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ORIGINAL ARTICLE

Development and Validation of the Short-Form Ryff's Psychological Well-Being Scale for Clinical Nurses in Taiwan

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Background: Research into clinical nurses' psychological well-being (PWB) is limited and fragmented. A reliable and valid measure is needed to advance the field of nurses' mental health. **Objective:** To examine the psychometric validity of Short-Form PWB Scale (PWBSs) among clinical nurses. **Methods:** This study adopted a cross-sectional design. Randomized cluster sampling was used to recruit clinical nurses from a medical center in Taipei, Taiwan, from July to October 2015. Nurses were recruited if they worked for more than 3 months in the medical center. The 84-item PWBS was used to assess PWB. Based on exploratory and confirmatory factor analysis in this study, an 18-item version of Ryff's PWBS was developed using 474 respondents. The Short-Form PWBS was tested for internal consistency, construct validity, and criterion-related validity. **Results:** Cronbach's alpha was 0.88, with aggregated subscale alphas of 0.72–0.88, except 0.57 for autonomy. Good construct validity and criterion-related validity of the Short-Form PWBS were found. **Conclusions:** The study results showed that the Short-Form PWBS is suitable and recommended for Taiwanese clinical nurses.

Key words: Clinical nurses, construct validity, criterion-related validity, internal consistency, psychological well-being

INTRODUCTION

Nurses' psychological well-being (PWB) is positively associated with quality of care and job satisfaction.[1] A systematic review shows that poor well-being is associated with moderate-to-high levels of burnout, and poor well-being among health-care staff contributes to poorer quality of care and less patient safety.[2] The original version of Ryff's PWB Scale (PWBS) consists of six dimensions, namely autonomy, environmental mastery, purpose in life, positive relationships, personal growth, and self-acceptance. The scale has 192 items totally, and each dimension has 32 items.[3]

Later, different versions of the PWBS (3 items, 7 items, 9 items, and 14 items per subscale) were developed because there was a need for a short and easy-to-take version since clinical staff such as physicians and nurses have limited time to complete items.[4] Based on the literature review, most studies focused on the dimensions of depression and emotional exhaustion. Few addressed nurses' positive emotions such as PWB.[5] Hence, the study aimed to examine the psychometric integrity of a short form of the Mandarin PWBS in a sample of clinical nurses.

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METHODS

Ethical considerations

This study protocol was approved by the Institutional Review Board of the Tri-Service General Hospital (Approval No. 1-105-05-109).

Design

The study adopted a cross-sectional design to examine the validity and reliability of the Chinese version of PWBS in clinical nurses in Taiwan.

Participants and procedure

A cluster random sampling with probability proportionate to sample size was used to recruit clinical nurses from a medical center in Taipei, Taiwan, from July 2015 to October 2015. We stratified the sample by specialty to obtain similar number of participants at each work unit. Details of the study procedure

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are described in a previous article.[6] Specifically, the inclusion criterion was working at least 3 months in a clinical setting. The exclusion criteria were nonshift working, a part-time job, or a nonclinical staff position.

A sample of clinical nurses (n = 474) agreed to participate in the study after the study purpose and procedure were explained by the researchers. Participants were assured that their participation was anonymous and would not influence their work. After signing the consent form, it took about 20–30 min for the participants to complete the questionnaire in a quiet room with comfortable air condition and temperature. Two separate boxes were used to collect the consent forms and questionnaires to assure anonymity.

Instruments

Demographic items

Demographic items include gender, age, marital status, education level, work experience, perceived health, and unit.

Ryff's Psychological Well-Being Scale

The PWBS has 84 items, 14 items in each of the six subscales, which included autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance.[4] The Mandarin version was confirmed to have good validity and reliability (α = 0.89) among adults.[7] Internal consistency was 0.88 for the short version in this study. Respondents answer each item using a 6-point scale, ranging from 1 ("strongly disagree") to 6 ("strongly agree)."

Statistical analyses

Descriptive data were analyzed using SPSS (IBM, SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp) software version 20.0. Scores for the PWBS are presented as means, standard deviations (SDs), Cronbach's alpha, Pearson's correlation coefficients, and F values from analysis of variance.

To determine the psychometric validity of the Short-Form PWBS, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed using Mplus software version 5.1 (MPLUS software, Los Angeles, CA: Muthén & Muthén) and a criterion significance level of $P < 0.05$.[8] EFA was performed to reduce the items to a common factor pattern. The uni-dimensionality of the resulting scales was examined through CFA. Finally, the reliability of these scales was assessed through internal consistency analysis.[9] Items were selected on the basis of their fit with the factor pattern (percentage of total variance and factor loadings) and conformance to the guiding theoretical definition of PWB dimensions. One factor per dimension is recommended in the literature, and results from the scree plot confirmed that the number of factors is appropriate. The indicators of model fit used for this study included: (1) comparative fit index (CFI) ≥0.90,[10] (2) root mean square error of approximation (RMSEA) <0.07,[11] and (3) standardized root mean squared residual (SRMR) ≤0.08.[10]

RESULTS

Sample characteristics

The participants' background characteristics are listed in Table 1. Most participants were female (n = 455, 96%), and the mean age was 29.6 years (SD = 7.4). Approximately 77% were single or divorced (n = 363) and 96.4% had an educational level of bachelor's degree or higher (n = 447). About one-third reported that their work experience was <2 years and 61.2% (n = 280) had been employed at the hospital for <5 years. Most participants worked in medical-surgical wards (n = 282, 59.2%) and 46.3% reported no disturbed health (n = 220). The sum scores for the dimensions ranged from 3 to 18. There was no years-of-experience difference for gender, education level, and PWBS scores, except for the autonomy subscale [Table 1].

PSYCHOMETRIC VALIDITY OF THE 18-ITEM PSYCHOLOGICAL WELL-BEING SCALE

Principal axis factoring with varimax rotation was performed to examine item loadings. The Kaiser–Meyer–Olkin measures of sampling adequacy were all >0.76, indicating that there was a sufficient level of factorability. In addition, Bartlett's test of sphericity was statistically significant at $P < 0.001$, indicating that the correlation matrix was not identical to the factor structure matrix. Overall, the data were appropriate for factor analysis. An initial examination of the scree plot suggested six factors. Eigenvalues of the selected items were >1 and communality values were >0.5, except for autonomy subscale (about 0.3).[12]

Results from the EFA, including components matrix, communality values, total variance explained, and rule of cross-loading, collectively suggested that three items (short version) comprising a one-factor solution were most appropriate. Internal consistency (alpha coefficients) for the reduced scales ranged from 0.72 to 0.81, except for autonomy subscale (0.57), and correlations of the subscales with the 84-item total scale ranged from 0.70 to 0.87. Table 2 presents the EFA results for the three items in each PWBS subscale.

Then, CFA was performed to examine the uni-dimensionality of the PWBS. The second-order factor analysis model-fit statistics for the originally proposed model are as follows: CFI = 0.78, RMSEA = 0.11, and SRMR = 0.26, indicating that the six-factor model did not fit very well. After determining the relation between positive relations with others and self-acceptance, the revised model-fit statistics were found to be as follows: CFI = 0.90, RMSEA = 0.076, and SRMR = 0.048. Standardized factor loadings for the PWBS dimensions ranged

Table 1: Sample characteristics of clinical nurses (*n*=474)

Characteristics	*n* (%)			*P*
	Total (*n*=474)	Years of experience		
		<2 years	≧2 years	
Age (years), mean (SD)	29.6 (7.4)	24.4 (2.71)	32.2 (7.4)	
Gender				
Female	455 (96.0)	155 (32.8)	300 (63.3)	0.48
Male	19 (4.0)	5 (1.0)	14 (3.0)	
Education level				
Senior high school	2 (0.4)	0	2 (0.4)	0.05
College or university	457 (96.4)	159 (33.5)	298 (62.9)	
Graduate school	15 (3.2)	1 (0.2)	14 (3.0)	
Workplace				
ER	54 (11.4)	14 (3.0)	40 (8.4)	<0.01
OR	30 (6.3)	9 (1.9)	21 (4.4)	
ICU	108 (22.8)	25 (5.3)	83 (17.5)	
Medical-surgical ward	282 (59.2)	112 (23.6)	170 (35.9)	
Marital status				
Married	111 (23.4)	3 (.6)	108 (22.8)	<0.001
Single/divorced/separated	363 (76.6)	157 (33.1)	206 (43.5)	
Years of experience				
<2	160 (33.8)			
2-5	130 (27.4)			
5-10	84 (17.7)			
11-15	43 (9.1)			
>5	57 (12.1)			
Perceived health				
Very disturbed (often)	14 (3.0)	5 (1.1)	9 (1.9)	0.01
Disturbed (usually)	178 (37.6)	42 (8.9)	136 (28.7)	
Not disturbed (sometimes)	220 (46.3)	93 (19.6)	127 (26.7)	
Good (not at all)	62 (13.1)	20 (4.2)	42 (8.9)	
PWBS	72.9 (9.6)	72.43 (9.1)	73.19 (9.8)	0.41
Autonomy	11.3 (1.9)	10.9 (1.9)	11.5 (1.9)	<0.01
Environment mastery	12.5 (2.0)	12.5 (2.0)	12.5 (2.0)	0.70
Personal growth	13.3 (1.9)	13.1 (2.0)	13.3 (1.9)	0.18
Positive relations with others	12.3 (2.8)	12.2 (3.0)	12.3 (2.6)	0.81
Purpose in life	12.2 (2.2)	12.4 (2.1)	12.1 (2.2)	0.13
Self-acceptance	11.4 (2.6)	11.3 (2.7)	11.5 (2.5)	0.39

ER=Emergency room; OR=Operation room; ICU=Intensive care unit; PWBS=Psychological Well-Being Scale; SD=Standard deviation

from 0.84 to 0.99, except for the error term for the relation between positive relations with Others (loading = 0.42) and self-acceptance (loading = 0.43), as shown in Table 2. Correlation coefficients for relationships between the 18-item and 84-item PWBS and the corresponding subscales ranged from 0.70 to 0.87. Cronbach's alpha coefficients for the six subscales of the 18-item PWBS ranged from 0.72 to 0.81, except 0.57 for autonomy subscale. The overall alpha coefficient for the 18-item PWBS was 0.88. There was a positive correlation between perceived health and the 18-item PWBS ($r = 0.20$, $P < 0.001$), indicating that criterion validity is acceptable.

Table 2: Summary of dimensions and reliability of the Short-Form Psychological Well-Being Scale (n=474)

Subscale and item number	f^a	Percent total variance (%)	h^2	f^b	r	Cronbach's alpha
PWBS						0.88
Autonomy		44.03		0.84*	0.70*	0.57
8	0.51	7.73	0.26	0.43*		
14	0.53	20.82	0.28	0.46*		
50	0.52	15.49	0.27	0.72*		
Environmental mastery		55.01		0.99*	0.76*	0.72
51	0.62	7.06	0.39	0.66*		
69	0.69	32.53	0.45	0.71*		
81	0.62	15.43	0.39	0.69*		
Personal growth		54.35		0.87*	0.71*	0.81
46	0.71	8.08	0.50	0.73*		
52	0.72	31.05	0.51	0.83*		
70	0.71	15.21	0.50	0.73*		
Positive relations with others		57.49		0.42*	0.87*	0.75
13	0.69	36.08	0.47	0.66*		
31	0.65	7.66	0.42	0.73*		
61	0.68	13.75	0.46	0.73*		
Purpose in life		55.63		0.96*	0.74*	0.77
23	0.68	6.54	0.46	0.67*		
47	0.62	16.34	0.47	0.74*		
53	0.63	32.74	0.47	0.77*		
Self-acceptance		55.63		0.43*	0.80*	0.75
42	0.60	8.48	0.36	0.77*		
66	0.63	31.09	0.40	0.71*		
84	0.62	14.15	0.38	0.64*		

*P<0.001. [a]Exploratory factor analysis with principal axis factoring was used to deduct items from each subscale, [b]Confirmatory factor analysis with principal axis factoring was used to verify the loadings of each dimension. f^a=Standardized item loading; f^b=Standardized factor loading; h^2=Communality; r=Correlation with 84-item scale; PWBS=Psychological Well-Being Scale

DISCUSSION

Results from the study showed that the Short-Form (18 items) Mandarin PWBS has good psychometric integrity and thus is suitable for assessing the PWB of clinical nurses in Taiwan. The finding of moderate-to-strong associations of positive relations with others and self-acceptance is noteworthy. The present result ties well with previous studies wherein PWB influenced by life experiences and individual interpretations of these experiences.[13] Self-acceptance is highly correlated with environment mastery, but only moderately correlated with positive relations with others. Nurses working in clinical practice feel stressful and exhausting. The relationships between nurses and the rest of the medical team are critical factors for job outcomes.[14] By developing positive relations with others, in which empathy and intimacy are expressed, the nursing staff becomes more compassionate and understanding in their own lives and in their views of others.[15] More self-compassion, consequently, is associated with more compassion for others and the ability to understand that life is a journey, full of ups and downs, and not perfect. This, in turn, predicts a higher quality of professional life, which results in a higher level of self-acceptance.[16]

Our findings concerning the positive association of perceived health with PWB are consistent with previous results.[17,18] A cross-sectional online survey of 697 nurses in Taipei showed that nurses with self-rated poor health were more likely to suffer from psychological symptoms than those in good health.[17] Another survey of 432 volunteer nurses in South Korea revealed that increasing resources not only promoted healthy behavior but also improved stress management. The resulting higher levels of health responsibility and spiritual growth were found to improve nursing performance and care quality.[19] Thus, perceived health

in nurses is important not only for their own mental health, but also for the quality of patient care.

The subscales autonomy, environmental mastery, personal growth, purpose in life, positive relations with others, and self-acceptance performed well on all criteria and can be used independently. Autonomy performed well on construct validity but not so well on internal consistency. The finding that nurses with more than 2 years of experience showed higher levels of autonomy is consistent with a previous study.[20] Results from a sample of 3032 noninstitutionalized women and men between the ages of 25 and 74 years who were interviewed over telephone or completed a mail questionnaire showed that well-educated women with multiple roles had greater autonomy.[20] In the present study, most married nurses with more than 2 years of experience were not only capable of being a clinical care staff member, an educator, and a leader in the workplace, but also a wife, a daughter, and/or a mother within the family.

This study presents the advantages and limitations of quantitative analyses that should be taken into account for improving the clinical implications of PWB measurement. Both EFA and CFA were used to understand the dimensions of Short-Form PWBS. Moreover, a cluster random sampling with probability proportionate to sample size was used; the data were shown as descriptive terms and can be applied to a large number of participants. Several limitations should be taken into account, though the study is still noteworthy. The participants were mainly young women from a medical center, which limits the generalizability of the findings; these data do not reflect the national population. Further studies in multiple areas of the country are strongly recommended. Moreover, gender difference on the total PWBS and each subscale of PWBS should be assessed in the future.

CONCLUSIONS

The 18-item short form of the Mandarin PWBS is an instrument with good reliability and validity that is suitable to measure the level of PWB in clinical nurses in Taiwan. The results contribute to the research literature on PWB among clinical nurses. This investigation can lead to the development of mental health promotion practices aligned with personal and institutional needs. The system may thus support PWB, which in turn, may result in a better nursing practice environment and higher quality of nursing care.

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Conflicts of interest

There are no conflicts of interest.

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