

# Validation and psychometric evaluation of the Dutch Person-centred care of Older People with cognitive impairment in Acute Care (POPAC)

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## Research article

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# Abstract

## Background

People with dementia are regularly hospitalized. Person-centered care is the preferred model for caring for people with dementia. To improve the quality of care for people with dementia in an acute care setting, knowledge of the level of person-centeredness of the care is relevant. The POPAC is a tool to determine the level of Person-centred care. Translation enables international comparisons of data and outcomes of Person-centred care. This study aimed to translate and cross-nationally validate the Dutch Person-centred care of Older People with cognitive impairment in Acute Care scale and to evaluate its psychometric properties.

## Methods

After translation, a total of 159 nurses recruited from six hospitals and via social media completed the POPAC. A confirmatory factor analysis was performed to test the factor-structure, and a Cronbach's alpha scale was utilized to establish the reliability of the scale.

## Results

A confirmatory factor analysis showed that the fit by the Confirmatory Fit Index was a nearly acceptable model fit. The Root Mean Square Error of Approximation and the Standardized Root Mean Square Residual suggested an acceptable model fit. The findings of the authors confirm a three-dimensional structure suggested by previous research. The loadings of the items indicate that these are strong associations with each of the factors. Besides, the factor correlations also indicate that these are strongly associated. These findings indicate that the factors are strongly associated with a general POPAC factor. This study confirms that, statistically, Item 5 could be deleted to improve the reliability of the instrument. Instead of deleting this item, the authors suggest considering rephrasing it into a positive item.

## Conclusions

The Dutch version of the POPAC is sufficiently valid and reliable and can be utilized for assessing person-centered care in acute care hospitals. The study enables nurses to interpret and compare levels of Person-centred care in wards and hospital levels between regions and countries. The results form an important basis for improving the quality of care and nurse-sensitive outcomes such as prevention of complications and length of hospital stay.

# Background

Worldwide, approximately 50 million people are living with dementia. With the aging population, this number will increase (1). People with dementia are regularly hospitalized due to comorbidity; they occupy approximately 25 percent of the beds in a hospital (2,3). Not all people with dementia are diagnosed as such. Thereby, it is estimated that the actual percentage is higher, specifically, 30 percent up to more than 40 percent of all hospital beds (4,5). During a hospital stay, this population is at risk for falls, inadequate hydration and nutrition, delirium, infection, and functional decline (6–8). These have an impact on the duration of stay, the functioning of the person, and the care that is required following discharge (9). Nursing care for people with dementia should be based on evidence, best-practice care, and processes in combination with Person-centred care to prevent complications (8,10–13). It is known that Person-centred care can improve their quality of life. However, specific knowledge about Person-centred care, also referred to as patient-centered or client-centered care, is limited in hospitals (13). Even though, worldwide, it is the paragon in the care for people with dementia (12,14).

The base of person-centered care in the care for people with dementia is laid by Tom Kitwood (15,16). In a broader context, the framework of McCormack and McCance is often used (17–19). In the care for people with dementia, the definition and framework of Brooker are often used (3,20). Brooker summarized person-centred care into four elements (23): valuing people with dementia regardless of their cognitive ability, individualizing approaches in care, caring and understanding from the perspective of the person with dementia and, finally, providing a social environment that supports psychological needs. However, a universal definition of person-centered care is not yet available(21).

To improve the quality of care for people with dementia in an acute care setting, knowledge of the level of person-centeredness of the care is important. The literature reports a limited number of instruments that measure person-centred care for people with dementia in an acute hospital setting (10,24). Available instruments are aimed at long term care (25) or more generically on person-centred care in the acute hospital setting as well as the lack of a specific focus on the quality of care for people with dementia (26–29).

The POPAC (24) is aimed at the acute hospital setting and measures the person-centredness of care for older people with dementia. The scale consists of three subscales, which can be connected to the elements of person-centered care of the used definition. The subscale 'using cognitive assessments and care interventions' is suitable for valuing people; 'using evidence and cognitive expertise' fits to understanding it from the perspective of the person with dementia; and 'individualizing care' accords with the individualizing approach and the social environment. In addition to the possibility to measure and improve the quality of care, translating tools into different language versions enables international comparisons of data and comparative analysis of levels, correlations, and outcomes of person-centred care. Besides, there are no Dutch-language instruments available that measure person-centred care in the hospital setting.

The POPAC was designed in 2013 by Edvardsson in Australia to establish quantitative measurement to assess experienced levels of person-centred care for people with dementia in acute hospital settings (24,30). Based on the literature, eight dimensions of best practice were used as the basis for constructing the instrument. Further development with a panel of international experts led to an instrument that consisted of statements on recognizing cognitive impairment, consulting specialist expertise, using evidence-based care protocols or guidelines, making environmental adjustments, providing social enrichments, prioritizing staff continuity and close interactions, avoiding restraints, and individualizing care (24). The degree in which participants agree with item

statements is expressed in a 6-point Likert scale with the categories 'never' (1), 'very rarely' (2), 'rarely' (3), 'frequently' (4), 'very frequently' (5), to 'always' (6) (12,24,30). The original instrument was pilot tested with a sample of 212 nurses from different types of wards such as neurology, orthopedics, and cardiology in an acute care hospital in Melbourne, Australia. A retest was conducted with a group of 25 nurses from an orthopedic ward, and the outcomes indicated satisfactory temporal stability (24). To evaluate the overall level of person-centered care, the subscales can be combined into a total score where higher scores indicate higher levels of person-centeredness. An interpretation of the score is not yet available. The totals of the items per subscale suggest possible areas for improvement of care. The instrument allows comparing person-centered care at both national and international levels (24).

Nilsson psychometrically evaluated the instrument in Sweden (2013) and Grealish (2017) in Australia. They report that the POPAC is valid and reliable and can be used to provide insight into the person-centeredness of nursing care in a hospital setting. However, the high correlations between the subscales and the conclusion of the authors that the dimensionality of the instrument requires further research are important tenets for this study. For the use of the POPAC in the Netherlands in a study about person-centered care in a hospital setting, the instrument needed to be translated into Dutch. Measuring psychometric properties is important for assessing validity and reliability (31). Nurses and nursing managers can use the outcomes of the POPAC to improve the quality of care in their ward, and outcomes and data can be used for national and international comparison. Therefore, the purpose of this study was cross-nationally validation and psychometric evaluation of the Dutch version of the POPAC.

## Methods

This study aimed to translate and cross-validate the POPAC into Dutch, and to test the Dutch version of the questionnaires for psychometric properties among Dutch nurses working in acute hospital settings(32). Data were collected with the online questionnaire program Qualtrics<sup>XM</sup> (version 2018, Provo, UT USA).

## The Instrument

The POPAC consists of 15 items, as shown in table one. The items describe care procedures and processes in the care of patients with dementia in hospitals (24). With the self-report of nurses in hospitals, the POPAC measures the extent to which nursing interventions are based on best practices in association with Person-centred care. The items are divided into three subscales: Using cognitive assessments and care interventions (items 1–5), Using evidence and cognitive expertise (items 6–8), and Individualizing care (items 9–15) (24). The scales are to be summed as well on a subscale level, as they are on a total level whereby higher scores imply higher levels of person-centeredness (12,24,30).

## Translation of the Person-centred care of Older People with cognitive impairment in Acute Care scale

The principal author of the instrument was involved in the translation, validation, and writing of the evaluation. Therefore, the instrument was translated according to the guideline described by Sousa (33). Two independent translators from a certified translation agency translated the questionnaire into Dutch. These two translations were independently assessed by two researchers (AK and EF) to determine the optimal translation of the question formulations and the answer options.

The discussions included the use of the term cognitive functioning or cognitive status whereby the choice was made for cognitive functioning because this term is commonly used in nursing care in the Netherlands. There were no disagreements on a linguistic or cultural base. The final selection of all of the items could be made by unanimous consensus.

This Dutch version was also translated back into English by two other independent translators from the same certified translation agency. These translations were again independently assessed by the same researchers to decide on the best translation. This time, there was consensus on all of the items. The author reviewed this final English version, and the conclusion was that the outcomes closely resemble the original version. During the translation, there were no specific reasons to expect systematic errors due to linguistic or cultural differences (34).

## Setting, Recruitment, And Participants

Six hospitals in the northern part of the Netherlands participated in this study and supplemented by Dutch nurses who were approached via LinkedIn and Facebook. The data were collected in one academic hospital, two top clinical hospitals, and three rural hospitals. The capacity of the hospitals varied from 241 to 1300 beds, with additional outpatients. The targeted sample size was a minimum of 150 (35,36).

For clinical experience, the authors specified a threshold of three months of experience in clinical practice in direct care for people with dementia and being willing to participate. All hospital wards were included except pediatrics and obstetrics. The measurements were made from July 2018 to March 2019.

The recruitment of participants in the hospitals was performed by contact persons working in the hospital, which was based on a convenience sample (31). The authors also used LinkedIn and Facebook for recruiting hospital nurses. A general request was made for nurses to participate via LinkedIn in which nursing managers are active and then repeated the call once. For Facebook, which is often used by Dutch nurses, a different approach was used for which the authors requested on two groups on Facebook. One was in a private group for questionnaires of a professional nursing magazine, and the other was in an open group for nurses in general. On Facebook, a daily update of the response was provided. This Facebook group has many members; however, it is not known how many members are active.

## Data analysis

Only complete cases are used in the data analysis by analyzed using IBM SPSS statistics (version25), and JASP (Version 0.11.1) with Lavaan was employed for the Confirmatory Factor Analysis (CFA)(37). Before starting the analysis, Item 5 was coded reversed due to the negative formulation of this item.

Descriptive analyses are used to describe the sample. Item performance was executed by item means and standard deviations, the Inter-Item Correlation Matrix, and the Corrected Item-Total Correlation.

The CFA was performed by robust maximum likelihood estimation, after which four types of fit indices were used to evaluate the fit of the model to the data. These were: The Chi-square model fit, the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean-square Residual (SRMR). The Hoelter index was utilized to check the is the smallest sample size at which the interpretation of the chi-square would not be significant. As criterium for significance, a p-value < 0.05 was used. An acceptable model fit was defined with the following criteria: p-value for the  $\chi^2$  model fit comparing to the baseline model smaller than 0.05, CFI and GFI values between 0.90 and 0.95 or above and RMSEA and RMR values of 0.08 or below (38).

Cronbach's alpha on the total scale and that of its subscales were assessed to determine the internal reliability.

## Results

### Characteristics of the sample

In total, 159 hospital nurses completed the POPAC questionnaire; 114 of these were recruited directly from hospitals and 45 nurses through social media. The general response rate from the hospitals was 33%, based on the information provided by the managers of the participating wards. More specifically, it came from nurses working on medical (21.4%), surgical (20.1%), and geriatric (13.2%) wards as well as on wards with different combinations of specialized care (45.3%). The education of the nurses varied from a care assistant level to the master level, see Table 2. The nurses had an average experience of 18 years of working with the aged population with a range from a few weeks to 45 years (SD 12.6). 43.3% of the nurses had participated in a course in the past year about care for people with dementia. They graded their skills on caring for people with dementia with an average of 7.3 on a scale from 1 to 10 with a range from 4 to 9 (SD 0.095).

Table 1  
Original items POPAC (Edvarsson, 2013)

Item	
1	We assess the cognitive status of our older patients on admission
2	We make environmental adjustments to avoid over-stimulation in older people with cognitive impairment (e.g. single rooms, noise reductions etc.)
3	We diagnose symptoms of cognitive impairment (e.g. dementias, delirium etc.)
4	We spend more time with older patients with cognitive impairments as compared to cognitively intact patients
5	We leave older people with cognitive impairments alone in the ward
6	We use evidence-based tools to assess cognitive status of older patients (e.g. the MMSE, SPMSQ, CAM)
7	We consult specialist expertise (e.g. psychologist, gerontologist) if we find that a patient has cognitive impairment
8	We use evidence-based care guidelines in the care of older cognitively impaired patients
9	We use biographical information about older patients (e.g. habits, interests and wishes etc.) to plan their care
10	We involve family members in the care of older patients with cognitive impairment
11	We provide staff continuity for older patients with cognitive impairments (e.g. the same nurses providing care to these patients as often as possible)
12	We systematically evaluate whether or not older patients with cognitive impairment receive care that meets their needs
13	We involve older patients with cognitive impairment in decisions about their care (e.g. examinations, treatments etc.)
14	We ensure that older patients with cognitive impairment have tests/examinations/consultations in the unit rather than having to go to another department
15	We discuss ways to meet the complex care needs of people with cognitive impairment

Table 2  
Level of education (n = 159)

Level	Frequency	Percent
Care assistant	2	1.3
Secondary vocational level	81	50.9
Bachelor level	58	36.5
Master level	12	7.5
Student level	6	3.8
Total	159	100

## Item Performance

The mean score per item varies between 3.59 and 5.28, as shown in Table 3. The total score was 66.88 (SD (10.04), with a mean of 4.46 (SD 0.53). Internal consistency reliability was based on a cut-off point of Cronbach's alpha 0.7, item-total correlation of 0.3, and inter-item correlations between 0.2–0.4 (39). The correlation between the different items reveals some negative correlations with Item 5. It shows a corrected item-total correlation of 0.11. The other values vary from 0.34 (Item 14) to 0.63 (Items 8 and 9). The Cronbach's alpha increases by 0.0131 when Item 5 is deleted. The visual expectation of the data gave indications for a three-block structure.

Table 3  
Mean, standard deviation, item rest correlation, item-total correlation, Cronbach's alpha overall and Cronbach's alpha per subscale (n = 159)

	Mean	Standard deviation	Item-rest correlation	Item-total correlation	Cronbach's alpha overall	Cronbach's alpha per subscale
Item1	5.28	1.06	0.48	0.54	0.86	1. Using cognitive assessments and care interventions with item 5: 0.60 without item 5: 0.72
Item2	4.75	1.05	0.56	0.67		
Item3	4.90	1.06	0.46	0.49		
Item4	3.87	1.20	0.43	0.48		
Item5	4.64	1.31	0.11	-0.32		
Item6	5.09	1.32	0.55	0.59	0.78	2. Using evidence and cognitive expertise
Item7	5.06	1.05	0.48	0.51		
Item8	4.45	1.13	0.63	0.67		
Item9	4.27	1.07	0.63	0.64	0.80	3. Individualizing care
Item10	4.77	0.88	0.48	0.51		
Item11	3.62	1.29	0.52	0.51		
Item12	3.59	1.37	0.59	0.58		
Item13	4.16	1.12	0.34	0.34		
Item14	4.26	1.46	0.35	0.37		
Item15	4.15	1.18	0.73	0.73		

## Construct Validity

Construct validity was evaluated with a CFA, using ML extraction. Lavaan's iterative maximum likelihood estimation converged after 22 iterations. An overview of the different fit indices is shown in Table 4 and indicates an acceptable model fit. The Hoelter's criterial N is 106.8, which means that the sample size is adequate.

Table 4  
Fit indices

Metric	Value
Comparative Fit Index (CFI)	0.89
Root mean square error of approximation (RMSEA)	0.08
RMSEA 90% CI lower bound	0.06
RMSEA 90% CI upper bound	0.09
RMSEA p-value	0.01
Standardized root mean square residual (SRMR)	0.06
Hoelter's critical N ( $\alpha = .05$ )	106.88
Goodness of fit index (GFI)	0.99
Expected cross validation index (ECVI)	1.64

A chi-square test was performed to check the model fit. This test showed that the Factor model differed significantly from the baseline model,  $\chi^2 (87, N = 159) = 164.84, p < .001$ . The obtained CFI 0.89 was slightly smaller than the cut-off value of 0.9. Both the RMSEA (0.075,  $p = 0.012$ , CI 0.057–0.092), and the SRMR of 0.063 were acceptable with values less than 0.08.

The CFA shows that all loadings are fairly large, positive, and significantly different from zero, as presented in Table 5 with Item 5 as the only exception. The factor correlations are between 0.69 and 0.77, indicating that the factors are strongly associated.

Table 5  
Factor loadings

Factor loadings							95% Confidence Interval	
Factor	Indicator	Symbol	Estimate	Std. Error	z-value	p	Lower	Upper
Factor 1	Item1	$\lambda_{11}$	0.675	0.117	5.754	< .001	0.445	0.905
	Item2	$\lambda_{12}$	0.711	0.095	7.465	< .001	0.524	0.898
	Item3	$\lambda_{13}$	0.649	0.094	6.944	< .001	0.466	0.833
	Item4	$\lambda_{14}$	0.641	0.106	6.058	< .001	0.434	0.849
	Item5	$\lambda_{15}$	0.057	0.106	0.538	0.590	-0.150	0.264
Factor 2	Item6	$\lambda_{21}$	1.000	0.127	7.878	< .001	0.751	1.249
	Item7	$\lambda_{22}$	0.671	0.098	6.814	< .001	0.478	0.864
	Item8	$\lambda_{23}$	0.899	0.098	9.176	< .001	0.707	1.091
Factor 3	Item9	$\lambda_{31}$	0.756	0.078	9.706	< .001	0.603	0.909
	Item10	$\lambda_{32}$	0.496	0.069	7.171	< .001	0.360	0.631
	Item11	$\lambda_{33}$	0.753	0.099	7.589	< .001	0.559	0.948
	Item12	$\lambda_{34}$	0.930	0.092	10.120	< .001	0.750	1.110
	Item13	$\lambda_{35}$	0.501	0.085	5.891	< .001	0.334	0.668
	Item14	$\lambda_{36}$	0.606	0.127	4.790	< .001	0.358	0.854
	Item15	$\lambda_{37}$	0.948	0.078	12.198	< .001	0.796	1.100

Figure 1 Model with factor loadings, residual variances, and factor covariances(n = 159)

Figure 1 provides the final model with significant correlations between the subscales, residual variances, and factor covariances.

## Reliability

For measuring the reliability, Item 5 was reversed. The internal consistency of the total instrument measured by Cronbach's alpha was 0.85 (CI 0.82–0.88). The reliability of Using cognitive assessments and care interventions was 0.60 (0.45–0.66) with item five, and 0.72 (0.63–0.78) without it; Using evidence and cognitive expertise had a reliability of 0.78(0.70–0.83) and Individualizing care 0.8 (0.74–0.84).

## Discussion

The study aimed to translate and cross-national validate the Dutch version of the POPAC and to evaluate the psychometric properties to make international comparisons possible. The outcomes confirm that this Dutch version of the POPAC is a valid and reliable instrument for measuring person-centred care and the quality of care of people with dementia in acute care (12,24,30).

The results obtained from the factor analysis with three factors are comparable with those from earlier research (12,24,30). All of the earlier studies derived a three-factor solution whereby in the Swedish study found that Cronbach's alpha values of the Subscales 2 and 3 did not reach the necessary cut-off point of 0.7(12). The Australian study used an exploratory factor analysis because the items did not meet the pre-determined cut-off points for using confirmatory factor analysis(30). They came to a revised version of the instrument in which Item 5 was deleted, and several items were referred to another subscale. Earlier research concluded that the dimensionality of the POPAC requires additional research(12,30).

The three-factor solution found in this study replicates those from the original study and the study from Nilsson. The model fit confirms the three-factor solution. That is, the Chi-square rejected the model. However, this test has been found unreliable for small sample sizes (40). The fit by the CFI was a nearly acceptable model fit, and that of the RMSEA and the SRMR suggested an acceptable model fit (40). However, the findings confirm a three-dimensional structure suggested by previous research. The loadings of the items indicate that these are strong associations with each of the factors. In addition, the factor correlations also indicate that these are strongly associated. These findings indicate that the factors are strongly associated with a general POPAC factor. Future research is necessary to indicate the scientific benefits of distinguishing three factors in explaining, e.g., person-centered care over that of a single generic POPAC factor.

Furthermore, the Cronbach's alpha of 0.86 corresponds with earlier research in which the internal consistency varies from 0.83 to 0.87. (12,24,30). Also, this research confirms that, statistically, Item 5 could be deleted to improve the reliability of the instrument, and especially Using cognitive assessments and care interventions, because this subscale has reliability, 0.6, which is lower than the 0.7 that is seen as lower limit (31,39). Instead of deleting this item, the authors suggest considering rephrasing it into a positive item. At this moment, it is the only negatively formulated item, which can influence its outcomes. The background of the instrument's construction can provide direction in changing the focus of this question. In a hospital, there are always nurses in the ward, so they never believe that they leave patients by themselves. However, this does not mean that people with dementia are always visible by nurses and being monitored when needed, which might influence the quality of care. Our suggestion is to reformulate this question from:

“We leave older people with cognitive impairments alone in the ward”

to:

“We make sure older people with cognitive impairments are not left alone in the ward”.

The mean scores per item vary from 3.6–5.3. This score is higher than the scores in earlier studies. A higher score reflects a higher level of the construct person-centered care (24). This score can partly be explained by the obtained high score found for Item 1. In the Netherlands, assessing cognition is a criterium on which the quality of hospital care is judged, which might have influenced this outcome.

The mean POPAC scores over a sample of nurses can be utilized to measure the quality of care for people with dementia in hospitals. Nursing professionals and nursing managers can use the outcomes as indicators to determine which areas of care can be improved in their ward (41). Additionally, the POPAC can be used in the education of nurses and nursing students. It is applicable in research to investigate if a relationship exists between the outcomes of the POPAC and complications such as falls, poor hydration and nutrition, delirium, infection, and functional decline. Also, there might be a relationship between the outcomes and the length of the hospital stay. In brief, the POPAC can be employed to investigate various important research questions regarding interventions for people with cognitive impairment in acute wards. The authors will use this instrument to determine the perceptions of nurses on person-centred care for people with dementia.

## Limitations

This study has some limitations. Our study had a lower response rate of 33%, in the hospital setting, in comparison to the response rate of, respectively, 59% (24), 51% (12), and 54.3% (30) possibly due to the different methods of recruiting responders. There were two primary aspects. On one side, a nursing manager did not always want to cooperate because there were only a small number of people with dementia in their ward, or they perceived no added value in the study. However, the outcomes are comparable with the earlier research. Therefore, the authors expect that the results to be generalizable over similar countries

The questionnaire was conducted in combination with another questionnaire. The numerous questions negatively influenced the motivations to complete the questionnaire, which could have caused missing information. We used different orders of the questionnaire to prevent this information bias.

By using a convenience sample, participating nurses with a high affinity for the topic may be overrepresented. In future research, it may be useful to validate against actual behavior in practical working situations. However, the use of social media provided a significant scope outside the region.

## Conclusions

The findings of this study confirm the validity and reliability of the Dutch version of the POPAC. However, the results provide grounds for further research on the dimensionality of the instrument with a rephrased Item 5. The results can help nursing managers improving the care in hospitals for people with dementia. The authors advise using total sum scores for interpretation of the scale for national and international comparison. Further research can provide insight into the relationship of person-centred care with the quality of care and nurse-sensitive outcomes such as prevention of complications and the length of the hospital stay.

## Implications for nursing practice

The results are of significant importance for nurses in facilitating the improvement of care for people with dementia. The instrument can be used to hold reflective discussions in clinical settings around how people perceive that they are working to meet the content of the items of the instrument. The findings of this study also make broader use of the POPAC possible: a total sum score can be calculated and consequently used to determine and interpret the level of person-centered care. Person-centered care and evidence-based nursing are important ingredients for high-quality nursing care for people in this situation. With this, the instrument is easy for nurses to use as an instrument for practice improvement. Furthermore, nurses can employ the results of the POPAC for benchmarking the level of person-centred care at a hospital as well as on a national or international level.

## Abbreviations

CFA:Confirmatory Factor Analysis; CFI:Comparative Fit Index; CI:Confidence interval; POPAC:Person-centred care of Older People with cognitive impairment in Acute Care scale; RMSEA:Root Mean Square Error of Approximation; SD:Standard deviation; SRMR:Standardized Root Mean-square Residual

## Declarations

### Ethics approval and consent to participate

The study was performed following the Helsinki declaration, and all of the participants provided written informed consent before filling out the questionnaire. Nurses had an option to choose whether the results would also be available for further research. The Medical Ethical Committee of the University Medical Centre Groningen considered approval unnecessary (decision M17.221048) because the questionnaire was intended for staff. The questionnaire was completely anonymous; no one could be identified based on the results.

### Consent for publication

Not applicable.

### Availability of data and materials

The datasets generated and analyzed during the current study are not publicly available, as more papers will be written based on this dataset. Data can be provided by the corresponding author after a reasonable request.

### Competing interests

The authors declare that they have no competing interests.

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### Authors' contribution

AKP, EJJ, and PFR were responsible for the study design. AKP and EJJ were responsible for the translation process. AKP performed the data collection. AKP, and WK contributed to the data analysis and interpretation of the data. AKP, EJJ, WK, ED, and PFR were involved in drafting and the manuscript and revising it critically for important intellectual content and give final approval of the version to be published.

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# Figures

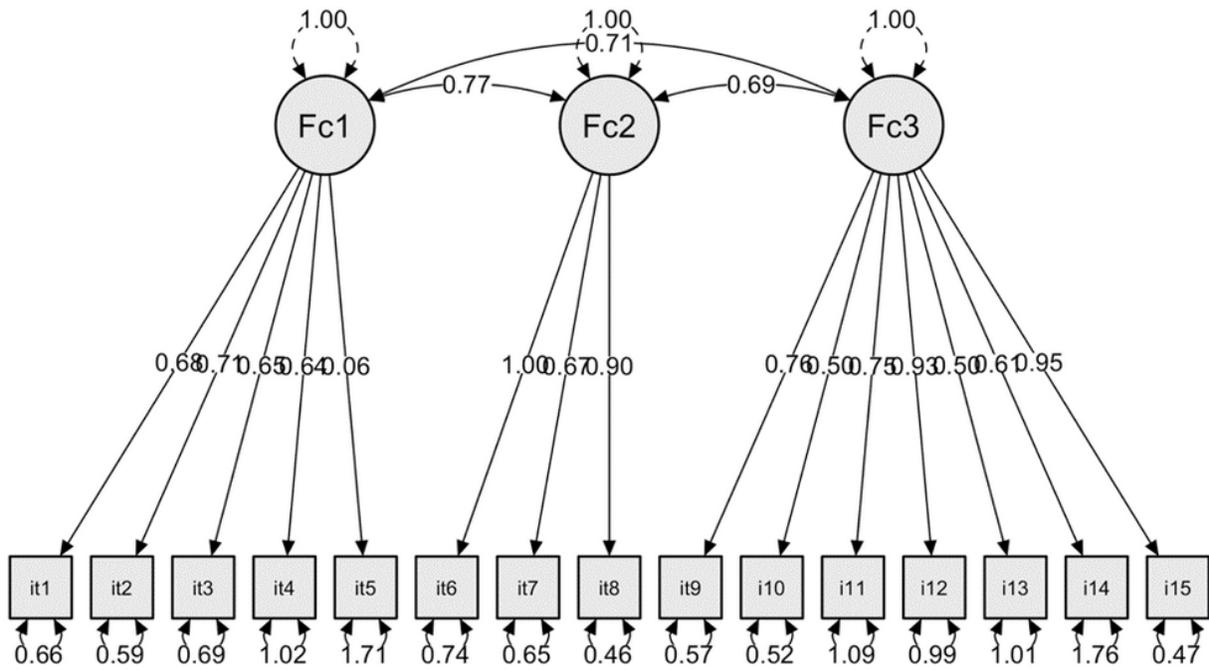


Figure 1

Model with factor loadings, residual variances, and factor covariances(n=159)