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Abstract

Workplace social capital positively influences the quality but reduces the cost of healthcare services. Academic research suffers from limited and inadequate culturally sensitive nurses' workplace social capital instruments. Here we report on the design and protocol of a culturally focused instrument development study in China. The overarching objective of our dual phase study is to develop and validate a questionnaire measuring nurses' workplace social capital tailored toward Chinese cultural values and norms. In the first phase of *INSTRUMENT DEVELOPMENT*, the qualitative phase, we will conduct interviews with purposefully sampled nurses from five geographically diverse regions capturing 16 provinces in China to formulate the initial version of the Nurses' Workplace Social Capital Questionnaire (NWSCQ). Data collection will be stopped at the saturation point and content analysis will be performed for interview data in parallel. The initial version of the NWSCQ will be evaluated and confirmed by two-rounds of expert consultation (target $N = 20$) and pre-tested among 70 nurses. During the second phase of *INSTRUMENT VALIDATION* or the quantitative phase, we will validate the psychometric properties of the NWSCQ. The validity and reliability of the questionnaire will be examined and validated through three cross-sectional surveys among nurses (target $N = 1154$) randomly selected from 12 tertiary hospitals. We have reported our study protocol with the intention of sharing our experience with researchers in other countries who are striving to advance the phenomenon of culturally sensitive and social normatively appropriate nurses' workplace social capital. Findings from our study should advance the development of culturally appropriate and valid instrument of nurses' workplace social capital, another important step toward recognition and incorporation of cultural diversity in the daily operation of healthcare industry.

Keywords

Culturally focused instrument development, nurses, social capital, workplace

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Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

Background

The term “social capital” was first introduced by L.J. Hanifan in 1916 as a figurative concept to describe the importance of constructive human social connection and interaction in establishing a community (Hanifan, 1916). Since then, the definition of “social capital” has been evolved beyond the concepts of human connection and interaction (Grootaert et al., 2004; Kawachi et al., 2008; Putnam, 2000). Meanwhile, the revival of social capital can be traced to the seminal work of Pierre Bourdieu in 1986 (Bourdieu, 1986). Later, social capital was incorporated into working life by developing and validating an instrument measuring workplace social capital (Kouvonen et al., 2006), which was used in many settings to study the association of social capital with employee health and well-being (Oksanen et al., 2013).

E.A. Read in 2014 pioneered a concept analysis of workplace social capital in nursing and coined the term “nurses’ workplace social capital” (Read, 2014). About 6 years later, Xu et al. updated and revised Read’s definition of nurses’ workplace social capital with the objective of capturing the rapid changes in the role and responsibilities of the nursing professionals and the changes in the demographic structure of the nursing workforce (Xu et al., 2020). According to Xu et al. (2020), nurses’ workplace social capital is the “*relational network configured by respectful interactions among nursing professionals and between the other healthcare professionals. These interactions are characterized by the norms of trust, reciprocity, shared understanding, and social cohesion*” (p.252).

Workplace social capital has been associated with better mental and physical health among nurses and other healthcare professionals (Firouzbakht et al., 2018; Kida et al., 2021). Nurses’ workplace social capital can be an effective tool to address, resolve and remove barriers to workplace productivity and to improve efficiency of the delivery of healthcare services. Although the nursing professionals can be the direct and immediate beneficiaries of the nurses’ workplace social capital, the positive consequences of nurses’ workplace social capital can penetrate across a spectrum of recipients, ranging from the other healthcare professionals to patients and to hospital management and leadership (Kida et al., 2021; Xu & Stark, 2021). While the value of nurses’ social capital is well-established and accepted by academic scholars and healthcare industry leaders; its operational assessment has been limited because most nurse researchers have borrowed and/or modified instruments that were developed for application in scientific domains other than nursing.

Application of such instruments may impose assessment biases and/or implementation limitations which can confound the definition of nurses’ workplace social capital and its operational value, because of the complexity and intricacy of the networks of relationships (social capital networks) in the field of nursing (Hofmeyer & Marck, 2008; Xu et al., 2022). Cultural values and beliefs influence growth and development of social capital in a workplace; thereby, the effects of

culture should be considered when assessing workplace social capital (Eguchi et al., 2017; Norikoshi et al., 2020). However, findings from our previous study indicated that Chinese nursing professionals rated the translated versions of the commonly used instruments as insufficient and with limitations in validity because Chinese norms and values of their workplace were not incorporated in the context of these instruments (Xu, 2020). Therefore, we have designed and developed a study protocol to address the need for a new culturally sensitive instrument.

We conducted a comprehensive systematic review of literature in March 2022 with the objective of capturing all publications describing instruments that had been used to assess nurses’ workplace social capital. Our search strategy was designed to capture publications without time limitation; we used the combination of search terms “social capital”, “nursing”, “nurses” and “nurs*” by using the appropriate Boolean operators of “AND” and “OR” in PubMed, CINAHL and Web of Science. Reference lists also were reviewed to identify potential instruments. Studies with participants other than the nursing professionals were excluded. We identified a total of 15 instruments in English language measuring workplace social capital used by nursing researchers (Table 1). Five of these instruments are full instruments of which only two, the Social Capital of Nursing (SCON) (Sheingold & Sheingold, 2013) and the Relational Workplace Social Capital Scale for Japanese Nurses (RWSCS-JN) (Norikoshi et al., 2020) were constructed and validated among nursing professionals.

Among these five full scale instruments, the Eight-Item Measure of Workplace Social Capital developed by Kouvonen et al. (2006) is most frequently used by the nursing researchers. This instrument consists of eight items and can measure two components of social capital, that is structural (the extent and intensity of the relationships) and cognitive (reciprocity, sharing and trust). Meanwhile, items also can be combined to measure linking (vertical relationships at work), and bonding and bridging (horizontal relationships at work) (Oksanen et al., 2010). However, the Chinese nursing professionals who participated and contributed to our previous study on social capital expressed their concerns and frustration about this instrument to recognize the influence of the principles of Chinese traditional cultural values and norms, such as the Guanxi norms (the way of interactions among people) (Qi, 2013) and principles of Confucianism.

Finally, we identified an additional 10 subscales or item-selected measures, used by nursing researchers to assess social capital at work. These subscales or measures are derivatives of instruments that have been developed and validated in fields other than the nursing sciences. The psychometric properties of these tools in assessing the structure of nurses’ workplace social capital should be confirmed in more empirical studies due to the limited reports on their usage in the publications.

A culturally appropriate instrument to assess nurses’ workplace social capital allows us to improve the accuracy of

Table 1. Instruments Assessing Nurses' Workplace Social Capital in Academic Research and Publications.

Instrument (Authors)	Used by	Subscales/Dimensions (Number of Items)	Total Number of Items
^a Relational workplace social capital scale for Japanese nurses (RWSCS-JN) (Norikoshi et al., 2020)	—	Bonding social capital (7); linking social capital (4); bridging (4)	15
Social capital questionnaire (Jafari et al., 2018)	Jafari et al. (2018)	Structural social capital (11); cognitive social capital (6); relational social capital (14)	31
Subscale of social capital and the ethical climate in the workplace (SEV) scale (Tei-Tominaga & Nakanishi, 2018a)	Tei-Tominaga and Nakanishi (2018b)	—	9
^a Bonding workplace social capital scale (Eguchi et al., 2017)	Kida et al. (2021)	—	6
Items from two scales (Farag et al., 2017)	Farag et al. (2017)	Warmth and belonging (11); organizational trust (12)	23
Social capital index (Strömngren et al., 2016)	Williamsson et al. (2019)	Reciprocity (3); trust (2); mutual trust(2); recognition (3)	10
Items from new brief job stress questionnaire (Inoue et al., 2014)	lida et al. (2021)	—	3
^a Social capital of nursing (SCON) (Sheingold & Sheingold, 2013)	1) Shin and Lee (2017) 2) Shin and Lee (2016)	External trust, solidarity and empowerment(10); Participation and affiliation (8); internal trust, solidarity and harmony (5); social cohesion with coworkers (3); conflict (2)	28
Items from three different scales (Hsu et al., 2011)	1) Chang et al. (2012) 2) Hsu et al. (2011)	Social interaction (2); trust (4); shared vision (4)	10
Subscale of Alberta context tool (ACT) (Estabrooks et al., 2009)	1) Fry et al. (2020) 2) Pittman et al. (2019)	—	6
^a Eight-item measure of workplace social capital (Kouvonen et al., 2006)	1) Xu et al. (2021) 2) Zhang et al. (2021) 3) Pekurinen et al. (2019) 4) Firouzbakht et al. (2018) 5) Middleton et al. (2018) 6) Vagharseyyedin et al. (2018)	Type1: Cognitive social capital (3); structural social capital (5) Type 2: Bonding social capital (3); bridging social capital (2); linking social capital (3)	8
Contextual barriers and supports measure (Cunningham et al., 2005)	1) Chang et al., 2019a 2) Chang et al., 2019b	—	4
^{a,b} Social capital in organizations (Pfaff et al., 2004)	1) Van Bogaert et al. (2013) 2) Kowalski et al. (2010) 3) Ernstmann et al. (2009)	—	6
The community subscale of arears of worklife scale (AWS) (Leiter & Maslach, 2003)	Read and Laschinger (2015)	—	5
Items from shortell organizational culture scale (Shortell et al., 1991)	Laschinger et al. (2014)	—	9

^aFull instrument.^bEnglish version of Social Capital in Organizations is described in the publication of Ernstmann et al. (2009).

assessment of nurses' relational network in the workplace. This improvement is due to asserting and accepting the influence of traditional values and cultural norms at workplace interaction and communication. Utilization of workplace social capital instruments without incorporating specific attributes of cultural values and norms of the nursing professionals in different settings and societies could yield to incorrect results (Norikoshi et al., 2020). For example, some items of the SCON (Sheingold & Sheingold, 2013), e.g. "Interaction with politicians, public meetings, writing letters about nursing issues" or "Nursing issues affect my vote in state and national elections" (P. 796) are non-relevant to Chinese societal standards and are not part of the professional responsibilities and scope of the nursing professionals in some countries including China. The RWSCS-JN, developed based on nurses' deep reflections on workplace social capital upon Japanese essential cultural attributes, e.g., "robust cooperation" and "altruistic reciprocity" (Norikoshi et al., 2018; 2020) might also not be suitable for nursing professionals in China.

In this paper, we are reporting the protocol that we have developed in implementing our instrument entitled Nurses' Workplace Social Capital Questionnaire (NWSCQ). Our objective is to share our experience with researchers in other countries who are striving to advance the phenomenon of culturally sensitive and social normatively appropriate nurses' workplace social capital, which is the fulcrum for a healthy psychosocial work environment, improved quality but reduction of cost of healthcare services (Oksanen et al., 2013; Xu et al., 2022).

Objectives

The overarching objective of our study is to develop an instrument (NWSCQ) that is compatible with Chinese workplace cultural values and norms to assess workplace social capital among nurses in China. Our specific aims are:

- 1) To identify the domains of the NWSCQ based on the themes abstracted from data collected from nurses' reflections.
- 2) To develop the initial version of the NWSCQ.
- 3) To assess the validity and reliability of the NWSCQ.
- 4) To finalize the operational version of the NWSCQ.

Explanation and Justification of Method

Study Design

We have designed a dual methodology in developing the NWSCQ: during the first phase or the qualitative phase of our study, we will dedicate time and effort to formulate the NWSCQ (PHASE 1: INSTRUMENT DEVELOPMENT); while during the second phase or the quantitative phase, we will focus on the validation of the NWSCQ (PHASE 2:

INSTRUMENT VALIDATION). The flow chart of our study design is presented in Figure 1.

Phase 1: Instrument development. We will begin this phase with implementation of semi-structured interviews (minimum target $N = 32$; for further explanation, see the section Phase 1, Sampling/Recruitment) with nursing professionals from five geographic regions of China which differ by their cultural values and norms. The objective is to abstract culturally appropriate and sensitive themes as the potential domains and to develop the initial item pool for the NWSCQ. The operational definition of the nurses' workplace social capital within the Chinese cultural context will be conceptualized based on the theoretical definition by Xu et al. (2020) and findings from our semi-structured interviews.

In the second step, we will invite a group of nursing experts (target $N = 20$) (see further information in the Section Phase 1, Data Collection) to participate in two rounds of consultation to confirm the content validity of the NWSCQ (Devellis, 2012). Items with low content validity index will be deleted or revised based on the experts' suggestions. Face validity, readability and internal consistency (Cronbach's alpha coefficient) of the NWSCQ will be evaluated among volunteered registered clinical nurses (target $N = 70$).

Phase 2: Instrument validation. During the quantitative phase of our study, we will evaluate and validate the psychometric properties of the NWSCQ. The content of the psychometric assessment of the NWSCQ will include: (1) item analysis; (2) validity: construct validity from exploratory and confirmatory factor analysis, convergent validity, concurrent validity and validity from contrast-groups test; and (3) reliability: internal consistency (Cronbach's alpha coefficient), test-retest reliability and inter-rater reliability (intra-class correlation coefficient, ICC).

Three cross-sectional surveys will be conducted to evaluate the psychometric properties of the NWSCQ. The first survey will be conducted among 500 nursing professionals randomly selected from five tertiary hospitals in Zhejiang province of China. We will conduct item analysis to select reliable items and will proceed with exploratory factor analysis to assess construct validity of the NWSCQ based on the data collected from the first survey. Finally, within a window of 2 weeks post the first survey, we will re-invite 50 of the 500 nursing professionals of the first survey to complete the NWSCQ for a second time. Our objective is to examine the test-retest reliability of our instrument.

In the second cross-sectional survey, we will randomly recruit another 500 nursing professionals from five tertiary hospitals in Zhejiang province different from the five hospitals selected in the first survey. We will conduct a confirmatory factor analysis based on data obtained from the second survey to ascertain the construct validity of our instrument. Meanwhile, convergent validity will be evaluated by the validated Eight-Item Measure of Workplace Social

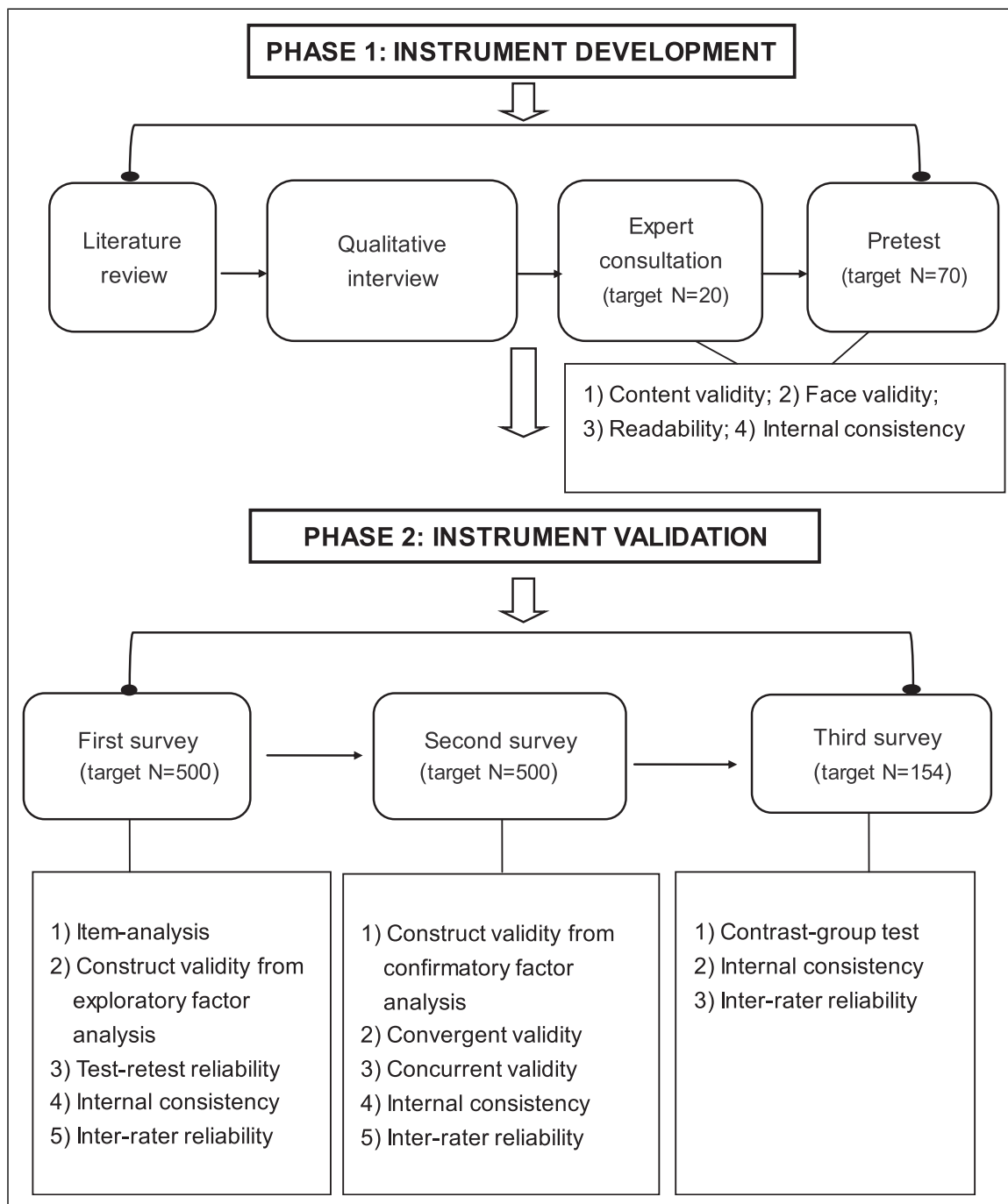


Figure 1. Study design of development and validation of the Nurses' Workplace Social Capital Questionnaire (NWSCQ).

Capital (Kouvonen et al., 2006) and concurrent validity of the NWSCQ will be evaluated by McCain's Intention to Stay Scale (McCloskey, 1990).

Finally, we will implement a third cross-sectional survey with the objective of discerning the sensitivity of the NWSCQ in differentiating two nursing groups, clinical senior nursing professionals and the entry level nursing professionals, employed in the same hospitals. Theoretically, these two groups

should have different caliber of workplace social capital (Xu, 2020). Our objective is to conduct a contrast-group test of the NWSCQ. We will randomly recruit a group of clinical senior nursing professionals and a group of entry level nursing professionals from the same hospitals to contribute to this segment of our study. Cronbach's alpha coefficient and ICC will be tested and demonstrated in the three cross-sectional surveys.

Sampling/Recruitment

Phase 1: Instrument development. Registered nurses in public hospitals, across five regions (eastern, southern, western, northern and central) capturing 16 provinces of China, will be recruited to take part in the qualitative phase of our study. Nursing professionals with at least 1 year of experience in a clinical ward and willingness to participate will be eligible to contribute to our study.

The participants of the qualitative semi-structured interview will be purposefully sampled. The strategies for the purposeful sampling will be snowball sampling with maximum variation in sampling (considering the variation of age, gender, region, professional position, work experience and education background); sampling and data collection will be stopped at the phase of data saturation which means exhaustion of development of additional categories from interview data (Creswell & Poth, 2018; Holloway & Galvin, 2016; Patton, 2014).

Norikoshi et al. (2018) reported that they reached the level of data saturation at 32 participants when exploring Japanese nurses' understanding about their workplace social capital. The sample size in our study, therefore, is estimated to be a minimum of 32 participants; meanwhile, we are projecting to exceed 32 participants because we will interview nurses from five regions representing different geo-cultural regions of China. We will make all the efforts to maintain a balanced representation from these five regions to reduce the likelihood of sampling bias and therefore, mis/under representation of understanding of workplace social capital due to regional cultural and social variation.

Phase 2: Instrument validation. We will recruit a total of 1000 nursing professionals to participate in the first and second cross-sectional surveys. Equal numbers of randomly selected nursing professionals ($N = 500$) will be recruited from 10 tertiary hospitals from Zhejiang province located in the eastern region of China. Nursing professionals will be eligible if (1) having a minimum of 1 year of clinical ward experience and (2) willingness to complete the survey. Nurses will be excluded if they are on vacation, maternity leave or sick leave during the implementation of the survey.

A proportional sampling method and a simple random sampling method will be implemented to recruit participants in the first and second surveys. A sample size of 300 is sufficiently large for factor analysis and a sample of 500 has been suggested as very good (Comrey, 1973; Devellis, 2012). The final sample size of 500 participants for each cross-sectional survey, therefore, will be sufficient in reaching the adequate generalizability of the outcomes. The sampling process will consist of (1) proportionally calculated number of nurse participants from each hospital and (2) random selection of required participants from each hospital.

For the third cross-sectional survey of phase 2, we will recruit 77 clinical senior nursing professionals (≥ 5 years of job

tenure) and 77 entry level nursing professionals (1–2 years of job tenure) as the contrasting groups from two tertiary hospitals in Lishui City of Zhejiang Province. Senior nursing professionals, in general, are considered to possess more stability in their relational networks and richer relational resources in their workplace (Xu, 2020). These two attributes, stability and richer resources are primarily due to their duration of professional performance and their tenure association with their colleagues. In contrast, entry level nursing professionals because of their limited career experience are believed to have limited relational networks (Xu, 2020). Inclusion of these two groups permits for contrast evaluation of the NWSCQ. In estimating the minimum sample size, we conducted power analysis ($\alpha = .50$, power = .80, effect size = .50) (Polit & Beck, 2017). Our initial calculation yielded a total of 128 (64 per group). We decided to inflate the sample size by 20% to account for potential attrition. Therefore, the final sample size will be 154 (77 per group) for the third cross-sectional survey. Participants will be randomly sampled according to the name list of the nursing professionals.

Data Collection

Phase 1: Instrument development. The qualitative data will be collected by semi-structured interviews with participants. Six trained interviewers of our research team, working in pairs, will conduct these interviews.

The interview guide consists of seven key open-ended questions, starting with the question of “what is your understanding of workplace social capital?” These open-ended questions have been designed to encourage the nursing professionals to express their perceptions about the main characteristics of workplace social capital in Chinese context, the differences between Chinese nurses' workplace social capital and nurses' workplace social capital in the other countries, the facilitators and/or barriers that influence the development of nurses' workplace social capital in China, and their personal experiences with high and/or low level of workplace social capital.

Interviews will be scheduled at a time and location convenient to the study participants. We are anticipating a total of 45–60 minutes for each interview. If or when necessary, we will apply the probing technique to unfold deeper reflections of the study participants. Before the start of each interview, permission will be obtained from each study participant to digitally record the interview. Our study protocol permits re-interviewing of the study participants, only after evaluation of information collected during the first interview.

After formulating the initial version of the NWSCQ based on the results of the qualitative interview, we will proceed with two rounds of expert consultation to check content validity of the NWSCQ; 20 nursing professionals with at least 10 years of clinical work and/or administrative experience will be invited. Each member of the panel will receive an e-package which will contain a cover letter drafted by the PI of the study, a copy

of the initial version of NWSCQ and a copy of the consultation form about the relevancy of items of the NWSCQ to domain of nurses' workplace social capital. The consultants will receive a reminder email, 1 week after the mailing of the package.

We will modify the initial version of the NWSCQ per the comments and feedbacks from the first round consultation provided by the panel of 20 experts and will re-send them the revised version of the NWSCQ. Upon receiving the second round of comments, we will incorporate their suggestions in the second version of the NWSCQ. The second version of the NWSCQ will be pretested among 70 nursing professionals whom we will purposefully recruit from the clinical wards of tertiary hospitals across five geographic regions of China. Of these 70 nursing professionals, 20 will be invited to evaluate the face validity, readability, and appropriateness of the NWSCQ; then the remaining 50 will be invited to examine the internal consistency and average consuming time of the NWSCQ.

Phase 2: Instrument validation. Trained research assistants from the participating hospitals will be assigned to the task of delivering and distributing the three instruments to study participants: (1) the NWSCQ developed by our research team; (2) the Eight-Item Measure of Workplace Social Capital (Kouvonen et al., 2006); and (3) the McCain's Intention to Stay Scale (McCloskey, 1990). We will translate the English version of instruments to Chinese using translation/back-translation techniques. The NWSCQ will be delivered in three surveys; the Chinese translated Eight-Item Measure of Workplace Social Capital and the Chinese translated McCain's Intention to Stay Scale will be used to collect data with the NWSCQ in the second survey. Participants will be asked to complete the questionnaires in 2 weeks since they are invited. We have obtained authors' permission to apply their instrument, the Eight-Item Short Measure of workplace Social Capital in our study; the McCain's Intention to Stay Scale is in the public domain.

Data Analysis

We will conduct analysis of qualitative data in parallel with data collection. Audio-recorded interview data will be transcribed to written text verbatim. The software NVivo12 (QSR International) will be used to analyze data. The interviewers will first analyze the interview data they collected and will send data and the findings of their data analysis to our research team. Consensus on final results will be reached through repeated team discussions. The process of data analysis will follow the content analysis approach of Graneheim and Lundman (2004). This approach will include: (1) gaining a comprehensive understanding of the interview data by line-by-line text reading; (2) focusing on the "meaning units" that are words, sentences or paragraphs closely related to the purpose of the interview; (3) condensing and coding the meaning units identified in the review data; (4) abstracting

categories and sub-categories that describe the manifest content of the data; and (5) finally, constructing themes and sub-themes that represent the latent content of the data and the thread of the meaning units, codes and categories.

Descriptive statistics will be used to present quantitative data. The psychometric properties of the NWSCQ will be examined by using SPSS 21 (IBM) and SPSS Amos 24 (IBM). Statistical indicators used for item analysis are item-total correlation and inter-item correlation, item means, item variance and Alpha if item deleted. Construct validity of the NWSCQ first will be evaluated by exploratory factor analysis (EFA) using the principal component analysis with varimax rotation, and then will be confirmed by confirmatory factor analysis (CFA). We will apply model fitting indicators of Chi-Squared test value, χ^2/df , root mean square error of approximation (RMSEA), goodness-of-fit statistic (GFI), root mean square residual (RMR), normed-fit index (NFI) and comparative fit index (CFI) to ascertain the statistical legitimacy of our confirmatory factor analysis. We will conduct bivariate correlation analysis to evaluate convergent and concurrent validity of the NWSCQ. Additionally, we will calculate Cronbach's alpha coefficient, r value of correlation analysis and ICC to assess internal consistency, test-retest reliability and inter-rater reliability of the NWSCQ, respectively. Finally, we will apply Student's t -test to discern if the mean difference of workplace social capital scores between the two groups of nursing professionals, senior versus entry level nursing professionals, reaches the level of statistical significance ($p < .05$). Application of Student's t -test will be justified only after we ascertain the assumption of normal distribution of data is not violated. In the event of observing this violation we will assume appropriate non-parametric statistical techniques, comparable to the student's t -test, to evaluate the test of statistical significance.

Ethics

The participants will be informed about the research project, process, their role as a research participant and benefits associated with participation in our study; meanwhile, they will be informed verbally and in writing that they can withdraw from the study at any time. We will assume steps in protecting the confidentiality of study participants. For example, data will be pseudonymized and all personal identifiers such as names will be removed. Furthermore, data will be stored on a password protected and secured study laptop with PI restricted access only.

Rigor

Trustworthiness (Guba & Lincoln, 1989) will be highlighted in the qualitative part of our study. Several strategies will be utilized to strengthen the trustworthiness of our qualitative investigation: member checking, peer debriefing, triangulation and thick description (Denzin, 1989; Holloway & Galvin, 2016). Feedback on the summarized findings of the interviews

will be received from the participants (member checking). Peer qualitative researchers will be invited to review the research procedures and data analysis (peer debriefing). Data triangulation (multiple times of interview) and investigator triangulation (six trained interviewers) will be performed. The research process, context and results will be documented using thick descriptions.

We have planned for potential sources of biases in the quantitative segment of our research project. Therefore, we have devised several corrective action plans to reduce the likelihood of bias in our study. For example, we have developed recruitment protocol and we will strictly adhere to the requirements of the study protocol when recruiting prospective study participants. The other action plans include addressing potential attrition and conducting statistical power calculation when estimating the sample size, using a combination of the proportional sampling and simple random sampling method, developing standard training protocol to train members of our research team including research assistants, and double checking the quantitative data. Finally, we carefully have selected the published instruments to verify the NWSCQ; these instruments were scientifically evaluated for their sound psychometric properties and associations with the concept of workplace social capital.

Discussion

Nurses' workplace social capital is an intangible resource among nursing professionals and between the other healthcare professionals in any healthcare system. The positive consequences brought about by nurses' workplace social capital have been widely reported in academic research. However, correct conceptualizing and assessment of nurses' workplace social capital within the diversity of different cultural contexts requires further research and evaluation. A measurement is effective only when it represents the true meaning of the phenomenon that it aims to measure. Therefore, the effectiveness of an instrument, used as the tool to measure a phenomenon, depends on the authenticity of the experiences of those who create this phenomenon. The qualitative part of our study will help to understand self-perceptions, feelings, and experiences of the social capital from nurses' perspectives; results from the qualitative part of our study will be a rich data source for the development of the pool of items of the NWSCQ. The quantitative part of our study will further validate the components of nurses' workplace social capital through repeated investigations among different nursing populations; results will assist to expand the theoretical illustrations of nurses' workplace social capital, supported by objective evidence from statistical analysis. The psychometrically sound NWSCQ will provide an effective tool to assess workplace social capital possessed by the nursing professionals; an effective assessment will ensure the quality of future interventional programs on nurses' workplace social capital.

The phenomenon of nurses' workplace social capital needs more investigations given the current small body of relevant research evidence, especially the evidence of measurement studies. Our study will contribute to overcoming the shortage of information in the domain of measurement studies and enriching the knowledge pool of workplace social capital in the discipline of nursing.

Limitations

There are several possible limitations in our study. First, the participants of our study will be clinical nursing professionals in both qualitative and quantitative phases. It might be beneficial if we receive inputs from the other healthcare professionals, e.g., physicians, to provide a more comprehensive description of the meaning of nurses' workplace social capital. This is one of the objectives our future research endeavors. Second, participants in the second phase of our study will be recruited only from tertiary hospitals which might influence the generation of the results; future studies should focus on recruiting and inclusion of nursing professionals from various healthcare settings with different levels of experiences and diverse geographical areas for further validation of the NWSCQ.

Conclusion

Workplace social capital has contributed constructively to building up a healthy work environment for nursing professionals. However, the measurement of nurses' workplace social capital can benefit from further investigations. The development of instruments measuring nurses' workplace social capital should embrace cultural elements due to the complex relational networks in the nurses' workplace. So far, there has been no effective tools for measuring nurses' workplace social capital within the Chinese culture which raises limitations for academic research and communication. Our study will develop and validate an instrument measuring nurses' workplace social capital (NWSCQ) among Chinese nurses based on their deep reflections on their workplace social capital. The outcomes of our study will enrich the description of nurses' workplace social capital and will facilitate advancing research in nurses' workplace social capital, a new but important concept in nursing administration.

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Author Contributions

J-MX assumed the primary responsibility of designing and drafting the study protocol and drafting the initial version of the manuscript. AS contributed to the development and critical improvement of the

manuscript. All authors have contributed to the designing, drafting and approving of the study protocol.

Declaration of Conflicting Interests

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Ethical Approval and Consent to Participate

This instrument development protocol was approved by the Research Ethics Committee of Lishui University (No. 2022YR013). Written informed consent will be obtained from all participants before data collection.

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