

RESEARCH ARTICLE (ORIGINAL) 8

Validation of the Self-Assessment Scale of Autonomy Promotion in Older Adults (EAPAI) by nurses

Validação da Escala de Autoavaliação da Promoção da Autonomia dos Idosos (EAPAI) por parte dos enfermeiros

Validación de la Escala de Autoevaluación para la Promoción de la Autonomía del Adulto Mayor (EAPAI) por los enfermeros


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Abstract

Background: The promotion of older adults' autonomy is particularly relevant in nursing care. However, no instruments were found in the literature that allowed the self-assessment of autonomy promotion in older adults.

Objective: To evaluate the psychometric properties of a self-assessment scale of autonomy promotion in older adults.

Methodology: This is a methodological study that included the assessment of the scale's psychometric properties, using a sample of 360 nurses. The scale's reliability was assessed through internal consistency and construct validity using an exploratory factor analysis (varimax rotation).

Results: The total internal consistency (Cronbach's alpha) was 0.983, ranging from 0.955 to 0.990 across the six factors identified.

Conclusion: The scale presents good psychometric properties and consists of an instrument for nurses to self-assess autonomy promotion in older adults. This instrument can potentially increase nurses' awareness in this area.

Keywords: old age assistance; nursing care; personal autonomy; health promotion; validation study; weights and measures

Resumo

Enquadramento: A promoção da autonomia do idoso assume particular relevo na prestação de cuidados de enfermagem. Contudo, na literatura não foram encontrados instrumentos que permitam efetuar a autoavaliação da promoção da autonomia dos idosos.

Objetivo: Avaliar as propriedades psicométricas de uma escala de autoavaliação da promoção da autonomia dos idosos.

Metodologia: Estudo metodológico que compreendeu a avaliação das propriedades psicométricas da escala, com recurso de uma amostra de 360 enfermeiros. A fiabilidade foi avaliada através da consistência interna e a validade de constructo através de análise fatorial exploratória (rotação varimax).

Resultados: A consistência interna total (Alfa de Cronbach) foi de 0,983, variando de 0,955 a 0,990 nos seis fatores identificados.

Conclusão: Esta escala, que apresenta boas propriedades psicométricas, é um instrumento de avaliação da promoção da autonomia dos idosos, na perspetiva dos enfermeiros, potencialmente útil para aumentar a consciencialização destes profissionais neste domínio.

Palavras-chave: assistência a idosos; cuidados de enfermagem; autonomia pessoal; promoção da saúde; estudo de validação; pesos e medidas

Resumen

Marco contextual: La promoción de la autonomía de los adultos mayores es especialmente importante en la prestación de cuidados de enfermería. Sin embargo, no se han encontrado en la literatura instrumentos que permitan la autoevaluación de la promoción de la autonomía de los adultos mayores.

Objetivo: Evaluar las propiedades psicométricas de una escala de autoevaluación de la promoción de la autonomía de los adultos mayores.

Metodología: Estudio metodológico que incluyó la evaluación de las propiedades psicométricas de la escala, para lo cual se utilizó una muestra de 360 enfermeros. La fiabilidad se evaluó mediante la consistencia interna y la validez de constructo mediante el análisis factorial exploratorio (rotación varimax).

Resultados: La consistencia interna total (alfa de Cronbach) fue de 0,983, variando de 0,955 a 0,990 en los seis factores identificados.

Conclusión: Esta escala, que presenta buenas propiedades psicométricas, es un instrumento para evaluar la promoción de la autonomía en los adultos mayores desde la perspectiva de los enfermeros, lo que resulta potencialmente útil para aumentar la conciencia de estos profesionales en este ámbito.

Palabras clave: asistencia a los ancianos; atención de enfermería; autonomía personal; promoción de la salud; estudio de validación; pesos y medidas



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Introduction

Due to the substantial increase in the older population, nurses face the challenge of developing nursing interventions to improve or maintain older adults' autonomy (Cruz et al., 2017). The literature review did not find any instruments that allow nurses to self-assess the promotion of older adults' autonomy. Thus, constructing an instrument with these characteristics could promote nurses' awareness of the need to maintain or improve their practices in this area. This awareness certainly impacts the quality of care delivered as autonomy is a multidimensional concept with several dimensions, among which physical and cognitive skills, emotional intelligence, and social integration (Lima et al., 2021). After analyzing the concept in the available literature and examining the nurses' perceptions of the practices promoting older adults' autonomy, it was deemed useful and relevant to develop an instrument that allows nurses to self-assess how they intervene in older adults' autonomy. The instrument was designed and then evaluated by subject experts using a Delphi study. The present study aims to assess the psychometric properties of the Self-assessment Scale of Autonomy Promotion in Older Adults (EAPAI - *Escala de Autoavaliação da Promoção da Autonomia dos Idosos*).

Background

Considering the demographic changes resulting from the substantial increase in the older population in recent decades, an inversion of the age pyramid is expected. It is also estimated that, between 2015 and 2080, the aging rate will double, from 147 to 317 older adults for every 100 young adults (*Instituto Nacional de Estatística* - National Institute of Statistics, 2017).

As people live longer, older adults are often replaced in self-care and decision-making and have their autonomy, quality of life and dignity compromised due to inadequate diagnostic assessments. This trend highlights aging-related issues, namely older adults' frailty, and challenges some concerns regarding older adults' living conditions and health-illness processes (Apóstolo et al., 2018; Passos et al., 2014).

Autonomy is an intrinsic source of motivation to control one's destiny and master one's life and behavior that allows individuals to experience feelings of freedom and control over their actions (Reach, 2018). It is a concept that involves cognitive ability, intellectual ability, emotional intelligence, social integration, and physical ability. Moreover, it empowers individuals to develop behaviors that are adjusted and appropriate to their volition (Lima et al., 2021).

Therefore, the respect for older adults' autonomy is particularly relevant, since the failure to comply with this principle, due to the processes arising from aging and culture, places the person in a situation of great frailty and vulnerability (Apóstolo et al., 2018). The implementation of the nursing process, as in all nursing care delivery, allows identifying the real needs of the person receiving nursing

care. Correctly identifying the *foci* of attention is a key step for identifying diagnoses, thus allowing the planning of an appropriate response (Passos et al., 2014). Nurses must understand the concepts (Watson, 2017) to direct their care and accomplish the objectives. In this specific case, they must master the concept of autonomy (Lima et al., 2021) to implement the respective nursing process. Changing the culture of care of older adults' autonomy is a challenge for nurses, as they recognize and maintain the application of routines, which can hinder the promotion of older adults' autonomy (Nogueira et al., 2018). Health care institutions, particularly these organizations' managers, should also consider the conditions under which health care professionals perform their work, specifically regarding the need to maintain adequate ratios (Nogueira et al., 2018; Poeira et al., 2018).

There has been an increase in the use of scales to assess people's needs in recent decades, as well as the construction of new instruments. These allow nurses to objectify the care needs and, at the same time, assess the health gains with the implementation of nursing care (Almeida et al., 2019).

A few instruments were found in the literature to assess the person's autonomy. However, these focus on assessing the person's skills in this area or the autonomy perceived by users regarding the degree to which health professionals support autonomy (Thomas et al., 2019). The available evidence showed the absence of an instrument allowing nurses to self-assess how they promote autonomy. Hence, this study's instrument is a self-completed tool for nurses to assess how they promote older adults' autonomy in their clinical practice.

Research question

Is the Self-Assessment Scale of Autonomy Promotion in Older Adults (EAPAI) a valid and reliable instrument for nurses to self-assess autonomy promotion in older adults?

Methodology

This is a methodological study. The instrument's construction was based on four previously conducted studies: 1) the analysis of the concept of autonomy, using a scoping review; 2) a scoping review to map the scales assessing autonomy; 3) a phenomenological study on the meaning assigned by nurse specialists to the concept of autonomy and their practices in the promotion of older adults' autonomy; and 4) a Delphi study to validate the selected items. From these previous studies emerged an instrument with 68 items. The first three studies mentioned served as a basis for constructing the instrument (Lima et al., 2021), and the fourth study was used to assess its content validity.

Each item in the scale is a statement that can be rated on a 5-point Likert scale with the following options: *do not apply* (0); *apply sometimes* (1); *apply often* (2); *apply very often* (3); *apply always* (4). According to the litera-

ture, using a 5-point Likert scale is highly recommended (Revilla et al., 2014).

The data collection instrument included a first part, which consisted of the participants' sociodemographic and professional characterization (including sex, age, if and which specialty the nurse holds, length of service as a nurse and length of service as a nurse specialist, and type of health care institution where the nurse works), and a second part with the scale items.

Data were collected using the Google Forms® online platform during September and October 2020.

The scale's psychometric properties were assessed using a sample of 360 nurses. The sampling technique used was non-probability snowball sampling. Nurses from the researchers' contact lists were sent the link for completing the questionnaire via email and asked to share it with other nurses with the same professional characteristics. The inclusion criteria were: 1) being a nurse, 2) working with older adults, and 3) working in the community or inpatient institutions. The sample size was calculated according to the recommendations of several authors, who recommend a sample of 5 to 20 participants for each questionnaire item (Streiner et al., 2015).

All ethical procedures were followed during the application of the data collection instruments. Before data collection, the Informed Consent Form was signed, and the study was appraised and approved by the Ethics Committee of the Local Health Unit of Alto Minho and São João Hospital and University Center (opinions n.º 11/18 and n.º 324/17, respectively). All participants were informed about the study and its objectives and that all data provided would be treated anonymously, thus ensuring confidentiality and anonymity. Participants could only answer the questionnaire after confirming that they had read and understood the informed consent and accepted participating in the study.

Data analysis was performed using IBM SPSS® software, version 26, which allowed characterizing the sample and assessing the scale's validity and reliability.

Sample characterization was performed using absolute and relative frequencies (qualitative variables) and mean and standard deviation (SD) or median and interquartile

range (quantitative variables).

The instrument items were described using absolute and relative frequencies, and factors were described using the mean and SD.

The Kaiser Meyer Olkin (KMO) measure and Bartlett's test of sphericity were used in the instrument's exploratory factor analysis (EFA). The KMO test is considered excellent if $KMO > 0.90$, and Bartlett's test is considered appropriate when the Chi-Square (X^2) value is high and the p -value is less than 0.05 (Cunha et al., 2016). The varimax orthogonal rotation was chosen to compare the simple correlations and principal component analysis. The number of factors to be retained was decided based on three aspects: scree plot, *eigenvalues*, and percentage of variance explained, based on the Kaiser rule. A free factor analysis was performed, in which each item was considered relevant if its factor loading was greater than 0.500. Each item was allocated to the factors where it had the highest factor loading. The assessment of the scale's internal consistency as a whole and of the dimensions that emerged from the EFA was performed through the analysis of Cronbach's alpha.

Each factor was rated using the mean score of the items that composed it, and factors were described using the mean and SD.

Results

The sample consisted of 360 participants, mostly women (86.4%), with a mean age of 37.4 years ($SD = 8.7$). Most participants were general care nurses (57.2%), with 42.8% nurse specialists. Of the latter, 47.7% were nurse specialists in Rehabilitation Nursing. On average, the participants worked for 13.0 years (median of 12.0 years), while the specialists worked in this category for 6.0 years (median of 8.0 years). Most participants (77.0%) worked in inpatient institutions, and 22.8% worked in the community. This study observed that the participants' answers ranged between all scale points (i.e., from 0 to 4), showing that the scale structure is appropriate to assess the construct under analysis, as shown in Table 1.

Table 1*Descriptive statistics of the scale items (n = 360)*

Scale Items	0*		1**		2***		3****		4*****	
	n	%	n	%	n	%	n	%	n	%
In my professional practice, I assess whether the older adult demonstrates:										
Q1 - the ability to go shopping	108	30.0	102	28.3	70	19.4	48	13.3	32	8.9
Q2 - the ability to manage money	94	26.1	115	31.9	72	20.0	44	12.2	35	9.7
Q3 - the ability to use the telephone	31	8.6	69	19.2	128	35.6	81	22.5	51	14.2
Q4 - the ability to cook	104	28.9	78	21.7	87	24.2	48	13.3	43	11.9
Q5 - the ability to use transportations	102	28.3	104	28.9	67	18.6	50	13.9	37	10.3
Q6 - the ability to engage in leisure activities	45	12.5	91	25.3	103	28.6	59	16.4	62	17.2
Q7 - the ability to self-feed	5	1.4	10	2.8	80	22.2	55	15.3	210	58.3
Q8 - the ability to perform self-hygiene	4	1.1	10	2.8	84	23.3	58	16.1	204	56.7
Q9 - the ability to self-toilet	5	1.4	11	3.1	82	22.8	57	15.8	205	56.9
Q10 - the ability to stand up	3	0.8	14	3.9	80	22.2	62	17.2	201	55.8
Q11 - the ability to transfer	3	0.8	11	3.1	80	22.2	62	17.2	204	56.7
Q12 - the ability to self-turn	4	1.1	12	3.3	82	22.8	56	15.6	206	57.2
Q13 - the ability to walk	4	1.1	12	3.3	83	23.1	53	14.7	208	57.8
Q14 - the ability to make decisions about specific events	23	6.4	80	22.2	99	27.5	91	25.3	67	18.6
Q15 - the ability to understand the questions asked	3	0.8	21	5.8	100	27.8	86	23.9	150	41.7
Q16 - the ability to respond according to the questions that are asked	4	1.1	17	4.7	95	26.4	82	22.8	162	45.0
Q17 - the ability to retain the information provided	7	1.9	18	5.0	97	26.9	102	28.3	136	37.8
Q18 - the knowledge about autonomy promoting interventions	13	3.6	34	9.4	102	28.3	114	31.7	97	26.9
Q19 - the ability to establish interpersonal relationships	14	3.9	66	18.3	125	34.7	91	25.3	64	17.8
Q20 - the willingness to interact with others	19	5.3	69	19.2	124	34.4	88	24.4	60	16.7
Q21 - the awareness that others respect his or her decisions	20	5.6	93	25.8	113	31.4	76	21.1	58	16.1
Q22 - the ability to express emotions (verbal and non-verbal reactions, joy, crying, anger, sadness)	7	1.9	47	13.1	111	30.8	88	24.4	107	29.7
Q23 - the ability to respond with appropriate emotions to situations	11	3.1	61	16.9	107	29.7	88	24.4	93	25.8
Q24 - the perception that others understand his/ her emotions	18	5.0	76	21.1	101	28.1	92	25.6	73	20.3
Q25 - the ability to understand others' emotions	17	4.7	81	22.5	101	28.1	92	25.6	69	19.2
In my professional practice, to promote older adults' autonomy:										
Q26 - I establish an empathic relationship with the older adult.	1	0.3	3	0.8	60	16.7	67	18.6	229	63.6
Q27 - I respect the older adult's privacy.	1	0.3	4	1.1	59	16.4	63	17.5	233	64.7
Q28 - I respect the older adult's religious beliefs and rituals.	1	0.3	7	1.9	68	18.9	63	17.5	221	61.4
Q29 - I respect the older adult's wishes and choices.	1	0.3	4	1.1	75	20.8	109	30.3	171	47.5
Q30 - I explain procedures to the older adult.	1	0.3	4	1.1	58	16.1	80	22.2	217	60.3
Q31 - I give the older adult time to do the activities	1	0.3	18	5.0	78	21.7	128	35.6	135	37.5
Q32 - I encourage the older adult's independence	1	0.3	8	2.2	70	19.4	91	25.3	190	52.8
Q33 - I empower the older adult to go shopping	144	40.0	84	23.3	53	14.7	49	13.6	30	8.3
Q34 - I empower the older adult to manage money	139	38.6	92	25.6	60	16.7	44	12.2	25	6.9
Q35 - I empower the older adult to use the telephone	38	10.6	70	19.4	102	28.3	86	23.9	64	17.8

Q36 - I empower the older adult to clean the house	159	44.2	73	20.3	62	17.2	41	11.4	25	6.9
Q37 - I empower the older adult to cook	162	45	83	23.1	55	15.3	36	10.0	24	6.7
Q38 - I empower the older adult to use transportations	167	46.4	82	22.8	47	13.1	41	11.4	23	6.4
Q39 - I empower the older adult to do leisure activities	71	19.7	70	19.4	91	25.3	65	18.1	63	17.5
Q40 - I empower the older adult to self-care – self-feed	6	1.7	16	4.4	69	19.2	95	26.4	174	48.3
Q41 - I empower the older adult to self-care –self-hygiene	4	1.1	13	3.6	75	20.8	95	26.4	173	48.1
Q42 - I empower the older adult to self-care – self-toilet	8	2.2	12	3.3	70	19.4	96	26.7	174	48.3
Q43 - I empower the older adult to self-care – stand up	5	1.4	13	3.6	71	19.7	97	26.9	174	48.3
Q44 - I empower the older adult to self-care - transfer	5	1.4	12	3.3	72	20.0	97	26.9	174	48.3
Q45 - I empower the older adult to self-care – self-turn	5	1.4	11	3.1	73	20.3	96	26.7	175	48.6
Q46 - I empower the older adult to walk.	4	1.1	16	4.4	76	21.1	95	26.4	169	46.9
Q47 - I empower the older adult to the decision-making process	4	1.1	34	9.4	103	28.6	102	28.3	117	32.5
Q48 - I empower the older adult's cognition	3	0.8	19	5.3	101	28.1	100	27.8	137	38.1
Q49 - I empower the older adult to socialize	13	3.6	48	13.3	89	24.7	91	25.3	119	33.1
Q50 - I empower the older adult to express emotions	7	1.9	40	11.1	103	28.6	91	25.3	119	33.1
Q51 - I promote the older adult's self-esteem	6	1.7	29	8.1	83	23.1	100	27.8	142	39.4
Q52 - I perform motion range exercises (active, active-assisted, passive) with the older adult.	20	5.6	52	14.4	77	21.4	86	23.9	125	34.7
Q53 - I perform balance training exercises with the older adult.	32	8.9	67	18.6	79	21.9	96	26.7	86	23.9
Q54 - I perform cognitive training exercises (memory games) with the older adult.	71	19.7	73	20.3	89	24.7	78	21.7	49	13.6
Q55 - I teach/instruct the older adult about motion range exercises (active, active-assisted).	23	6.4	77	21.4	86	23.9	91	25.3	83	23.1
Q56 - I practice motion range exercises (active, active-assisted) with the older adult	40	11.1	82	22.8	76	21.1	79	21.9	83	23.1
Q57 - I teach/instruct the older adult about balance training exercises	47	13.1	77	21.4	71	19.7	89	24.7	76	21.1
Q58 - I train the older adult in balance-training exercises	50	13.9	83	23.1	69	19.2	83	23.1	75	20.8
Q59 - I teach/instruct the older adult about cognitive training exercises	55	15.3	82	22.8	89	24.7	77	21.4	57	15.8
Q60 - I train the older adult in cognitive training exercises	58	16.1	89	24.7	84	23.3	76	21.1	53	14.7
Q61 - I teach the caregiver about self-care in older adults	18	5.0	51	14.2	84	23.3	97	26.9	110	30.6
Q62 - I teach the caregiver about older adults' instrumental activities of daily living	32	8.9	62	17.2	78	21.7	87	24.2	101	28.1
Q63 - I teach the caregiver about promoting healthy lifestyles in the older adult	17	4.7	56	15.6	88	24.4	89	24.7	110	30.6
Q64 - I teach the caregiver about older adults' preventive measures	19	5.3	51	14.2	83	23.1	95	26.4	112	31.1
Q65 - I teach the caregiver about older adults' therapeutic management	18	5.0	47	13.1	75	20.8	94	26.1	126	35
Q66 - I teach the caregiver about older adults' physical activity management	27	7.5	64	17.8	84	23.3	85	23.6	100	27.8
Q67 - I teach the caregiver about promoting older adults' autonomy	18	5.0	51	14.2	78	21.7	93	25.8	120	33.3
Q68 - I teach the caregiver about promoting older adults' independence	18	5.0	54	15.0	75	20.8	92	25.6	121	33.6

Note. *0 – do not apply; **1 – apply sometimes; ***2 – apply often; ****3 – apply very often; *****4 – apply always.

After the individual study of the EAPAI items, a latent structure analysis was conducted, using the EFA, to identify underlying factors to that assessment. These factors allowed understanding the concepts and the relationship between them, as well as the motivations behind the pattern found in the answers. Thus, it was possible to measure the instrument's validity regarding the objective intended for its use.

First, the correlations between the degree of agreement of the different items were observed, confirming the existence of many moderate correlations and a considerable number of high correlations.

The KMO value was 0.96, considered acceptable for conducting the EFA, as was the significance level of Bartlett's test of sphericity [$X^2(\text{gl})=39877.350(2278)$; $p<0.001$]. According to the scores obtained in the anti-image cor-

relations matrix and the communalities matrix, both the scores of the Measure of Sample Adequacy (MSA) and the scores of the item's explained variability when grouped by factor do not indicate the need for exclusion (greater than 0.500).

The EFA was conducted with factor extraction using the principal components method, which resulted in a six-factor solution (decision based on the scree plot, *eigenvalues*, and percentage of explained variance) that involved 68 items of the scale explaining 78.6% of the total variance. Therefore, the percentage of each item's variance jointly explained by the six factors extracted was also identified. No item was excluded in the respective factor analysis because all items had a score equal to or higher than 0.500 in the factors allocated to them, as shown in Table 2.

Table 2*Factor Analysis*

Items	Factor						Items	Factor					
	1	2	3	4	5	6		1	2	3	4	5	6
Q1			0.796				Q35			0.521			
Q2			0.784				Q36			0.813			
Q3			0.584				Q37			0.839			
Q4			0.751				Q37			0.832			
Q5			0.761				Q39			0.578			
Q6			0.589				Q40	0.672					
Q7					0.854		Q41	0.678					
Q8					0.879		Q42	0.665					
Q9					0.872		Q43	0.705					
Q10					0.867		Q44	0.699					
Q11					0.879		Q45	0.709					
Q12					0.879		Q46	0.683					
Q13					0.857		Q47	0.565					
Q14				0.598			Q48	0.579					
Q15				0.570			Q49	0.457					
Q16				0.589			Q50	0.515					
Q17				0.602			Q51	0.545					
Q18				0.602			Q52		0.678				
Q19				0.744			Q53		0.790				
Q20				0.713			Q54		0.686				
Q21				0.783			Q55		0.807				
Q22				0.790			Q56		0.852				
Q23				0.781			Q57		0.825				
Q24				0.812			Q58		0.845				
Q25				0.809			Q59		0.735				
Q26	0.687						Q60		0.773				
Q27	0.736						Q61						0.773
Q28	0.702						Q62						0.735
Q29	0.672						Q63						0.772
Q30	0.710						Q64						0.810
Q31	0.686						Q65						0.831
Q32	0.687						Q66						0.760
Q33			0.820				Q67						0.794
Q34			0.816				Q68						0.796

Regarding the factor structure obtained, factor 1 explained 48.8% of the variance and was composed of 19 items (Q26-Q32 and Q40-Q51). Given that the items are associated with nursing interventions that empower older

adults for emotional management, social integration, and self-care, this factor was designated as “Development of emotional, social, and self-care interventions”.

Factor 2 explained 10.6% of the variance and included

nine items (Q52-Q60). As these items focus on nursing interventions that empower older adults to develop physical and cognitive abilities, this factor was designated as “Development of physical and cognitive interventions”. Factor 3 explained 7.1% of the variance and included 13 items (Q1-Q6 and Q33-Q39). These items are associated with nursing interventions that empower older adults to perform daily living activities, which is why Factor 3 was designated as “Development of interventions for instrumental activities of daily living”.

Factor 4 consisted of 12 items (Q14-Q25) and explained 4.9% of the variance. The 12 items relate to nursing interventions performed within the assessment of basic activities of daily living, also defined as self-care, which is why it was designated “Development of assessment interventions in the area of self-care”.

Factor 5 explained 4.0% of the variance and consisted of seven items (Q7-Q13). The items identified for this factor refer to nursing interventions implemented to

assess emotional, cognitive, and social components, thus entitled “Development of assessment interventions in emotional, cognitive, and social areas”.

Factor 6 consisted of eight items (Q61-Q68) and explained 3.6% of the variance. These eight items focus on nursing interventions aimed at the “Caregiver’s Empowerment,” which is why this definition was used to identify this factor.

Finally, the scale’s reliability and validity were assessed. The Cronbach’s alpha coefficient and reliability scores are presented in Table 3. The alpha coefficient for the total scale was 0.98. All factors showed high reliability, ranging from 0.955 to 0.990 for the different factors. After deleting one item in each factor, the difference in Cronbach’s alpha is not very significant, indicating that all items are adequate. The item-total correlation scores for all factors are also satisfactory. Therefore, there was no need to delete any items.

Table 3

Internal consistency coefficients

Factors	Scale items	Cronbach’s alpha	Cronbach’s alpha if item deleted	Item-total correlation
Factor 1	19 items (Q26-Q32 and Q40-Q51)	0.975	0.974	0.731
Factor 2	9 items (Q52-Q60)	0.975	0.977	0.779
Factor 3	13 items (Q1-Q6 and Q33-Q39)	0.955	0.954	0.660
Factor 4	12 items (Q14-Q25)	0.957	0.956	0.723
Factor 5	7 items (Q7-Q13)	0.990	0.989	0.944
Factor 6	8 items (Q61-Q68)	0.983	0.981	0.902
TOTAL	68 items (Q1-Q68)	0.983	-	-

Discussion

This study aimed to validate the EAPAI. Nurses’ use of self-completion instruments develops comprehensive, reflective, critical, and creative thinking (Cotta & Costa, 2016). The EAPAI has good validity and reliability indicators, as shown in the results. The KMO (0.96) score obtained confirmed that the scale items were susceptible to factor analysis, thus indicating that the factorability of the item correlation matrix is good (Gärtner et al., 2018). The scales must prove reliable and valid, as otherwise, there is the risk that the research conducted may assume inaccurate and biased data (Mokkink et al., 2010). Thus, the development of this study contributed to validating an instrument that can improve the delivery of autonomy-related nursing care. This instrument allows nurses to reflect on their practices.

The factor analysis, with factor extraction using the principal components method, based on the Kaiser rule and the scree plot, allowed explaining 78.6% of the total variance, which is considered a very good score, as pointed out by other authors (Cunha et al., 2016). The analysis involved a theoretically adequate number of factors, constituting the best solution regarding the interpretation and meaning

of the dimensions. All the items gathered by the EFA, in each factor, had factor loadings greater than 0.5.

Reliability is considered one of the key criteria that ensure the instrument’s quality, considering the purpose for which it was built. Therefore, its applicability during validation and even application must not be neglected. The parameters of the reliability coefficient vary according to the following scores: scores below 0.40 represent low reliability; scores between 0.40 and 0.69 represent moderate reliability; and scores above 0.70 represent high reliability (Cunha et al., 2016). In this study, the reliability scores of the validated scale proved to be high, even after deleting items, indicating that all items are appropriate. Although Cronbach’s alpha is the most widely used test for assessing internal consistency, there is no consensus regarding its interpretation. Cronbach’s alpha is recommended to be above 0.70 (Echevarría-Guanilo et al., 2017; Gärtner et al., 2018), though other authors argue that scores closer to 1.00 are the ideal (Mokkink et al., 2010; Souza et al., 2017). In long questionnaires, such as the EAPAI, Cronbach’s alpha sometimes assumes higher scores, probably because each factor presents many items. Therefore, the item-total correlation was estimated and considered satisfactory, with scores higher than 0.650

(Souza et al., 2017).

Based on the EFA with varimax rotation, the 68 items were grouped into six factors, which were named: “Development of emotional, social and self-care interventions”; “Development of physical and cognitive interventions”; “Development of interventions for instrumental activities of daily living”; “Development of assessment interventions in the area of self-care”; “Development of assessment interventions in emotional, cognitive, and social areas” and “Caregiver’s Empowerment.” Therefore, this is a multidimensional assessment instrument. The designation of each factor considered the items covered and the construct of autonomy, based on studies previously conducted.

As a whole, these factors allow addressing older adults’ needs regarding the promotion of autonomy and all aspects related to this concept. Based on the above, nurses need to meet the demands in this area using assessment and physical (Cruz et al., 2017), cognitive, emotional management (Passos et al., 2014), and social integration (Lima et al., 2021) empowerment actions.

As this instrument allows nurses to self-assess how they promote older adults’ autonomy, it seems to contribute to a greater awareness of the activities performed in this area. Therefore, if nurses perform few activities to promote older adults’ autonomy, the low score obtained during the application of the instrument can alert them to the need to increase their activities in this area. Consequently, to some extent, the instrument serves as a self-regulation tool. Regarding the study’s limitations, a snowball sampling technique was used, which partially limited the generalization of the results. Furthermore, conducting studies with random samples from other nurse populations would be relevant.

Conclusion

The validation of the EAPAI includes a set of items that allow assessing, monitoring, and comparing the nurses’ performance in the promotion of older adults’ autonomy in clinical practice. Due to the multidimensionality of the concept of autonomy, this scale is composed of 68 items. Nevertheless, it is easy to apply and has good conceptual properties. This is an instrument with good reliability and validity.

The instrument is composed of six factors - “Development of emotional, social and self-care interventions”; “Development of physical and cognitive interventions”; “Development of interventions for instrumental activities of daily living”; “Development of assessment interventions in the area of self-care”; “Development of assessment interventions in emotional, cognitive, and social areas”; and “Caregiver’s Empowerment.” Being a multidimensional instrument, it allows self-assessing the promotion of older adults’ autonomy in its entirety.

Measurement instruments play a key role in research, care practice, and evaluation of health gains. Self-assessment scales allow the implementation of measures to correct practices and inform about the need for improving working conditions and continuing training, particularly

in-service training.

Until now, no instrument allowed nurses to self-assess their practices regarding the promotion of autonomy in older adults. This study contributed to developing more sustained nursing practices to promote older adults’ autonomy. The application of the instrument also aims to raise awareness among professionals of the need to observe autonomy as a multidimensional concept and, thus, enrich the body of knowledge of the nursing discipline.

Author contributions

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