

Validation of the Brazilian version of the Penn State College of Medicine Professionalism Questionnaire

Validação da versão brasileira do Questionário de Profissionalismo da Penn State College of Medicine

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ABSTRACT

Introduction: Assessing professionalism represents a challenge for medical educators given the nature of its construct, which comprises diverse values, beliefs, and principles. Understanding this psychological phenomenon is fundamental for reaching the goals in medical education.

Objective: This study aimed to translate into Brazilian Portuguese and to validate the Penn State College of Medicine Professionalism Questionnaire.

Method: The questionnaire was translated, and cross-culturally adapted into Brazilian Portuguese using data from 249 medical students. An exploratory factor analysis was conducted, using a polychoric matrix and the Robust Diagonally Weighted Least Squares method of extraction. The following model adequacy indexes and criteria were used: Root Mean Square Error of Approximation (RMSEA) adjustment indexes <0.08, Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) >0.90.

Result: The exploratory factor analysis obtained a KMO = 0.920, and a significant Bartlett's test of sphericity (2719.0, $df = 630$; $P < 0.001$). The parallel analysis yielded a three-factor solution, which showed adequate levels of reliability: Professional-Patient Relationship, Professional Development and Ethical Commitment. The three-factor solution was the best one found to represent the data.

Conclusion: The questionnaire evidenced good psychometric properties and appropriateness to evaluate medical students' professionalism, contributing to reach more desirable ethical standards in medical education.

Keywords: Professional Ethics; Professionalism; Validation Studies; Exploratory Factor Analysis; Medical Education.

RESUMO

Introdução: Avaliar o profissionalismo representa um desafio para os educadores médicos dada a natureza de seu construto que compreende diversos valores, crenças e princípios. A compreensão desse fenômeno psicológico é fundamental para o alcance dos objetivos da educação médica.

Objetivo: Este estudo teve como objetivos traduzir para o português brasileiro e validar o Questionário de Profissionalismo da Penn State College of Medicine.

Método: O questionário foi traduzido e adaptado transculturalmente para o português brasileiro com dados de 249 estudantes de Medicina. Na condução da análise fatorial exploratória, utilizaram-se uma matriz policórica e o método de extração Robust Diagonally Weighted Least Squares. Os seguintes índices e critérios de adequação do modelo foram usados: índices de ajuste da raiz quadrada da média do erro de aproximação (RMSEA) < 0,08, índice de ajuste comparativo (CFI) e índice de Tucker-Lewis (TLI) > 0,90.

Resultado: A análise fatorial exploratória obteve um KMO = 0,920 e um teste de esfericidade de Bartlett significativo (2719,0, $df = 630$; $P < 0,001$). A análise paralela resultou em uma solução de três fatores que apresentou níveis adequados de confiabilidade: relacionamento profissional-paciente, desenvolvimento profissional e compromisso ético. A solução de três fatores foi considerada a melhor para representar os dados.

Conclusão: O questionário evidenciou boas propriedades psicométricas e adequação para avaliar o profissionalismo dos estudantes de Medicina, contribuindo para o alcance de padrões éticos mais desejáveis na educação médica.

Palavras-chave: Ética Profissional; Profissionalismo; Estudos de Validação; Análise Fatorial Exploratória; Educação Médica.

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INTRODUCTION

The concept of medical professionalism remains in constant development, without a universally accepted definition¹. Understanding the phenomenon is fundamental for reaching the goals in medical education². The parameters used for its construction are diverse and comprehensive, considering different societies and cultures. In 2020, a systematic review³ portrayed the definitions already used for medical professionalism, including the domains of clinical competence, understood as the ability for clinical reasoning and communication skills, humanistic qualities, or virtues such as altruism, and reflective capacity to self-evaluate in search of improvement. These domains derived important elements in the structuring of professionalism throughout undergraduate courses, ranging from training in interpersonal relationships, the performance of skills and work management, and reflection on the role of individual and collective medicine³.

Medical professionalism has been considered according to three major topics: interpersonal professionalism, public professionalism, and intrapersonal professionalism⁴. Professionalism is related to the building of the professional identity from the initial years of undergraduate medical education. Therefore, efforts must be made towards the use of tools, considering students' training to achieve better ethical standards and medical curriculum improvement.

From this perspective, educators need to *broaden* their understanding of the hidden and formal curricula, addressing institutional barriers, and enhancing their understanding of professionalism³. Assessing professionalism represents a challenge for medical educators given the nature of its construct, which comprises diverse values, beliefs, and principles. Therefore, the importance of well-defined instruments to measure this competence.

Developed by a group of researchers from the College of Medicine of the State University of Pennsylvania, the Penn State College of Medicine (PSCOM) Professionalism Questionnaire⁵ is a self-applied instrument to measure attitudes about medical professionals, being the first valid and reliable tool that evaluated medical students' perception of professionalism^{5,7}. Its purpose is to assist in advancing medical education's efforts to enhance professionalism at all levels, as it aims to diagnose the institutional curriculum⁵.

The questionnaire includes the conception of professionalism defined by the American Board of Internal Medicine (ABIM)⁶: altruism, accountability, excellence, duty, honor and integrity, and respect for others. The PSCOM Professionalism Questionnaire⁵ obtained an internal consistency value that ranged from 0.71 to 0.78, except for the Respect domain (0.51).

The PSCOM Professionalism Questionnaire was validated for Colombia⁷, Pakistan⁸ and Turkey⁹. To the best of our knowledge, the PSCOM Professionalism Questionnaire has not yet been validated in Brazil. The validation of the questionnaire would provide a tool to assess attitude changes during undergraduate medical education⁵. Translating, adapting, and validating existing scales allow the comparison of professionalism with other countries¹⁰. This study aimed to translate into Brazilian Portuguese and to validate the PSCOM Professionalism Questionnaire.

METHODS

A validation study was conducted using the PSCOM Professionalism Questionnaire in medical students. This study was conducted at a private school of medicine in Salvador, state of Bahia, Brazil. Students regularly enrolled in the Ethics and Bioethics disciplines were invited to participate in the study, given the importance of the professionalism topic in this curricular component. Of the 300 enrolled students, 249 accepted to participate in this study and signed the informed consent form.

Instrument

The PSCOM Professionalism Questionnaire was originally developed and validated by Blackall et al.⁵ It is a scale consisting of 36 items, distributed in seven domains: Accountability (7 items), Enrichment (6 items), Equity (4 items), Honor and integrity (8 items), Altruism (3 items), Duty (6 items), and Respect (2 items). The answers to each item are offered using a five-point Likert scale (1=never, 2=little, 3=some, 4=much, and 5=great deal).

Translation of the scale

The PSCOM Professionalism Questionnaire was translated from the original English version into Brazilian Portuguese by two independent researchers, fluent in English. Then, a third researcher, also fluent in English, synthesized the two versions. The three translators created a single consensual version. The back-translation into English was carried out by a native English speaker. The original and back-translated versions were compared by a second native English speaker, who evaluated the preservation of the content. For content validation, the final version of the translation was evaluated by an expert panel¹¹. Ten judges, all with experience in the field of medical professionalism, participated in this validation stage. The expert committee individually analyzed the items and the overall aspects of the questionnaire. Based on the judges' considerations, adjustments were made to the instrument.

Psychometric properties testing in the target population

This stage was conducted at a private medical school in Salvador, Bahia, Brazil. First-year students who were enrolled in the course were invited to participate in the study. Of the 300 enrolled students, 249 accepted to participate in the study and signed the Informed Consent Form.

Statistical analysis procedures

The evaluation of the psychometric properties of the PSCOM Professionalism Questionnaire was performed by exploratory factor analysis, using the FACTOR v10.10.01 software. The analysis was implemented using a polychoric matrix and the Robust Diagonally Weighted Least Squares (RDWLS) extraction method¹². Initially, Kayser-Meyer-Olkin (KMO) tests were used, with values above 0.500 being accepted, and Bartlett's test of sphericity, with values of $p < 0.05$ being accepted. To define the number of factors to be retained, a Parallel Analysis was performed with random exchange of the observed data¹³ and Robust Promin rotation¹⁴. Then, the factorial loads were analyzed, adopting the following criteria as desirable: loads greater than 0.30 and absence of factorial ambiguities (that is, factorial loads close to more than one factor)^{11,15}.

To analyze the reliability of the scale, the indices of composite reliability were calculated, with values above

0.70 being considered satisfactory¹⁶. The adequacy of the model was assessed using the Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) adjustment indexes. RMSEA values must be less than 0.08, and CFI and TLI values must be above 0.90, or preferably, 0.95¹⁷. This study was approved by the Research Ethics Committee of the Bahiana School of Medicine and Public Health, under opinion numbers: 3,562,569 and CAEE: 17608219.3.0000.5544.

RESULTS

Table 1 depicts the original items of the scale and their respective translated versions, after the back-translation and content validation process. The final version was answered by 249 of the 300 students regularly enrolled in the Ethics and Bioethics disciplines.

The exploratory factor analysis obtained a KMO = 0.920 and Bartlett's test of sphericity was significant (2719.0, $gl = 630$; $P < 0.001$). As shown in Table 2, the parallel analysis recommended a three-factor solution.

The matrix of factorial loads is shown in Table 3. The first factor grouped 14 items and was related to the Professional-Patient Relationship. The second factor grouped five items, being defined as Professional Development. The third factor grouped 10 items, concerning Ethical Commitment. In total,

Table 1. The PSCOM Professionalism Questionnaire items and their respective versions translated into Portuguese.

Original text in English	Translation into Portuguese
Works collaboratively and respectfully within a team to the benefit of improved patient care or to the contribution of research	Trabalha de forma colaborativa e respeitosa dentro de uma equipe em benefício de um melhor atendimento ao paciente ou à contribuição de pesquisa
Recognizes one's own limitations	Reconhece as próprias limitações
Demonstrates adaptability in responding to changing needs and priorities	Demonstra flexibilidade em resposta às necessidades de mudança e prioridades
Commits to implement cost-effective patient care	Compromete-se a implementar um cuidado custo-efetivo ao paciente
Assumes leadership in patient management	Assume a liderança no manejo de pacientes
Participates in activities aimed at attaining excellence in patient care	Participa de atividades que visam alcançar excelência no cuidado ao paciente
Responds to constructive criticism by working to improve one's capability in the area criticized	Responde a críticas construtivas, trabalhando para melhorar a capacidade na área criticada
Shows a willingness to initiate and offer assistance toward a colleague's professional and personal development	Demonstra disposição para iniciar e oferecer assistência em favor do desenvolvimento profissional e pessoal de um(a) colega
Takes time to review other colleagues' work and provides meaningful and constructive comments to improve it	Disponibiliza tempo para revisar o trabalho de colegas e oferece comentários significativos e construtivos a fim de melhorá-lo
Attends faculty meetings, seminars, and student research presentations as a reflection of support	Participa de reuniões do corpo docente, seminários e apresentações de pesquisas de alunos como formas de apoio

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Table 1. Continuation.

Original text in English	Translation into Portuguese
Seeks self-improvement	Busca o autoaperfeiçoamento
Promotes the welfare and development of junior faculty	Promove o bem-estar e desenvolvimento de membros iniciantes do corpo docente
Meaningfully contributes to the teaching mission of the department and the College of Medicine	Contribui de forma significativa com a missão de ensino do Departamento e da Faculdade de Medicina
Adopts uniform and equitable standards for patient care	Adota padrões uniformes e com equidade no cuidado ao paciente
Promotes justice in the health-care delivery system by demonstrating efforts to eliminate discrimination in health care	Promove a justiça no sistema de prestação de cuidados de saúde, demonstrando esforços que visam eliminar a discriminação no sistema de saúde
Appreciates and respects the diverse nature of research subjects and/or patients, and honors these differences in one's work with them	Aprecia e respeita a natureza diversa de participantes de pesquisa e/ou pacientes e respeita essas diferenças no trabalho com os mesmos
Respects the rights, individuality, and diversity of thought of colleagues and students	Respeita os direitos, individualidade e diversidade de pensamento dos colegas e estudantes
Upholds scientific standards and bases decisions on scientific evidence and experience	Defende os padrões científicos e baseia as decisões em evidências e experiências científicas
Assumes personal responsibility for decisions regarding patient care	Assume responsabilidade pessoal pelas decisões relacionadas ao atendimento ao paciente
Represents information and actions in a truthful way	Representa informações e ações de maneira verdadeira
Maintains patient/physician relationships that do not exploit personal financial gain, privacy, or sexual advantages	Mantém relações médico-paciente que não exploram ganhos financeiros pessoais, privacidade ou vantagens sexuais
Advocates a patient's or research subject's interest over one's own interest	Defende o interesse de um paciente ou participante de pesquisa sobre seu próprio interesse
Reports data consistently, accurately and honestly	Relata dados de forma consistente, precisa e honesta
Refusal to violate one's personal and professional code of conduct	Recusa-se a violar o código de conduta pessoal e profissional
Meets commitments and obligations in a conscientious manner	Cumpre compromissos e obrigações de maneira consciente
Shows compassion	Demonstra compaixão
Demonstrates empathy	Demonstra empatia
Volunteers one's skills and expertise for the welfare of the community	Oferece voluntariamente suas habilidades e conhecimentos para o bem-estar da comunidade
Participates in corrective action processes toward those who fail to meet professional standards of conduct	Participa de processos de ações corretivas sobre àqueles que não cumprem os padrões profissionais de conduta
Does not seek to advance one's career at the expense of another's career	Não busca avançar na carreira às custas da carreira de outra pessoa
Reports medical or research errors	Relata erros médicos ou de pesquisa
Discloses conflicts of interest in the course of professional duties and activities	Declara conflitos de interesse no exercício de deveres e atividades profissionais
Respects patient autonomy and helps them make informed decisions	Respeita a autonomia do paciente e o ajuda a tomar decisões informadas
Acts in ways that show a commitment to confidentiality	Age de forma a demonstrar comprometimento com a confidencialidade
Avoids offensive speech that offers unkind comments and unfair criticisms to others	Evita fala ofensiva que contenha comentários indelicados e críticas injustas aos outros
Is professionally attired in a manner that is respectful of others	Veste-se profissionalmente de maneira respeitosa para com os outros

Source: Prepared by the authors.

Table 2. Parallel Analysis of the PSCOM Professionalism Questionnaire in 249 medical students. Salvador, Bahia, Brazil.

	Real Data % Variance	Mean of Random ^a % Variance
1	31.7949*	6.0016
2	6.8598*	5.5780
3	5.3198*	5.2877
4	4.2209	5.0385
5	3.8961	4.8195
6	3.5312	4.6177
7	3.2838	4.4284
8	3.0527	4.2552
9	2.9797	4.0886
10	2.7497	3.9269
11	2.5992	3.7778
12	2.3818	3.6256
13	2.2564	3.4786
14	2.1738	3.3381
15	2.1212	3.1943
16	2.0601	3.0575
17	1.9115	2.9154
18	1.7870	2.7740
19	1.7413	2.6352
20	1.6055	2.5020
21	1.4696	2.3640
22	1.3516	2.2344
23	1.3424	2.1003
24	1.2293	1.9624
25	1.0739	1.8286
26	0.9437	1.6915
27	0.9116	1.5503
28	0.7193	1.4062
29	0.6398	1.2649
30	0.5769	1.1177
31	0.4567	0.9663
32	0.4082	0.8058
33	0.3051	0.6418
34	0.2162	0.4566
35	0.0291	0.2684

*the number of factors to be retained is three, as three factors of the actual data have explained variance greater than the random data. Source: Prepared by the authors.

seven items were excluded. Five did not show factorial loads greater than 0.30, and two showed factorial ambiguity.

Finally, the Composite Reliability indices for each factor were calculated. Professional-Patient Relationship (14 items) obtained 0.892, Professional Development (5 items) attained 0.684, and Ethical Commitment (10 items) was 0.832. The factorial structure showed adequate adjustment

Table 3. Exploratory factor analysis of the PSCOM Professionalism Questionnaire in 249 medical students. Salvador, Bahia, Brazil.

Items	Factors ^a		
	F1	F2	F3
Demonstrates empathy	0.982		-0.342
Respects the rights, individuality, and diversity of thought of colleagues and students	0.824		
Respects patient autonomy and helps them make informed decisions	0.812		
Shows compassion	0.693		
Avoids offensive speech that offers unkind comments and unfair criticisms to others	0.680	0.331	
Appreciates and respects the diverse nature of research subjects and/or patients, and honors these differences in one's work with them	0.627		
Recognizes one's own limitations	0.545		
Represents information and actions in a truthful way	0.517		0.357
Meets commitments and obligations in a conscientious manner	0.489		
Volunteers one's skills and expertise for the welfare of the community ^b	0.485	0.330	
Is professionally attired in a manner that is respectful of others	0.476		
Demonstrates adaptability in responding to changing needs and priorities	0.462		
Maintains patient/physician relationships that do not exploit personal, financial gain, privacy, or sexual advantages	0.385		
Promotes justice in the health-care delivery system by demonstrating efforts to eliminate discrimination in health care	0.356		
Acts in ways that show a commitment to confidentiality	0.545		
Takes time to review other colleagues' work and provides meaningful and constructive comments to improve it		0.675	

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Table 3. Continuation.

Items	Factors ^a		
	F1	F2	F3
Shows a willingness to initiate and offer assistance toward a colleague's professional and personal development		0.606	
Seeks self-improvement		0.560	
Promotes the welfare and development of junior faculty		0.486	
Attends faculty meetings, seminars, and student research presentations as a reflection of support		0.411	
Upholds scientific standards and bases decisions on scientific evidence and experience	-0.501		0.785
Advocates a patient's or research subject's interest over one's own interest			0.646
Adopts uniform and equitable standards for patient care			0.635
Discloses conflicts of interest in the course of professional duties and activities			0.635
Reports medical or research errors			0.626
Assumes personal responsibility for decisions regarding patient care			0.582
Participates in corrective action processes toward those who fail to meet professional standards of conduct			0.548
Commits to implement cost-effective patient care			0.507
Refusal to violate one's personal and professional code of conduct			0.427
Meaningfully contributes to the teaching mission of the department and the College of Medicine ^b		0.310	0.417
Assumes leadership in patient management			0.319
Reports data consistently, accurately and honestly ^c			
Works collaboratively and respectfully within a team to the benefit of improved patient care or to the contribution of research ^c			
Does not seek to advance one's career at the expense of another's career ^c			
Participates in activities aimed at attaining excellence in patient care ^c			
Responds to constructive criticism by working to improve one's capability in the area criticized ^c			

^a Robust Promin Rotation. Factor loads above 0.30 are shown.

^b Items excluded due to factorial ambiguity.

^c Items excluded due to the absence of a factor load greater than 0.30. Source: Prepared by the authors.

indexes ($\chi^2 = 326.813$, $gl = 525$; $p < 0,05$; RMSEA = 0,030; CFI = 0,992; TLI = 0,990).

DISCUSSION

In undergraduate medical courses, the formal curricula should include teaching tools that will encourage ethical and professional behaviors by the graduates. Given its multidimensional aspect, the construction of medical professionalism is complex and difficult to understand¹. Professionalism is a competence that should be acquired during the medical undergraduate period. Therefore, teaching professionalism and applying a tool for evaluating the degree to which medical students should meet the established understanding criteria for professionalism is essential.

Several scales have already been developed for medical professionalism evaluation^{18,19}. A literature review described the PSCOM Professionalism Questionnaire with good internal consistency and content validity; however, its structural validity was undetermined¹⁹. In our study, Parallel Analysis pointed to a three-factor solution¹³, differing from developers, who suggested seven factors⁵.

The solution with three factors (domains) was the best attained one, with good psychometric properties^{11,20}. The number of domains present in a scale does not seem to change its scope¹⁸. Analogous to that proposed by Van De Camp *et al.*⁴, the Professional-Patient Relationship domain can be understood as interpersonal professionalism, that is, when the doctor interacts with the patient or with another health professional. For example, avoiding offensive speech that contains rude comments and unfair criticism of others and maintaining doctor-patient relationships that do not exploit personal financial gains, privacy, or sexual advantages. The Professional Development domain would be contained in intrapersonal professionalism, which according to the referred author is the way through which the doctor meets the demands of the profession as an individual and therefore involves personal characteristics⁴.

In Ethical Commitment there is public professionalism, in which the doctor needs to be able to assume standards prescribed in their code of ethics, being, therefore, the requirement that society expects⁴. Likewise, it can be observed in the study by Klemenc-Ketis and Vrecko¹⁸, in which only three conceptually close factors (domains) were found: empathy / humanism, professional relationship / development and responsibility.

The present study applied rigorous methodological approaches for the translation, cross-cultural adaptation, and validation of the original English version of the PSCOM Professionalism Questionnaire. The psychometric behavior of the translated version of the questionnaire was tested by exploratory factor analyses, using polychoric matrix and the

Robust Diagonally Weighted Least Squares (RDWLS)¹². The factorial structure of the present study showed adequate adjustment in all indexes.

Concerning the internal consistency of the instrument, the reliability of two factors (Professional-Patient Relationship and Ethical Commitment) was > 0.70 , and for the factor entitled Professional Development, the reliability was satisfactory (0.684). As for the development of the PSICOM, the internal consistency reliability for each factor ranged from 0.51 to 0.78⁵.

It is noteworthy that the elements described by ABIM²¹ can be used to build consensus on the domains of professionalism, but cultural differences must be considered. The ABIM structure has been considered reliable in Western and Eastern societies to portray and evaluate attitudes towards professionalism and that is why countless studies have already used the ABIM structure using different instruments⁸.

The PSCOM Professionalism Questionnaire was also validated for Spanish and after the factor analysis, four new domains were found, namely patient care, ethical attitude, partnership and relationship with health systems⁷. In a recent study to assess the reliability of the PSCOM Professionalism Questionnaire for Pakistan, it showed that despite the seven-factor solution found, it occurred with a factorial structure that was different from the one observed in the original instrument, as in the respect domain, which now has five items instead of two⁸. The validation study of the Turkish version of PSCOM revealed consistency with the factors of the original scale, with the exception of only one item in the commitment domain⁹.

The PSCOM Professionalism Questionnaire may help psychologists and medical educators in medical curriculum implementation and intervention for medical professionalism teaching in Brazil. The difficulty in defining professionalism can be partly understood, since the topic is not clinical, and it may be hidden in the medical school curriculum¹⁸. Validating and adapting tools for subjective measurements such as professionalism in different cultures allows comparisons of undergraduate medical students' perceptions between countries.

This study showed some limitations, as all participants were from the second period of medical undergraduate school, and it was conducted at a single Brazilian medical school. However, there is a limited number of studies concerning the performance of professionalism questionnaires. Despite these limitations, the PSCOM Professionalism Questionnaire is one tool that contributes to the efforts to enhance professionalism at all levels in medical education.

CONCLUSION

In this study, the three-factor solution was the best one found to represent the data. The questionnaire evidenced

good psychometric properties and appropriateness to evaluate medical students' professionalism. It is necessary to use appropriate and validated scales to evaluate students in relation to professionalism and from that point it is possible to propose the restructuring of the curriculum, or even greater integration of this framework, to reach more desirable ethical standards in medical education. An important next step would be to administer the instrument to all periods of medical undergraduate course and residency.

AUTHORS' CONTRIBUTION

Patrícia Aparecida Silva Valadão and Liliane Lins-Kusterer have written the manuscript. Patrícia Aparecida Silva Valadão worked on acquisition of data. Patrícia Aparecida Silva Valadão, Liliane Lins-Kusterer, Mary Gomes Silva, Carolina Villa Nova Aguiar, Dilton Rodrigues Mendonça, Marta Silva Menezes have worked on the analysis and interpretation of data, critically revised the manuscript, and approved the manuscript last version for publication.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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