEINES-QOL/Sym summary score; Sym: symptoms; PF: physical functioning; RP: role-physical; MH: mental health; BP: bodily pain; GH: general health; VT: vitality; SF: social functioning; RE: role-emotional; PCS: physical component summary; MCS: mental component summary.

^a $P < 0.01$.

3.7 Reliability

The internal consistency reliability, split-half reliability and retest reliability were tested in this study. The Cronbach's α coefficients

were 0.930 for the VEINES-QOL/Sym summary score, 0.911 for symptoms, 0.877 for physical functioning, 0.956 for role-physical, and 0.917 for mental health, indicating good internal consistency reliability. The split-half coefficients were 0.792 for the VEINES-QOL/Sym summary score, 0.913 for symptoms, 0.834 for physical functioning, 0.858 for role-physical, and 0.881 for mental health, indicating good stability and internal consistency.

The retest coefficients were 0.929 for the VEINES-QOL/Sym summary score, 0.904 for symptoms, 0.891 for physical functioning, 0.987 for role-physical, and 0.939 for mental health, again indicating good stability. The Item-total correlations were 0.494-0.747, which indicated all items have good correlation with the VEINES-QOL/Sym questionnaire (Table 6).

Tables6 Reliability and Item-total correlation of the Chinese version of the VEINES-QOL/Sym questionnaire

Dimension	Content consistency reliability (n=132)	Split-half reliability (n=132)	Retest reliability (n=20)	Item-total correlation (n=132)
VEINES-QOL/Sym-SS	0.930	0.792	0.929	0.494-0.747
Sym	0.911	0.913	0.904	0.505-0.701
PF	0.877	0.834	0.891	0.494-0.726
RP	0.956	0.858	0.987	0.647-0.747
MH	0.917	0.881	0.939	0.525-0.564

Abbreviations: VEINES-QOL/Sym-SS: VEINES-QOL/Sym summary score; Sym: symptoms; PF: physical functioning; RP: role-physical; MH: mental health.

4. Discussion

The purpose of this study was to develop a Chinese version of the VEINES-QOL/Sym for measuring quality of life among Chinese patients with deep venous thrombosis.

By reason of Dr. Lamping, the author of VEINES-QOL/Sym questionnaire, passed away in 2011, there is no copyright or fee about the VEINES-QOL/Sym questionnaire. Based on literature review, we completed the forward-translation, back-translation and cultural adaption for the VEINES-QOL/Sym questionnaire. Moreover, we verified the Chinese version questionnaire by the way of the psychological measurement of questionnaire which includes the test of reliability and validity (such as internal consistency reliability, retest reliability, split-half reliability, structure validity, content validity and criterion-related validity) in patients with deep vein thrombosis.

The evidence of the structure validity of the Chinese version VEINES-QOL/Sym was supported by the exploratory factor analysis (EFA). The EFA extracted four factors: “symptoms”, “physical functioning”, “role-physical” and “mental health”, accounting for 69.85% of the cumulative variance. The sub-questionnaire of “symptoms” contains 10 items (Q1a-i, Q6) which can evaluate the frequency of symptoms. The sub-questionnaire of “physical functioning” contains 5 items (Q2, Q3a-d) which can evaluate the effects of normal physical activity due to leg problems. The sub-questionnaire of “role-physical” contains 5 items (Q4a-d, Q5) which can evaluate the functional limitations due to leg problems. The sub-questionnaire of “mental health” contains 5 items (Q7a-e) which can evaluate the mental health effects of leg problems. In this study, the VEINES-QOL/Sym questionnaire has good structure validity.

14 experts were invited to test the content validity, in our study. Likert 5 rating method is used for each item, which is divided into “very appropriate, appropriate, general, inappropriate, and very inappropriate”. The S-CVI value of the summary score was 0.97, the S-CVI values of the dimensions were 0.96-0.99, and the I-CVI values of all items were 0.86-1.00 in the Chinese-version VEINES-QOL/Sym questionnaire. It is indicated that the Chinese version of VEINES-QOL/Sym questionnaire has reasonable content validity.

The format of English-version SF-36 was used in the English-version VEINES-QOL/Sym. Meanwhile, the both have good criterion-related validity in previous study^[12]. According to literature review, the Chinese-version SF-36 was used to verify the criterion-related validity in our study. The criterion-related validity between the Chinese-version VEINES-QOL/Sym summary score and the two summary scores of Chinese-version SF-36 (PCS and MCS) were 0.801 and 0.792 respectively, indicating good criterion-related validity.

The Cronbach’s α coefficients of the VEINES-QOL/Sym summary score, symptoms, physical functioning, role-physical and mental health were 0.930, 0.911, 0.877, 0.956 and 0.917 respectively. The split-half coefficients of the VEINES-QOL/Sym summary score, symptoms, physical functioning, role-physical and mental health were 0.792, 0.913, 0.834, 0.858 and 0.881 respectively. The retest coefficients of the VEINES-QOL/Sym summary score, symptoms, physical functioning, role-physical and mental health were 0.929, 0.904, 0.891, 0.987 and 0.939 respectively. They were indicated that the Chinese version of VEINES-QOL/Sym questionnaire has good internal consistency and stability. The Chinese version VEINES-QOL/Sym questionnaire can comprehensively evaluate the quality of life of DVT patients, which is of great significance for the formulation of targeted intervention strategies in clinical practice.

This study also had some potential limitations. In our study, the questionnaire has only been used preliminarily in clinical. As a tool for DVT patients’ quality of life assessment, it can be used in future studies to further carry out the intervention studies on DVT patients’ quality of life. Meanwhile, owing to the limitations of time, investigation area, research funds and other objective conditions, our study only conducted a cross-sectional survey of DVT outpatients in two hospitals in Nanchong city. Geographical limitations may affect the representativeness of samples. We hope to conduct further studies in multiple regions and populations in the future research.

In conclusion, this study preliminarily completed the introduction, revision and preliminary clinical application of the VEINES-QOL/Sym questionnaire. There are 25 items in the Chinese-version VEINES-QOL/Sym questionnaire. And it is composed of four sub-questionnaires: symptoms, physical functioning, role-physical and mental health. The questionnaire meets the requirements

of psychometrics and it conforms to cultural background and expression habits in Chinese. It has good reliability and validity in DVT patients. So, it can provide disease-specific quality of life measures in Chinese patients with DVT. And it is applicable to the measurement of quality of life in Chinese patients with DVT.

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