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Portuguese translation, cultural adaptation, and validation of the Person-Centred Practice Inventory – Staff (PCPI-S)

Tradução, adaptação cultural e validação do Inventário da Prática Centrada na Pessoa, profissionais de saúde (PCPI-S)

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Abstract *Aiming to translate, culturally adapt, and psychometrically evaluate the Person-centred Practice Inventory – Staff (PCPI-S) for Portuguese healthcare professionals, this methodological study was conducted sequentially in two phases. Phase I followed the 10-steps recommendations from the ISPOR taskforce for translation and cultural adaptation of patient reported outcome measures. Phase II comprised a quantitative cross-sectional virtual survey of the translated PCPI-S with healthcare professionals, who were reached through snowball sampling from both primary and specialized care settings. The psychometric properties of the PCPI-S were determined by assessing reliability and construct validity. A sample of 304 healthcare professionals participated in Phase II. Ceiling effects were found. The overall internal consistency was excellent (> 0.9). The confirmatory factor analysis showed a good model fit after minor modifications, revealing construct validity, and supporting the theoretical framework. In conclusion, the three-factorial model of PCPI-S adjusted to the studied sample is a valid and reliable instrument to assess the perceptions of healthcare professionals on person-centred practice in various Portuguese clinical contexts. Considering the ceiling effects, the effect of social desirability should be explored.*
Key words *Patient-centered care, Psychometrics, Health personnel, Portugal*

Resumo *Com o objetivo de traduzir, adaptar culturalmente e avaliar psicometricamente o Inventário para a Prática Centrada na Pessoa para profissionais de saúde (PCPI-S) em diversos contextos de prestação de cuidados, este estudo metodológico realizou-se em duas fases sequenciais. A Fase I seguiu as recomendações de dez etapas da taskforce da ISPOR para tradução e adaptação cultural de medidas de resultados auto reportados. A Fase II incluiu um estudo cross-sectional do PCPI-S traduzido com profissionais de saúde, que foram alcançados por meio de amostragem snowball em contextos de cuidados primários e diferenciados. A psicometria do PCPI-S foi analisada pela avaliação da confiabilidade e validade de construto. Uma amostra de 304 profissionais de saúde participou da Fase II. Efeitos de teto foram encontrados. A consistência interna geral foi excelente (> 0,9). A análise fatorial confirmatória mostrou um bom ajuste do modelo e validade de construto, refletindo o referencial teórico. Concluindo, o modelo tri-fatorial do PCPI-S ajustado à amostra estudada é um instrumento válido e fiável para avaliar as percepções dos profissionais de saúde sobre a prática centrada na pessoa em vários contextos de cuidados portugueses. Considerando os efeitos teto, a desejabilidade social deve ser explorada.*
Palavras-chave *Assistência centrada no paciente, Psicometria, Profissionais da saúde, Portugal*

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Introduction

Healthcare services have been transitioning from biomedical models of care delivery to a person-centered practice, with evidence of gains to both the healthcare service users and professionals, as well as to the organisation[1]. The importance of person-centred practice (PCP) to the sustainability of healthcare systems is recognized worldwide by politicians and healthcare managers and is becoming the gold standard worldwide towards ensuring quality of care in a costs-constrained society[2]. Having ascertained PCP effectiveness, several research efforts are being driven towards prompting its implementation into mainstream healthcare practice. Yet, some challenges remain that hinder the successful implementation, long-term follow-up, and sustainability.

The absence of standardised measurement instruments that enable the assessment of person-centred processes and outcomes is a bottleneck with negative impact to its implementation[3]. The assessment is further complicated by the need to account for the perspectives of all those involved in the therapeutical encounter, i.e., service users and healthcare professionals, as well as the specificities of the multi-level contexts where that encounter occurs, i.e. micro-context (care setting), meso-context (healthcare organizations) and macro-context (healthcare strategy & policy makers)[4].

The evidence produced in the last decade on the theoretical underpinning of PCP and agreed definitions of PCP, allowed overcoming some of the difficulties in developing approaches to measurement and evaluation[5]. The Person-centred Practice Framework (PcPF) is one such theoretical structure to PCP. Anchored in a person-centeredness philosophy, the PcPF is a middle-range theory that acknowledges several domains towards PCP[6]. Starting at the macro-level with policies and leadership strategies, it further depicts the prerequisites of the healthcare professional as a person, the care environment, including its culture, and the care processes. Within each of these domains, subsequent elements are identified towards accomplishing the ultimate outcome of a healthful culture, i.e., good care experiences, care involvement and well-being. A healthful culture therefore is one in which each person flourishes, i.e., recognise the value of the other and continuously develop and evolve in relationship despite their role in the organisation (e.g. manager, nurse, physician, patient)[6].

Derived from the PcPF, the Person-Centred Practice Inventory (PCPI) was developed to capture the perspectives of person-centredness from staff as well as healthcare service users. Specifically focusing on the staff version (i.e., PCPI-S), the instrument has been developed with the main goal of assisting quality improvement of healthcare practices towards person-centredness. It is composed of 59 items that allow the self-assessment of the domains of pre-requisites, care environment and person-centred processes on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

The instrument is intended to be suitable for all healthcare professionals across various healthcare settings. It is a valid and reliable measure that reflects the PcPF theoretical structure, where all factor loadings were found to be statistically significant ($P < 0.05$) and ranging from 0.417 to 0.921[7]. It has been translated to many languages with evidence of psychometric robustness across culturally different contexts[8-10].

The Individualized Care Scale (ICS)[11] has been translated and validated to the Portuguese healthcare context to assess the perceptions about the individuality of care from the perceptions of both nurses and patients. Although this instrument was found to be valid to the Portuguese population with good internal consistency[12], and is grounded on a theoretical model, it does not allow to capture the perspectives of other healthcare professionals rather than nurses and, has a particular focus on the hospital setting. The PCPI-S will complement this measurement instrument has it allows to gather the multi-professional perspective at the various levels of an institution, as well as, transversely across healthcare settings (i.e., primary and differentiated care), which is essential to improve person-centeredness of healthcare.

This study aimed to translate, culturally adapt, and psychometrically evaluate the Person-centered Practice Inventory – Staff (PCPI-S) for Portuguese healthcare professionals in various healthcare contexts.

Method

Study design

This methodological study followed a two-stage sequential research design entailing the translation and cultural adaptation of the PCPI-S from English to European Portuguese (i.e., phase

I) and the subsequent psychometric evaluation with a cross-sectional quantitative approach (i.e., phase II). The study was approved by The Ethics Committee of The Health Sciences Research Unit: Nursing (Ref. Nr. 674/05-2020).

Phase I: Translation and cultural adaptation

The principles of good practice in translation and cultural adaptation approved by the International Society for Pharmacoeconomics and Outcome Research (ISPOR) guided the phase I processes[13]. The work was conducted according to ten recommended steps as described in detail in Chart 1.

The cognitive debriefing in step seven was conducted according to Willis[14]. Following a non-probabilistic convenience sample enhanced by a snowball approach, participants were identified and invited to participate in the study. Prospective participants received an email with the study's written information and were asked to reply with a suitable date and time for the interview. They then received a link to the virtual meeting platform. Accordingly, at the beginning of each interview, the participant received verbal information about the study that explained the nature of their participation. They were informed they could leave at any time without justification and were granted anonymity as no personal identification was collected, and confidentiality of perspectives offered was assured. Each participant who agreed to participate in the individual cognitive interview was granted access to a virtual form containing the informed consent, socio-demographic variables, and the harmonized version of the PCPI-S. Having completed the written informed consent, the participant

Chart 1. ISPOR recommended steps adapted to the translation and cultural adaptation of the PCPI-S to European Portuguese.

ISPOR recommendations	Procedures in the translation and cultural adaptation of the PCPI-S to European Portuguese.
1. Preparation	. Permission to use the PCPI-S in the Portuguese context was requested and received by the authors of the original version. . The concepts underpinning the instrument and reflected in the PcPF were translated to European Portuguese and discussed for consensus. . Definition of roles in the research process: project manager, key in-country consultant, in-country consultants, instrument developer, forward translators and back translator.
2. Forward translation	. Translation from English to European Portuguese by two independent translators.
3. Reconciliation	. Comparison and merging of the two forward translations into a single forward translation. . Consensus was reached through discussion with the key in-country consultant, in-country consultants and project manager.
4. Back translation	. Translation of the European Portuguese language version back into the original English by one native English speaker.
5. Back translation review	. Comparison of the back-translated versions of the instrument with the original to highlight and investigate discrepancies. . Consensus was reached through discussion with the key in-country consultant, in-country consultants, and project manager.
6. Harmonization	. Comparison of back translations with multiple language versions. . Consensus was reached through discussion between the key in-country consultant and the in-country consultants.
7. Cognitive debriefing	. Testing the instrument with healthcare professionals from both primary and specialized healthcare settings, reached by email through convenience sampling in a one-hour virtual interview with a ratio of 5:1.
8. Review of cognitive debriefing results	. Comparison of the respondents' interpretation of the translation with the original version to highlight and amend discrepancies. . Consensus was reached through discussion between the key in-country consultant, the in-country consultants and project manager.
9. Proofreading	. Review to highlight and correct typographic, grammatical, or other errors.
10. Final report	. Report from phase I.

Source: Authors.

was instructed on the reflexive activity and the interviewer explained the process by referring to questions drawn from the nationwide census. The interview was initiated with an introductory question to gather the perspectives of each participant about person-centered practice. Thereafter each item from the PCPI-S was read aloud. The interviewer carried out retrospective probing, on specific wordings or when there was a pause while reading the item and asked for alternative formulations when the participant considered the item problematic. All sessions were audio-recorded, transcribed verbatim and analyzed for discrepancies and similarities of interpretation of concepts across professions and healthcare settings, as well as cultural inadequacies[14].

Phase II: Psychometric evaluation

Quantitative cross-sectional research was carried out to generate a dataset for psychometric validation of the Portuguese version of the PCPI-S. The sampling process followed a convenience and snowball strategy to reach as many participants as possible and maximize variation with respect to the healthcare setting, professional category, and length of professional experience. A virtual version of the translated PCPI-S was disseminated through the Portuguese professional organizations of nursing, physiotherapy, occupational therapy, as well as professional groups of psychologists and physicians. Additionally, the members of the research team disseminated the study invitation through their professional network and personal social networks. The research team sent out reminders every two-weeks during the three-month data-collection period. Healthcare professionals who were actively delivering care in a Portuguese healthcare setting were invited to answer the virtual survey, which was composed of three sections: i) information about the study and request for informed consent, ii) socio-demographic and professional variables, and iii) the translated and culturally adapted PCPI-S. Anonymity and confidentiality were assured at this stage since no personal or Internet-related elements were collected from respondents that could act as identifiers. Through the written information, participants were informed about the research project, the meaning of their participation, their right to withdraw from the study at any time without any repercussions, and their right to access the study findings by contacting the principal investigator. Respondents made their informed consent explicit by answering the first section, which was set as mandatory before proceeding to answer the remaining sections. Data collection occurred from January to March 2022, during which time a 10:1 ratio of respondent to item was achieved[15]. To maximize this ratio and in line with other PCPI-S validation procedures (e.g., Bing-Jonsson et al.[8,] Weis et al.[9]), analyses were made independently for the three constructs (prerequisites, care environment, person-centered processes).

Data analysis

The software package SPSS statistics version 24.0 and SPSS AMOS version 21.0 were used to conduct data analysis. Descriptive statistics of respondents' characteristics and items were determined, including the items' floor and ceiling effects. Missing data analysis for the 59 items was performed. Reliability analysis included the internal consistency, using Cronbach's alpha for both total scale and individual constructs and domains. Values between 0.70 and 0.79 were considered evidence of acceptable internal reliability, between 0.80 and 0.89 indicated good internal reliability, and values of 0.90 or higher showed excellent internal reliability[16]. Construct validity was determined by (i) item-construct and item-total correlations, and (ii) exploratory (EFA) and confirmatory factor analysis (CFA). Correlations were judged as inadequate if < 0.20, sufficient if ranging from 0.20-0.34, good if ranging from 0.35-0.49 and excellent if ≥ 0.50[16].

Kolmogorov-Smirnov and Shapiro-Wilk tests of normality were calculated to determine data distribution characteristics. The Kaiser-Meyer-Olkin (KMO) measure of sample adequacy of 0.929 (≥ 0.6) and a significant Bartlett's test of sphericity ($\chi^2(1711) = 12\,163.432$, $\rho < 0.001$), indicated adequacy of data reduction procedures. EFA using the extraction method of principal component analysis with orthogonal varimax rotation was used. The number of factors was identified by the Kaiser criterion of Eigenvalue ≥ 1 and Scree Plot[17].

Confirmatory factor analysis (CFA) was conducted for each PCPI-S domain corresponding to the PcPF domains of prerequisites, care environment and person-centered processes. Skewness (> 2) and kurtosis (> 7) were not relevant issues across items (cf. Marôco[18]). Accordingly, the maximum likelihood estimation method recommended for categorical, non-normally distributed data was used[19]. Outliers were determined through the Mahalanobis distance for each data case. The items' factor loadings were examined

and the threshold for acceptability defined upon the sample size achieved[18]. Correlated items with a modification index (MI) greater than 4 were reviewed to potential modification, giving priority to MIs greater than 11[18]. Modifications to the original structure of each domain were defined in congruence with the criteria used in previous validation studies of the PCPI-S into Norwegian[8] and German[9] in the following order 1) correlated errors across items within the same factor, 2) correlated errors across items across factors, and 3) correlated factor loadings of items to factors. Modifications were only allowed if congruent with the theoretical framework.

The instrument model was refined continuously and iteratively until it was considered to have acceptable fit. Following the recommendations from the literature, model fit was attained if at least one criterion from each component revealed acceptable fit. The goodness-of-fit model was assessed through several fit indices from each category of three model fits (absolute, incremental, and parsimonious fit). In this study, the fitness indices used were Root Mean Square Error of approximation (RMSEA; acceptable fit ≤ 0.06), root mean square residual (SRMR; acceptable fit < 0.08), Tucker-Lewis Index (TLI; acceptable fit ≥ 0.9), Comparative Fit Index (CFI; acceptable fit ≥ 0.9), chi-square (χ^2)/degrees of freedom (df) (acceptable fit ≤ 5).[18, 19]

Results

Translation and cultural adaptation

The work on developing the explanations of the instrument's concepts, and the subsequent reconciliation of the two forward translated versions allowed the identification of language differences related to the culture and to the healthcare system. Attaining the definition of the construct of 'Appropriate skill mix', the Portuguese healthcare system does not comprise staff working as non-registered nurses and the multidisciplinary designation of 'staff' was found to be ambiguous. Non-registered nurses in the Portuguese healthcare system were then considered to be culturally equivalent to the operational assistants at the hospital wards and no such role was identified in relation to primary care. Concerning the designation of 'staff', it was culturally equivalent to the multidisciplinary team, who would present different members and structures depending on the context of care delivery.

These two steps of the translation and cultural adaptation of the instrument also revealed to be challenging with respect to ensuring the focus on a language of person-centeredness congruent with the PcPF and relevant across healthcare settings (e.g., physical environment: healthcare environment vs. clinical environment). The person-centered processes construct of 'being sympathetically present' was found to be particularly difficult to adapt culturally, while keeping its alignment with the philosophy of person-centeredness. Specifically, the literal translation of 'sympathetic presence' was not considered to bear the original meaning of the concept (i.e., *an engagement that recognizes the uniqueness and value of the individual, by appropriately responding to cues that maximize coping resources through the recognition of important agendas in their life*). Empathetic presence would be a more commonly used expression in Portuguese healthcare discourse and is understood by both healthcare professionals and service users. Yet, it is not endorsed by the original theoretical framework. The culturally adapted back-translation was therefore developed to 'solidary presence'.

Cognitive debriefing

Fifteen healthcare professionals participated in the individual cognitive debriefing with each virtual interview having one hour duration on average. Each participant reviewed 20 items on average following the instrument structure. The sample was mostly composed of women (n=12, 80%) and included the participation of physicians, nurses, physiotherapists, and psychologists. Participants schooling ranged from 16 to 24 years with a PhD being the highest academic degree. Ten participants (67%) worked at a specialized healthcare practice context and five (33%) from the primary healthcare context. Their professional experience ranged between 11 and 24 years.

Cognitive debriefing revealed understandability and suitability of the items. Yet, some issues that can compromise cultural equivalence were identified and grouped in relation to i) lack of inclusiveness in relation to healthcare professionals' discourse, practice, or healthcare context; ii) ambiguity of interpretation, iii) social desirability and iv) readability.

The interpretation of the items' meaning amongst the different professional categories was found to be similar, although different terms were used to portray the same meaning. Lack of

inclusiveness in relation to the healthcare professionals' discourse, practice or healthcare context was identified for the words 'care' and 'team', and in specific items. Chart 2 depicts the preferred wording for specific designations in relation to the healthcare professionals and the items where it was found to be problematic.

Across healthcare professionals the designation 'care' was identified as being closer to the nursing profession, which was even recognized by nurses as a potential misfit with other professions discourses. Psychologists identified 'intervention' as preferrable to 'care'. Likewise, physiotherapists would be more familiar with 'rehabilitation plan' while physicians at the specialized settings identified more easily with 'diagnose and treatment'. Importantly, primary care physicians were more comfortable with using the original wording compared with specialist physicians, without recommending amendment of the item.

The word 'team' was probed to elicit the constituting members being considered when answering the item. It became evident that it was interpreted differently across healthcare professionals' and within the same professional group depending on the practice setting. This was evident regardless of the context being primary or specialized care. Healthcare professionals compared experiences of working at different practice settings, mentioning that at one of the settings they would interpret the 'team' as being the nursing team, whereas in the other they would consider the multidisciplinary team. Primary care physicians considered the multidisciplinary team across items. Nurses and physicians at the specialized healthcare settings had varying interpretation across items. This variability was particularly identified in the care environment domain. For example, item 19 'I recognize when there is a lack of knowledge and skills in the team and its impact on the provision of care', 'team' referred to each healthcare professional group, i.e., nursing team, physicians. While item 26 'I work in a team that values my contribution to person-centered care' and 27 'I work in a team that encourages everyone to contribute to person-centered care', 'team' referred to the multidisciplinary team. Psychologists usually considered the other psychologists as being the team members, whereas physiotherapists considered the multidisciplinary team.

Item 10 was judged to be inadequate by psychologists and the other healthcare professionals reflected on how allocating extra time to a specific encounter would compromise person-centeredness in encounters that followed. To fit the practice of professionals across categories while stressing person-centeredness, the item was consensually adapted to 'I strive to ensure that the time I spend with the person is of quality' (the original version was 'I go out of my way to spend time with the people receiving care').

Item 25 'My opinion is sought in clinical decision-making forums (e.g., ward rounds, case conferences, discharge planning)' lacked inclusiveness in relation to primary healthcare practice, while being associated with routines of inpatient care contexts. Amendments were consensually adapted to 'My opinion is requested in multidisciplinary therapeutic decision-making meetings (e.g., clinical service meeting, clinical case conferences, discharge planning).

Item 49 'I work with the person to set health goals for their future' was sensitive for healthcare professionals working in oncological care settings. The respondents stressed the focus on future health objectives in comparison with the

Chart 2. Original wording and culturally adapted version of problematic items.

Culturally adapted version (Portuguese version)	Culturally adapted version (English version)	Original wording	Item
Na minha prática	In my practice	When I provide care (…)	2
		I deliver care (…)	59
Contributo de todos os membros da equipa para o plano terapêutico	Contribution of all team members to the therapeutic plan	(…) contributions to care.	21
Tarefa imediata	Immediate task	(…) immediate physical task	2
a minha forma de comunicar	the way I communicate	Communication techniques	6
Diversidade de competências	Skill mix	(…) diversity of competencies (…)	20

Source: Authors.

person's future. This item was therefore consensually harmonized to 'I work with the person to set future health goals'.

Ambiguity of interpretation across healthcare professionals' categories was found in relation to the word 'others' and 'person' or 'people'. On items 4, 5 and 16, 'others' was usually reflected upon to either relate to healthcare colleagues or to patients and their families. Respondents suggested changing to the singular form to stress the focus on respect and consideration in relationships regardless of the persons interacting in the relation. On item 50 'I enable people receiving care to seek information about their care from other healthcare professionals', the word 'others' was continuously questioned and reflected to be other healthcare professionals. Accordingly, the item was rephrased to 'I sensitize the person to obtain information about their care from other health professionals', to reduce ambiguity of interpretation.

On items 9, 10, 36, 41, 46, 47, 50, 53, 54, and 55, 'people' was replaced by 'person' to enhance interpretation as service user. On item 8, 'I strive to deliver high quality care to people', 'people' was considered redundant and decreased readability, which led to the deletion of the word from the item. The positioning of item 29 'The contribution of colleagues is recognized and valued' in the sequence of the previous items, was identified as influencing its interpretation towards reducing the ambiguity in relation to the person recognizing or valuing the contribution.

Social desirability was identified as potentially leading to positively scored items. While testing the items, respondents reflected recurrently on how they aimed for the ideal described in the item, although they were not consistently able to achieve it in their daily practice. Thus, they would answer 'neither agree, nor disagree' or 'agree' instead of 'strongly agree'. To give an example, when reflecting on the item 4 'I make sure I hear and acknowledge the other's perspectives', Respondent 13 (R13) reflected as follows:

Yes. Well, I can't say that there aren't days and moments when a person isn't overwhelmed, when the person is running short of time and that sometimes maybe I don't do it with the time or availability that I would like to, but at least I try to do it, yes. And when I say this, it's not just in relation to the patients, but it is something that I think is very important, and for us doctors it's very important, it's among us colleagues.

Interviewer: *Ok, and what would you select as an answer to this item?*

R13: *Here I would select strongly agree, because if I don't do it... It is only if it's a very rare situation where I don't really have time, or an exceptional situation, because other than that...*

Concerning the items readability, specific items were considered complicated. Namely item 28 'My colleagues positively role model the development of effective relationships', which was consensually amended to 'My colleagues set a good example of effective peer relationships'. Similarly, item 41 'I am recognized for the contribution that I make to people having a good experience of care' was adapted to 'I am recognized for providing a positive care experience to the person'. Item 56 'I ensure my full attention is focused on the person when I am with them' was also considered to be confusing, with participants suggesting its rephrasing to 'I make sure I fully focus my attention on the person I'm with'. On item 19 'I recognize when there is a lack of knowledge and skills in the team and its impact on care delivery', three of the respondents considered that the item was addressing two different elements.

Person-centered care as phrased on items 26, 27, and 37 was systematically read in the Portuguese plural form of 'care'. When asked to reflect on this, respondents identified the plural form to be part of their natural discourse as healthcare professionals, whereas the singular form was interpreted to be mostly in line with characteristic of being careful. Person-centered care was therefore adapted to the plural form of care.

Psychometric evaluation

A total of 308 healthcare professionals completed the inventory, of which four cases were considered dropouts as none of the items were answered. The sample (n = 304) was 86% composed of women (n = 261) and 14% (42) men. Participants were mostly nurses (45%) followed by occupational therapists, (26%), physicians (15%), physiotherapists (9%), and psychologists (2%). Healthcare professionals had an average of 17.3 schooling years (range 4-37) and 14.3 years of professional experience (range 0-46).

Missing data analysis revealed a negligible percentage of 0.³14 for all items and missing at random as per ρ values ≥ 0.01 but < 0.05 (Little's MCAR test: $\chi^2 = 2275$, df = 2131, $\rho = 0.02$). Multiple imputation was therefore used for the identified missing values, which were included in the analysis.

Item mean scores ranged from 2.65 (item 40) to 4.66 (item 8) and were mostly positively scored

(Table 1). Ceiling effects were identified for most of the items with exception of 10 that are identified in Table 1, with most of these belonging to the domain of the care environment.

Table 1. Items descriptive statistics, item-scale correlation, and reliability assessment.

Domains Domínios	Constructs and items Construtos e itens	Mean (SD)	Item-scale correlation	Standard error
Prerequisites Pre-requisitos (α = 0.89)	**Professionally competent (α = 0.56)**			
	Competências profissionais	4,37 (.48)		,027
	1. I have the necessary skills to negotiate care options.			
	Tenho as competências necessárias para negociar opções de cuidados.	4.14 (.67)	.451**	,038
	2. In my practice, I am attentive to more than just the immediate task.			
	Na minha prática estou atento/a a mais do que apenas a tarefa imediata.	4.54 (.64)	.524**	,037
	3. I actively look for opportunities to expand my professional competence.			
	Procuro ativamente oportunidades para melhorar a minha competência profissional.	4.42 (.66)	.544**	,038
	Developed interpersonal skills (α = 0.83)			
	Competências interpessoais desenvolvidas	4,44 (.50)		,029
	4. I make sure that I hear and acknowledge the others perspectives.			
	Certifico-me de que ouço e reconheço as perspectivas do outro.	4.43 (.61)	.624**	,035
	5. In my communication, I show respect towards others.			
	Demonstro respeito pelo outro na minha comunicação.	4.57 (.55)	.586**	,032
	6. I adjust the way I communicate to find solutions by mutual agreement.			
	Ajusto a minha forma de comunicar para encontrar soluções por mútuo acordo	4.47 (.60)	.665**	,034
	7. I am aware of the impact that my non-verbal communication has in my relationship with others.			
	Estou atento/a ao impacto da minha comunicação não verbal no relacionamento com o outro.	4.29 (.69)	.666**	,040
	Being committed to the job (α = 0.84)			
	Compromisso com o trabalho	4,43 (.50)		,028
	8. I strive to provide high quality care.			
	Esforço-me por prestar cuidados de alta qualidade.	4.66 (.54)	.614**	,031
	9. I look for opportunities to get to know the person and his/her family, to perform holistic care.			
	Procuro oportunidades para conhecer a pessoa e a sua família, de modo a prestar cuidados holísticos	4.32 (.71)	.696**	,041
	10. I strive to ensure that the time I spend with the person is of quality.			
	Esforço-me para que o tempo que passo com a pessoa seja de qualidade.	4,44 (.61)	.704**	,035
	11. I strive to provide high-quality, evidence-based care.			
	Esforço-me por prestar cuidados de alta qualidade e baseados na evidência.	4.42 (.59)	.632**	,034
	12. I constantly look for opportunities to improve the care experience.			
	Procuro constantemente oportunidades para melhorar a experiência de cuidados.	4.30 (.66)	.675**	,038

it continues

Table 1. Items descriptive statistics, item-scale correlation, and reliability assessment.

Domains Domínios	Constructs and items Construtos e itens	Mean (SD)	Item-scale correlation	Standard error
Prerequisites Pre-requisitos (α = 0.89)	**Knowing self (α = 0.83)**			
	Autoconhecimento	3,99 (.67)		,039
	13. I take time to explore the reasons why I react the way I do in certain situations.			
	Dedico tempo a explorar as razões pelas quais reajo do modo como reajo em certas situações.	3.86 (.84)	.659**	,048
	14. I analyze if my actions correspond to my way of being.			
	Analiso se as minhas ações correspondem à minha maneira de ser.	3.99 (.80)	.634**	,046
	15. I am aware of how my experiences influence my practice.			
	Estou atento/a à forma como as minhas vivências influenciam a minha prática.	4.11 (.68)	.628**	,039
	Clarity of beliefs and values (α = 0.72)			
	Clareza de crenças e valores	3,70 (.70)		,040
	16. I actively seek feedback from others about my practice.			
	Procuro ativamente o feedback do outro sobre a minha prática.	3.77 (.88)	.609**	,050
	17. I question my colleagues when their practice does not reflect our team's values and beliefs.			
	Questiono os meus colegas quando a sua prática não reflete os valores e crenças da nossa equipa.	3.54 (.91)[a]	.484**	,052
	18. I encourage colleagues to develop their practice in line with the team's values and beliefs.			
	Incentivo os colegas a desenvolverem a sua prática de acordo com os valores e crenças da equipa.	3.77 (.83)	.546**	,047
The care environment O ambiente de cuidados (α = 0.93)	**Skill mix (α = 0.65)**			
	Diversidade de competências	4,08 (.60)		,034
	19. I recognize when there is a lack of knowledge and skills in the team and its impact on care delivery.			
	Reconheço quando há um défice de conhecimento e competências na equipa e o seu impacto na prestação de cuidados.	3.96 (.80)	.199**	,046
	20. I am able to signal when the diversity of skills in the team is below acceptable levels.			
	Sou capaz de sinalizar quando a diversidade de competências na equipa está abaixo dos níveis aceitáveis.	3.78 (.86)	.405**	,049
	21. I value the participation and contribution of all team members to the therapeutic plan.			
	Valorizo a participação e o contributo de todos os membros da equipa para o plano terapêutico	4.49 (.61)	.456**	,035
	Shared Decision-Making Systems (α = 0.84)			
	Sistemas de tomada de decisão partilhada	3,62 (0.91)		,052
	22. I actively participate in team meetings to support my decision making.			
	Participo ativamente em reuniões de equipa para fundamentar a minha tomada de decisão.	4.01 (.88)	.543**	,051

it continues

Table 1. Items descriptive statistics, item-scale correlation, and reliability assessment.

Domains Domínios	Constructs and items Construtos e itens	Mean (SD)	Item-scale correlation	Standard error
The care environment O ambiente de cuidados (α = 0.93)	23. I participate in decision-making working groups at an institutional level with an impact on practice.			
	Participo em grupos de trabalho de tomada de decisão a nível institucional com impacto na prática.	3.53 (1.15)	.579**	,066
	24. I have the opportunity to actively participate and influence decisions in my service.			
	Tenho a oportunidade de participar ativamente e de influenciar decisões no meu serviço.	3.52 (1.16)	.709**	,067
	25. My opinion is requested in multidisciplinary therapeutic decision-making meetings (eg clinical service meeting, clinical case conferences, discharge planning).			
	A minha opinião é requisitada em reuniões multidisciplinares de tomada de decisão terapêutica (por exemplo: reunião clínica do serviço, conferências clínicas de casos, planeamento da alta).	3.42 (1.19)	.689**	,068
	Effective staff relationships (α = 0.87)			
	Relações eficazes entre profissionais	3,64 (.93)		,053
	26. I work in a team that values my contribution to person-centered care.			
	Trabalho numa equipa que valoriza a minha contribuição para os cuidados centrados na pessoa.	3.72 (1.07)	.746**	,061
	27. I work in a team that encourages everyone to contribute to person-centred care.			
	Trabalho numa equipa que encoraja a contribuição de todos para os cuidados centrados na pessoa	3.65 (1.06)	.767**	,061
	28. My colleagues set a good example of effective peer relationships.			
	Os meus colegas dão um bom exemplo de relacionamentos eficazes entre pares.	3.55 (1.01)[a]	.615**	,058
	Power sharing (α = 0.83)			
	Partilha de poder	3,63 (.82)		,047
	29. The contribution of colleagues is recognized and valued.			
	O contributo dos colegas é reconhecido e valorizado.	3.50 (1.03) [a]	.720**	,059
	30. . I actively contribute to the development of common goals.			
	Contribuo ativamente para o desenvolvimento de objetivos comuns.	4.08 (.75)	.645**	,043
	31. The service coordinator promotes participation.			
	O coordenador do serviço promove a participação.	3.54 (1.12)	.702**	,064
	32. They encourage and support me to lead improvements in practice.			
	Encorajam-me e apoiam-me para liderar as melhorias na prática.	3.42 (1.11)	.763**	,064
	Potential for innovation and risk taking (α = 0.62)			
	Potencial para inovação e tomada de riscos	3,69 (.68)		,039
	33. I feel supported when I do things differently to improve my practice.			
	Sinto-me apoiado quando procedo de forma diferente para melhorar a minha prática	3.32 (1.10) [a]	.760**	,063

it continues

Table 1. Items descriptive statistics, item-scale correlation, and reliability assessment.

Domains Domínios	Constructs and items Construtos e itens	Mean (SD)	Item-scale correlation	Standard error
The care environment O ambiente de cuidados (α = 0.93)	34. I am able to maintain a balance between using evidence and taking risks.			
	Sou capaz de manter o equilíbrio entre usar a evidência e correr riscos.	3.72 (.78) [a]	.496**	,045
	35. I am committed to improving the quality of care by challenging current practices.			
	Estou comprometido/a em melhorar a qualidade dos cuidados desafiando práticas correntes	4.04 (.78)	.463**	,045
	The physical environment (α = 0.82)			
	Ambiente físico	4,03 (.72)		,041
	36. I am aware of the impact of the physical environment on the dignity of the person.			
	Estou atento/a ao impacto do ambiente físico na dignidade da pessoa.	4.29 (.71)	.462**	,041
	37. I encourage others to analyze the impact of the physical environment on the provision of person-centred care (eg noise, light, heat etc.).			
	Encorajo os outros a analisar o impacto do ambiente físico na prestação de cuidados centrados na pessoa (por exemplo: ruído, luz, calor etc.).	4.02 (.86)	.484**	,050
	38. I look for creative ways to improve the physical environment.			
	Procuro formas criativas de melhorar o ambiente físico.	3.78 (.93)	.469**	,053
	Supportive Organizational Systems (α = 0.86)			
	Sistemas organizacionais facilitadores	3.15 (0.9)		,052
	39. In my team we make a point of celebrating our successes.			
	Na minha equipa fazemos questão de celebrar os nossos sucessos.	3.36 (1.05) [a]	.651**	,060
	40. My organization recognizes and rewards success.			
	A minha organização reconhece e recompensa o sucesso.	2.65 (1.19) [a]	.600**	,068
	41. I am recognized for providing a person with a positive care experience.			
	Sou reconhecido por proporcionar à pessoa uma experiência de cuidados positiva.	3.43 (1.08) [a]	.648**	,062
	42. I'm encouraged to express concerns about aspects of care.			
	Incentivam-me a expressar preocupações sobre aspetos dos cuidados.	3.22 (1.10) [a]	.750**	,063
	43. I have the opportunity to regularly discuss my practice and professional development.			
Person-centered processes Processos de centralidade na pessoa (α = 0.95)	**Tenho a oportunidade de discutir regularmente a minha prática e o meu desenvolvimento profissional**	3.07 (1.17) [a]	.720**	,067
	Working with patients' beliefs and values (α = 0.83)			
	Considerar as crenças e os valores da pessoa	4,22 (.60)		,035
	44. I integrate my knowledge of the person into care delivery.			
	Integro os meus conhecimentos sobre a pessoa na prestação de cuidados.	4.25 (.73)	.627**	,042

it continues

Table 1. Items descriptive statistics, item-scale correlation, and reliability assessment.

Domains Domínios	Constructs and items Construtos e itens	Mean (SD)	Item-scale correlation	Standard error
Person-centered processes Processos de centralidade na pessoa (α = 0.95)	45. I work with the person taking into account their family context and their caregivers.			
	Trabalho com a pessoa tendo em conta o seu contexto familiar e os seus cuidadores.	4.17 (.79)	.735**	,045
	46. I try to get the person's perception of their care experience.			
	Procuro obter a perceção da pessoa sobre a sua experiência de cuidados.	4.14 (.76)	.730**	,043
	47. I encourage the person to talk about what is important to them.			
	Encorajo a pessoa a falar sobre o que lhes é importante.	4.33 (.69)	.803**	,039
	Shared decision-making (α = 0.81)			
	Tomada de decisão partilhada	4,13 (.65)		,037
	48. I include the family in decisions about care when it is appropriate and/or in accordance with the person's wishes.			
	Incluo a família nas decisões sobre os cuidados quando é apropriado e/ou de acordo com a vontade da pessoa.	4.13 (.78)	.696**	,045
	49. I work with the person to set future health goals.			
	Trabalho com a pessoa para estabelecer objetivos de saúde futuros.	4.12 (.76)	.802**	,044
	50. I sensitize the person to obtain information about their care from other health professionals.			
	Sensibilizo a pessoa para obter informações sobre os seus cuidados junto de outros profissionais de saúde.	4.16 (.74)	.705**	,042
	Engagement (α = 0.86)			
	Envolvimento autêntico	4,33 (.58)		,033
	51. I try to understand the person's perspective.			
	Tento compreender a perspetiva da pessoa.	4.44 (.62)	.799**	,036
	52. I try to reach consensus when my goals for the person differ from their perspective.			
	Procuro chegar a um consenso quando os meus objetivos para a pessoa diferem da sua perspetiva.	4.18 (.69)	.796**	,039
	53. I involve the person in care processes when appropriate.			
	Envolvo a pessoa nos processos de cuidados quando apropriado.	4.37 (.64)	.847**	,036
	Having solidary presence (α = 0.84)			
	Estar presente em solidariedade	4,27 (.60)		,034
	54. I actively listen to the person to identify unmet needs.			
	Escuto ativamente a pessoa no sentido de identificar as necessidades não satisfeitas.	4.38 (.66)	.836**	,038
	55. I gather additional information to help support the person.			
	Recolho informação adicional para me ajudar no apoio à pessoa.	4.22 (.68)	.758**	,039
	56. I make sure I fully focus my attention on the person I'm with.			

it continues

Table 1. Items descriptive statistics, item-scale correlation, and reliability assessment.

Domains Domínios	Constructs and items Construtos e itens	Mean (SD)	Item-scale correlation	Standard error
Person-centered processes Processos de centralidade na pessoa (α = 0.95)	Certifico-me que foco totalmente a minha atenção na pessoa com quem estou.	4.21 (.71)	.781**	,041
	Providing holistic care (α = 0.91)			
	Trabalhar holisticamente	4,42 (.61)		,035
	57. I strive to understand the person as a whole.			
	Esforço-me por compreender a pessoa como um todo.	4.44 (.67)	.821**	,038
	58. I assess the needs of the person, taking into account all aspects of life.			
	Avalio as necessidades da pessoa, tendo em conta todos os seus aspetos de vida.	4.27 (.71)	.792**	,041
	59. In my practice I consider the person as a whole.			
	Na minha prática considero a pessoa como um todo.	4.54 (.62)	.795**	,036

[a] Ceiling effect absent, **p < 0.

Source: Authors.

The Cronbach's alpha for the whole inventory revealed excellent internal consistency (α = 0.96). Only the domain of Prerequisites had a good internal consistency (α = 0.89). Here the construct of 'professionally competent' had a value lower than 0.7 (α = 0.56). Particularly on this construct, the inter-item correlations were only sufficient ranging from 0.28 to 0.33[16]. In the Care Environment domain (α = 0.93), the constructs of 'skill mix' (α = 0.65) and 'potential for innovation and risk taking' (α = 0.62) also scored below 0.7 on the Cronbach's alpha, revealing acceptable internal consistency.

The item-scale correlations were generally good ranging from 0.40 to 0.85, with the exception for the item 19 'I recognize when there is a lack of knowledge and skills in the team and its impact on care delivery', with an inadequate correlation value (0.20).

EFA with principal component analysis and orthogonal varimax rotation revealed 10 components in line with Eigenvalue ≥ 1. Altogether, these factors accounted for an explained variance of 65,21%, which was considered adequate.

To keep in line with the CFA adequate ratio of 10:1 of respondent to item, the factor analysis was conducted according to the original domains (i.e., Prerequisites 17:1, Care Environment 12:1, Care Processes 19:1)[15]. Given the sample size greater than 250 participants, factor loadings of 0.35 were considered acceptable[18].

Following the confirmatory factor analysis, modifications were performed to the domains of Prerequisites and Care environment according to the first criterion of correlated errors across items within the same construct for items with correlated errors with MI greater than 11[18]. Specifically, for the domain of Prerequisites, the measurement errors of items 4 and 5 within the construct Developed Interpersonal Skills were correlated (MI = 16.259). Within the construct Being Committed to the Job, the measurement error of items 9 and 10 (MI = 18.635) were correlated, as well as the measurement errors of items 9 and 11 (MI = 17.246), items 11 and 12 (MI = 5.925), and items 10 and 12 (MI = 14.402). Within the construct Clarity of Beliefs and Values, the measurement errors of items 16 and 18 (MI = 6.259), as well as the measurement errors of items 17 and 18 (MI = 7.459). Concerning the domain of Care Environment, the measurement errors of items 31 and 32 within the construct Power Sharing were correlated (MI = 20.161), as well as the measurement errors of items 34 and 35 (MI = 45.985) within the construct Potential for Innovation and Risk Taking, and the measurement errors of items 39 and 40 (MI = 12.719) within the construct Supportive Organizational Systems. The fit statistics for each domain of the adjusted PCPI-S indicate good model fit and are displayed in Table 2.

Overall, factor loadings for all items on each construct were considered acceptable ranging from .42 on Item 34 to .87 on Item 59 (Table 3). Factor loadings between constructs were all acceptable for the domains of Prerequisites and The Person-Centered Care Processes. Yet in the Care Environment domain, some factor loadings were below 0.4, specifically between Skill Mix and Effective Staff Relationship (.33), Skill-Mix and

Potential for Innovation and Risk Taking (.32), Skill-Mix and Supportive Organizational Systems (.31), and Effective Staff Relationship and Physical Environment (.30).

The composite reliability for all constructs across domains improved from the original to the adjusted model. The values ranging from 0.66 to 0.90 in the Prerequisites, 0.66 to 0.91 in the Care Environment domain, and 0. 84 to 0.95 in the Person-Centered Processes, indicate improved internal consistency of the adjusted model across the three domains.

The average variance extracted (AVE) indicated acceptable convergent validity (i.e., above 0.5, according to Marôco[18]) for all constructs across domains, with the exception of the construct Professionally Competent (AVE = 0.40) in the domain of the Prerequisites, and the con-

Table 2. Fit Statistics of the adjusted three-factorial model of PCPI-S.

Models	X^2/df	TLI	CFI	RMSEA	90% RMSEA	SRMR
Pre-requisites	1.929	0,938	.952	.055	0.044 - 0.066 (p = 0,199)	0.0478
Care environment	2.933	0,865	.887	.080	0.073 - 0.087 (p = 0.000)	0.0763
Person-centred processes	2.179	0,961	.969	.062	0.051 - 0.074 (p = 0,041)	0.0305

Source: Authors.

Table 3. Validity and Reliability of the adjusted measurement model by constructs.

Domain	Construct	Items	Factor loading	CR	AVE
Prerequisite	Professionally competent	1. I have the necessary skills to negotiate care options.	.44	.66	.40
		2. In my practice, I am attentive to more than just the immediate task.	.59		
		3. I actively look for opportunities to expand my professional competence.	.61		
	Developed interpersonal skills	4. I make sure that I hear and acknowledge the others perspectives.	.69	.88	.66
		5. In my communication, I show respect towards others.	.69		
		6. I adjust the way I communicate to find solutions by mutual agreement.	.81		
		7. I am aware of the impact that my non-verbal communication has in my relationship with others.	.71		
	Being committed to the job	8. I strive to provide high quality care.	.72	.85	.67
		9. I look for opportunities to get to know the person and his/her family, to perform holistic care.	.70		
			.72		
	Knowing self	13. I take time to explore the reasons why I react the way I do in certain situations.	.74	.90	.76
		14. I analyze if my actions correspond to my way of being.	.86		
		15. I am aware of how my experiences influence my practice.	.80		
	Clarity of beliefs and values	16. I actively seek feedback from others about my practice.	.83	.80	.48
		17. I question my colleagues when their practice does not reflect our team's values and beliefs.	.56		
		18. I encourage colleagues to develop their practice in line with the team's values and beliefs.	.62		

it continues

Table 3. Validity and Reliability of the adjusted measurement model by constructs.

Domain	Construct	Items	Factor loading	CR	AVE
Care environment	Skill mix	19. I recognize when there is a lack of knowledge and skills in the team and its impact on care delivery.	.54	.76	.51
		20. I am able to signal when the diversity of skills in the team is below acceptable levels.	.68		
		21. I value the participation and contribution of all team members to the therapeutic plan.	.65		
	Shared decision-making systems	22. I actively participate in team meetings to support my decision making.	.69	.91	.71
		23. I participate in decision-making working groups at an institutional level with an impact on practice.	.71		
		24. I have the opportunity to actively participate and influence decisions in my service.	.79		
		25. My opinion is requested in multidisciplinary therapeutic decision-making meetings (eg clinical service meeting, clinical case conferences, discharge planning).	.85		
	Effective staff relationships	26. I work in a team that values my contribution to person-centered care.	.88	.91	.81
		27. I work in a team that encourages everyone to contribute to person-centred care.	.93		
		28. My colleagues set a good example of effective peer relationships.	.69		
	Power sharing	29. The contribution of colleagues is recognized and valued.	.75	.88	.65
		30. I actively contribute to the development of common goals.	.60		
		31. The service coordinator promotes participation.	.71		
		32. They encourage and support me to lead improvements in practice.	.82		
Care environment	Potential for innovation and risk taking	33. I feel supported when I do things differently to improve my practice.	.85	.66	.43
		34. I am able to maintain a balance between using evidence and taking risks.	.42		
		35.I am committed to improving the quality of care by challenging current practices.	.36		
	The Physical Environment	36. I am aware of the impact of the physical environment on the dignity of the person.	.74	.90	.75
		37. I encourage others to analyze the impact of the physical environment on the provision of person-centred care (eg noise, light, heat etc.).	.88		
		38. I look for creative ways to improve the physical environment.	.74		
	Supportive organizational systems	39. In my team we make a point of celebrating our successes.	.64	.91	.68
		40. My organization recognizes and rewards success.	.65		
		41. I am recognized for providing a person with a positive care experience.	.70		
		42. I'm encouraged to express concerns about aspects of care.	.87		
		43. I have the opportunity to regularly discuss my practice and professional development.	.83		

it continues

Table 3. Validity and Reliability of the adjusted measurement model by constructs.

Domain	Construct	Items	Factor loading	CR	AVE
Person-centered processes	Working with patients' beliefs and values	44. I integrate my knowledge of the person into care delivery.	.61	.91	.71
		45. I work with the person taking into account their family context and their caregivers.	.73		
		46. I try to get the person's perception of their care experience.	.76		
		47. I encourage the person to talk about what is important to them.	.84		
	Shared decision-making	48. I include the family in decisions about care when it is appropriate and/or in accordance with the person's wishes.	.72	.84	.63
		49. I work with the person to set future health goals.	.86		
		50. I sensitize the person to obtain information about their care from other health professionals.	.74		
	Engagement	51. I try to understand the person's perspective.	.80	.92	.79
		52. I try to reach consensus when my goals for the person differ from their perspective.	.79		
		53. I involve the person in care processes when appropriate.	.85		
	Having solidary presence	54. I actively listen to the person to identify unmet needs.	.86	.90	.75
		55. I gather additional information to help support the person.	.73		
		56. I make sure I fully focus my attention on the person I'm with.	.79		
	Providing holistic care	57. I strive to understand the person as a whole.	.92	.95	.86
		58. I assess the needs of the person, taking into account all aspects of life.	.85		
		59. In my practice I consider the person as a whole.	.87		

Source: Authors.

struct Potential for Innovation and Risk Taking (AVE = 0.43) in the domain of the Care Environment.

Finally, discriminant validity was found for most of the constructs within the Prerequisites and the Care Environment. The exceptions were in The Prerequisites, between Professionally Competent and Developed Interpersonal Skills, and between Professionally Competent and Commitment to the Job. Similarly, in the Care Environment, discriminant validity was not found between the constructs Power Sharing and Potential for Innovation and Risk Taking, Power Sharing and Supportive Organizational Systems, and Potential for Innovation and Risk Taking and Supportive Organizational Systems. Lastly, concerning the domain Person-Centered Care Processes, discriminant validity was only found between the constructs Working with Patients' beliefs and Values and Providing Holistic care, and Shared Decision Making and Providing Holistic Care.

Discussion

The systematic and rigorous translation and cultural adaptation of an instrument is a crucial prerequisite for its validity and reliability[11]. Importantly, language is one of the culture cornerstones and together with the person's values, education and in a specific context, it will shape the meaning of the words and the interpretation of the phenomena being assessed[20].

In the current study, the translation and cultural adaptation processes of the PCPI-S from English to European Portuguese language was a demanding process to retain the conceptual meanings of the original instrument in relation to the language, healthcare professions' cate-

gories and contexts. The challenges found were similar to the ones identified in the Norwegian validation study[8] and more recently in the Malaysian cross-cultural adaptation[10], both aiming at retaining the interdisciplinarity of the instrument. In the Portuguese study, the interdisciplinarity and the context of practice (i.e., primary care vs. specialized care) added further complexity in reaching a common discourse.

The iterative harmonization processes between the forward- and back-translated versions and the other existing versions, as well as the cognitive debriefing, were essential procedures in ensuring an inclusive discourse that was accepted and recognized across healthcare professionals without compromising the conceptual equivalence.

Another aspect that benefited the current study in terms of reaching a conceptual structure aligned with the original, was the parallel discussion of the items with the Swedish team, who were undertaking the same procedure for translating and culturally adapting the PCPI-S to Swedish. This continuous process kept alive the issue of ensuring comparability across cultures, while ensuring each country's cultural and linguistic accuracy[20,21].

Stressing the ISPOR recommendations, retaining the conceptual meaning supplants the literal translation[13]. This aspect is of particular importance in relation to the challenge of reducing terms' ambiguity [20]. Altogether, the cognitive debriefing of the varied healthcare professionals revealed equivalent interpretations of item meaning, despite the use of less inclusive terms in relation to the healthcare professionals background and practice setting. Even though many terms were changed to a meaningfully rich translation (e.g., 'care' to 'practice'), their interpretation was kept in line with the conceptual understanding of the items.

Yet, specific terms in specific items, might represent different things for different respondents, depending on their healthcare context. One such term is 'team'. Should this aspect be important to the study, a clarification of the term might be needed in the introduction of the data collection instrument or examples can be given for each specific item[14]. Although different interpretations arose concerning the team elements, they did not compromise the conceptual meaning of 'team', which consistently referred to the other elements, with whom a healthcare professional connects in order to achieve holistic person-centered care[6].

The other challenge identified in the cognitive debriefing related to answering the item according to the ideal of care or their competence to perform, rather than on the actual practice or caring procedures. This challenge was corroborated by the psychometric evaluation, where ceiling effects were present in forty-nine items across domains.

In the Malaysian study, attempting to handle the identified ceiling effect, authors modified the rating of the Likert options from the original opinion-interpreted rating (i.e., agree vs. disagree) to a focus on the frequency (i.e., never, rarely, sometimes, often, very often)[10]. Another strategy to enhance coherence of response to the rating system has been the inclusion of a timeframe to the instrument (e.g., in the last month)[14]. Social desirability is a common phenomenon among healthcare professionals known to influence their responses about their practice[22]. Future studies might also consider exploring the extent to which the items are sensitive to this type of response bias towards tendentially positive scores.

The results from the psychometric evaluation replicated the theoretical structure of the instrument. However, the undertaken approach to model adjustment deviated slightly from other psychometric evaluations, where inter-construct correlations were established (e.g., Weis et al[9]). Such a procedure had the potential of improving the lower factor loadings registered between some constructs in the Care Environment construct, where modification indices were the greatest. Even though these relationships might be off interest to understand the construct validity of the instrument, the undertaken conservative and theoretical adjustment within the isolated constructs and confined to correlated errors was enough to achieve acceptable fit statistics.

The CFA results further revealed convergent validity in relation to the original model, as indicated by the acceptable AVE and CR scores. However, without breaching the overall construct validity, some constructs had low discriminant validity, that can be understood from the theoretical point of view. Particularly concerning the construct person-centered processes, the specificities being captured by the construct 'Working with Patients' beliefs and Values' might not be sufficiently distinct from those captured by the construct 'Providing Holistic Care'. A similar phenomenon might be occurring in relation to the constructs 'Shared Decision Making' and 'Providing Holistic Care'. Following the instru-

ment's originally intended purpose, i.e., a tool for practice improvement towards person-centeredness, the lack of discriminant validity between these constructs might not be problematic as they theoretically overlap. Although rephrasing the items to enhance the concept they attempt to capture, might improve the understanding of their specificities. However, if the ambition is to develop an instrument for outcome measurement, this overlapping feature and lack of discriminant validity might be explored with the potential to reduce the overall number of items. The length of the inventory was frequently negatively judged during the cognitive debriefing and might also be prompting further response bias towards positively scored items.

To the generalization of the study results a few aspects should be considered. The lack of a priori robust sample size determination might be considered a limitation in the current study[23, 24]. The lack of agreement concerning the methods for sample size estimation led the research team to closely follow other other validation procedures of the same instrument into various languages. Moreover, the results on the KMO and the Bartlett test of sphericity are indicative of its adequacy to proceed with confirmatory factor analysis.

Another point worth of consideration when interpreting the measurement structure of the instrument is related to the lack of analyses that account for the interaction between the three constructs. Despite the evidence reinforcing the effectiveness of the PCPI-S and its alignment with the theoretical grounds on the PcPF[25], data aggregation from future studies should pursue this goal for the Portuguese population.

Altogether, the translated and validated version of PCPI-S to the Portuguese healthcare context adds to the other versions of the instrument to fill the gap concerning the need for theoretically grounded instruments that allow assessing the multiple perspectives of healthcare professionals across settings[26].

Conclusion

In conclusion, the three-factorial model of PCPI-S adjusted to the studied sample is a valid and reliable instrument to assess the perceptions of healthcare professionals on person-centered practice in various Portuguese healthcare contexts, which reflects the theoretical structure of the original instrument. The selection of this instrument for research purposes should take into consideration its strength as a theory-driven assessment tool originally intended for quality improvement purposes. While anchored in the consolidated PcPF, the instrument further allows the capturing of perspectives of different healthcare professionals across healthcare contexts. Additionally, the complementary use of other resources derived from the PcPF will allow for the triangulation of results with the perspectives of healthcare service users.

Further refinements to the items phrasing and rating system, might enhance construct validity, necessarily demanding additional psychometric evaluation. Considering the ceiling effects, the effect of social desirability on the responses to the inventory should be explored along with future psychometric evaluations.

Collaborations

F Ventura, J Chaplin, LB Sousa participated in the conception and design; analysis and interpretation of data; drafting the article or revising it critically. P Costa, I Domingues, RJO Ferreira, B McCormack and P Parreira participated in the analysis and interpretation of data and critically revision of the manuscript. All authors approved the version to be published.

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