Development and psychometric testing of the role-efficacy evaluation tool for nurses in the primary care setting

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INTRODUCTION

Healthcare is transitioning to community-based preventive models centred on enhanced primary care. This positions nurses as patients' primary contact for acute and chronic care, health education, and disease prevention. Primary care effectiveness depends on nurses' confidence and competence, termed 'Role-Efficacy', which bridges training and real-world performance. Unlike specialised settings, primary care demands broad knowledge spanning paediatrics, geriatrics, chronic care, women's health, and mental health. Welsh's (2014) Nursing Care Self-Efficacy Scale was modified to address primary care nursing's unique challenges and strengths.

OBJECTIVE

This poster is a report on the development and psychometric testing of a role-efficacy tool for evaluating nurses' confidence and performance in the primary care setting.

METHODOLOGY

This study was conducted in two phases. Firstly, content validity was established through rigorous qualitative expert panel review, prioritize iterative feedback and consensus on item clarity and relevance to primary care. Then, a quantitative phase assessed scale's factor structure and reliability. Sample size determination followed the established 10:1 participant-to-item ratio for factor analysis, yielding a minimum sample of 120 participants for the 12-item instrument. Results were analyzed using SPSS Version 21, to determine the tool's dimensionality, sampling adequacy, internal consistency and construct coherence.

RESULTS

The process's effectiveness is confirmed by the 12-item tool's strong unidimensional factor structure and exceptional reliability. Cronbach alpha (>0.90) indicated excellent internal consistency (refer to **Table 1**). Kaiser-Meyer-Olkin (KMO) value of 0.922, reflects good sampling adequacy. Barlett's Test of Sphericity was significant (χ^2=1584.6, df=66, p<0.001), confirming data suitability for factor analysis and indicating correlation between items were sufficiently large (refer to **Table 2**). The principal component analysis (PCA) showed a single-factor solution that explained 79.4% of total variance. All 12-items demonstrated strong factor loading (0.78-0.94) and communalities (0.60-0.89), indicating excellent construct alignment (refer **Table 3**). Internal consistency was excellent (inter-item correlation=0.334), which is a significant strength of this tool.

This combination of superb psychometric properties have provided overwhelming evidence that the 12-item tool is highly reliable and valid measure of a single, cohesive construct.

Table 1: Cronbach alpha of the 12-item role-efficacy tool

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.975	0.976	12

Table 2: KMO and Bartlett's Test of Sphericity of the 12-item role-efficacy tool

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.922
Bartlett's Test of Sphericity	Approx. Chi-Square	1584.601
	df	66
	Sig.	0.000

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DISCUSSION

The factor analysis confirms a unidimensional structure, with all 12 items converging on health-centred orientation as intended. However, the exceptionally high internal consistency (α > 0.90) may indicate item redundancy, suggesting some items represent semantic variations rather than capturing construct breadth (Tavakol & Dennick, 2011). Sample size of 94 participants, whilst meeting the minimum 10:1 ratio, is relatively modest for robust factor identification. The homogeneous expert panel may have introduced systematic bias, potentially limiting diverse perspectives in content validation. Additionally, uniformly strong factor loadings (0.78-0.94) and high communalities, though statistically sound, suggest susceptibility to response biases including social desirability and acquiescence bias (Furr & Bacharach, 2014). The consistently high item performance indicates potential ceiling effects in operational use, where respondents may cluster at elevated endpoints, compromising discriminative capacity between varying efficacy levels. These findings necessitate replication with larger, heterogeneous samples to establish cross-validation and psychometric stability. Future research should consider item refinement to enhance discriminative validity whilst maintaining theoretical coherence, and implement strategies to mitigate response bias

Table 3: Factor loading of the 12-item role-efficacy tool

Component Matrix	
	Component
Provide emotional support for patients in need	0.943
Use resources effectively to meet patient/caregiver care demands	0.941
Provide appropriate health education and/or patient education to patient(s)/caregiver(s) about culturally appropriate self-care and/or management strategies for optimal health and well-being	0.926
Deliver/perform care procedures required for patient care based on clinical practice guidelines and institutional standards	0.925
Collaborate effectively with other healthcare professionals in the primary care setting	0.922
Escalate to senior team members when patient's situation changes	0.914
Manage any potential interpersonal conflict with patients/caregivers (e.g. patients/caregivers disagree with recommendations/assessment)	0.894
Prioritize nursing care plans to address changing patient needs	0.878
Interpret patient data from various sources	0.865
Evaluate patients' response to care	0.850
Engage patients/caregivers in healthcare decision making and behaviour change	0.845
Perform relevant health screening test for patients	0.775

CONCLUSIONS

This study demonstrates the tool's strong psychometric properties. It is shown to be reliable in evaluating nurses' confidence and role-efficacy in the primary care setting. The tool has potential to enhance nursing education and nurses' professional development by augmenting existing clinical education programs, subsequently resulting in quality care delivery. The next crucial step is to confirm this factor structure in a new sample using confirmatory factor analysis.

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