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Original Article

Content validation of the constitutive and operational definitions of stress in the person-health environment interaction

Validação de conteúdo das definições constitutivas e operacionais do estresse na interação pessoa-ambiente de saúde

Validación de contenido de las definiciones constitutivas y operacionales del estrés en la interacción persona-entorno de salud

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ABSTRACT

Objective: To validate the content of the constitutive and operational definitions of the construct "stress in the person-health environment interaction". **Methodology**: Methodological study of content validation. The two constitutive definitions and the 18 operational definitions were evaluated by eight experts in the field. The Content Validity Index of each constitutive definition, of the set of definitions, and of each operational definition was calculated, and the binomial test and Cronbach's Alpha were performed. **Results**: The content validation of the items was achieved with a CVIt of 0.93. Of the 18 operational definitions developed, all were validated with a CVI ≥0.78, except for one. **Conclusion**: The design and validation of these constitutive and operational definitions contributed to an understanding of the analyzed phenomenon and enabled the construction of a questionnaire with internal validity.

DESCRIPTORS:
Psychological Stress; Interpersonal Relationships; Health Services; Validation Studies.

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RESUMO
Objetivo: Validar o conteúdo das definições constitutivas e operacionais do construto "estresse na interação pessoa-ambiente de saúde". **Metodologia**: Estudo metodológico de validação de conteúdo. As duas definições constitutivas e as 18 definições operacionais foram avaliadas por oito especialistas na temática. Foi calculado o Índice de Validade de Conteúdo de cada definição constitutiva, do conjunto delas e de cada definição operacional e realizado o teste binomial e o Alfa de Cronbach. **Resultados**: Permitiram a validação de conteúdo dos itens com um IVCt de 0,93. Das 18 definições operacionais elaboradas, todas foram validadas com IVC ≥0,78, exceto uma. **Conclusão**: O delineamento e a validação destas definições constitutivas e operacionais contribuíram para uma compreensão do fenômeno analisado e possibilitou a construção de um questionário com validade interna.

DESCRITORES:
Estresse Psicológico; Relação Interpessoal; Serviço de Saúde; Estudos de Validação.

RESUMEN
Objetivo: Validar el contenido de las definiciones constitutivas y operacionales del constructo "estrés en la interacción persona-entorno de salud". **Metodología**: Estudio metodológico de validación de contenido. Las dos definiciones constitutivas y las 18 definiciones operacionales fueron evaluadas por ocho expertos en la materia. Se calculó el Índice de Validez de Contenido de cada definición constitutiva, del conjunto de definiciones y de cada definición operacional, y se aplicaron la prueba binomial y el Alfa de Cronbach. **Resultados**: La validación de contenido de los ítems se logró con un IVCi de 0,93. De las 18 definiciones operacionales desarrolladas, todas fueron validadas con un IVC ≥0,78, excepto una. **Conclusión**: El diseño y la validación de estas definiciones constitutivas y operacionales contribuyeron a la comprensión del fenómeno analizado y permitieron la construcción de un cuestionario con validez interna.

DESCRIPTORES:
Estrés Psicológico; Relaciones Interpersonales; Servicios de Salud; Estudios de Validación.

INTRODUCTION

The social, technological and organizational transformations that characterize contemporary life have expanded the exposure of individuals to continuous demands for physical, psychological and behavioral adaptation, favoring the emergence of stress responses in different spheres of life[1]. In the context of health services, these demands are intensified, since the individual simultaneously experiences the condition of illness and the need to insert themselves into environments marked by norms, flows, times and institutional relationships. Evidence points to the presence of multiple stressors in care environments, involving environmental, physiological, emotional and social dimensions with relevant repercussions on physical and mental health[2-3].

In this sense, such factors reduce the adaptive capacity in the face of disease, reinforcing the close relationship between stress, organic changes, psychological suffering and adaptation difficulties[4]. In light of this scenario, this study adopts as a theoretical framework the Interpersonal System of the Open Interacting Systems Model by Imogene King, which understands stress as an expression of the dynamics established in the interactions between people and care environments[5].

The Interpersonal System consists of the concepts of interaction, communication, transaction, role and stress, which structure and give meaning to the interpersonal relationship. When in any of these elements the balance is lost, there is the manifestation of stress. This is defined as the result of the interaction between characteristics of the individual and the surrounding environment, that is, involves perception of the person and external environment[5]. Note that the theorist defends the idea that stress arises from the imbalance caused in the interaction of the person with the environment.

This perception is accurate in the interactions, and with it, growth and development will be strengthened between professional and client; however, if there is a conflict of roles between them, stress will occur[6]. The interaction corresponds to observable behaviors between two or more people in mutual presence, expressed by goal-oriented verbal and non-verbal actions. In this process, individuals mobilize experiences, perceptions and expectations, establishing relations of action and reaction. When this dynamic is maintained toward shared goals, the transaction[5] is configured.

Thus, the construct "stress in the interaction of the person with the health environment" is defined as a dynamic state observed in behaviors of the person in the presence of the health environment during their life experiences, seeking balance, which provides effective performance of roles and maximum potential for everyday life. This stress varies from low to high level in the face of human-environment health interactions. However, to approach it in a pragmatic way it is necessary to understand which constituent definitions and how they can be operationalized into items, giving possibilities for the construction of instruments with the ability to measure this construct.

The health professional, equipped with knowledge, skills and attitudes, must be attentive to the identification of stressors that hinder the promotion of positive interactions with users, compromising the transaction process and the achievement of care goals. In this sense, it becomes fundamental to understand from which elements is constituted the construct "stress in the interaction person-environment of health" and how it operates in practice. Such understanding enables professionals to recognize the factors capable of triggering stress in health service users, favoring more sensitive and effective interventions and, consequently, the qualification of the assistance provided.

Despite the negative impact that stress can have on patient health, studies evaluating the elements that constitute and operationalize stress arising from user interaction with the health environment are scarce, which justifies interest in this topic. It is hoped that the result of this research will serve as a theoretical tool that can give practical meaning during direct or indirect care to users by professionals inserted in the health environment aiming at the prevention of stress from the composition of the Questionnaire of Stresses in the Person-Health Environment Interaction (QUEIPAS – *Questionário de Estresses na Interação Pessoa-Ambiente de Saúde* in Portuguese).

OBJECTIVE

To validate the content of the constitutive and operational definitions of the stress construct in the human-environment health interaction.

METHODOLOGY

Type of study

This is a methodological study, which addresses the development and validation of measurement instruments. The construction process of QUEIPAS previously included a conceptual and prototypical stage, of a theoretical nature, focused on the definition of the construct and the initial elaboration of the items, as recommended in the methodological literature on instrument development[7].

The present study focuses on the theoretical pole of construction of measurement instruments and comprises the presentation of the conceptual structure of the construct, its constituent, operational definitions and items, as well as the evidence regarding the validity of the content of these elements[8].

Study protocol

To understand the construct, an integrative review was conducted that analyzed 38 studies[9]. The constituent and operational definitions were constructed by an analytical-theoretical process in multiple stages. Initially, the studies were read in full and had their findings extracted and organized according to the concepts of the Interpersonal System of Imogene King's Open Systems Conceptual Model (interaction, communication, transaction and paper). The constitutive definition of stress in the person-environment interaction of health emerged from the theoretical synthesis of these findings, highlighting stress as a cross-sectional phenomenon that manifests itself when imbalance occurs in any of these concepts, resulting in two central conceptual formulations, dimensionality, which express the nature and dynamics of the construct. The operational definitions, in turn, derived from the recurrent empirical identification of stress-generating elements described in the primary studies, which were systematically grouped and operationalized into 18 observable indicators (such as interpersonal behaviors, communication failures, professional incompetence, consultation time, access to services and infrastructure), allowing the abstract construct to be translated into measurable components applicable to health practice and research[9].

The constituent and operational definitions elaborated were exposed to content analysis by a panel of experts, who decided on their relevance to the construct they represent. In the analysis of experts, these should be experts in the area of construct, as they will decide whether or not items are referring to the latent trait under analysis.

The classification of the system of experts proposed by Jasper (1994) was used as a criterion for the choice of experts, in which specialists must possess skills/knowledge acquired through experience;

possess skills/specialized knowledge; possess special skill in a certain type of study; have passed a specific test to identify experts; have high rating assigned by an authority. Those who met at least two of these criteria were selected as experts, ensuring that the panel was composed of professionals with practical experience and theoretical-methodological knowledge compatible with the intended evaluation.

Initially, a search was carried out in the national database of the Coordination for the Improvement of Higher Level Personnel (CAPES - *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* in Portuguese) of people who study "stress" and "construction and validation of instruments in health". Those identified were contacted and invited to participate in the study. The snowball technique was also adopted for the indication of new experts. For the establishment of the sample size, we adopted what is recommended when it recommends a quantity of experts between six and twenty specialists[8]. The final sample was of 8 experts.

For data collection, contact by email was used to request participation in the study. An invitation letter was sent explaining the objective, a summary of the methodology and the role of the expert in the research. After consent, the Free and Informed Consent Term was sent by email and two forms: the first one constituted the characterization instrument composing sociodemographic and academic variables of the experts. The second, the content validation tool of the constituent and operational definitions.

The experts' assessment of the relevance of each definition to the research phenomenon was by means of an ordinal categorical scale of four points: 1, it is not indicative (o); 2, very little indicative (o); 3, considerably indicative (o); and 4, very much indicative (o). There was a 20-day period for the return of the instruments responded, however, due to the low return of the same, this time was doubled.

Data analysis

The data were processed in the International Business Machines Statistics Package Social Science version 23.0 (IBM SPSS 23.0), in which all variables were indexed.

The degree of agreement among experts was assessed through the Content Validity Index (CVI). Initially each definition was analyzed individually and then the set of definitions. For the CVI of the instrument, it is considered excellent when achieving CVI of items (CVIi) ≥ 0.78 and average total CVI 0.90[6]. To perform the analysis of the constituent and operational definitions, the exact test of binomial distribution was also performed for small samples, which were considered as a 5% significance level ($p>0.05$) and a ratio of 0.75 for the intended agreement to estimate the statistical reliability of the CVI.

The semantic analysis was carried out through a pilot study with 30 participants of the target population, aiming to evaluate the clarity and understanding of the items. The items were evaluated by users of the target population for each one's understanding. All the demands of users were recorded so that all items were better understood and it was observed the reaction of participants to each item, seeing the difficulty of understanding the words present in the items and asking which word would be more

appropriate.

Ethical aspects

The study was approved by the Research Ethics Committee of the State University of Ceará (n. 3.345.431) in line with Resolution 466/12 of the National Health Council[10].

RESULTS

The integrative review of the literature and the Imogene King's theory provided theoretical support to identify the elements that conceptualize, constitute and operationalize the latent trait "stress in the interaction person-environment of health". Two constituent definitions were identified, 18 operational definitions and 28 items were elaborated. From these constructions, the content analysis was carried out by experts.

When characterizing the experts, it was found that the vast majority were female (87.5%). Half of them resided in Fortaleza (50%) and 12.5% in Juazeiro do Norte, Crato, Teresina and Sobral. As for the age, the average found was 35 years, with variation between 27 and 41 years. The majority, 87.5%, had a degree in nursing and 12.5% medical and physical education professionals with knowledge of instrument validity. The participation of several areas of health was requested, but no response was received.

In relation to training in post-graduate courses stricto sensu, master's degree (37.5%) and doctorate (62.5%). Of these specialists, 50% were teachers, 25% researchers and 25% nurses with practical experience. Most had between 5 and 9 years of training. Regarding academic production, 75% had knowledge in construction studies and validation of materials in the health area and 25% knowledge in construction studies and validation of materials in the health area and research and publications in the stress area. For the content validation of the constituent definitions, the analysis of the literature showed two. Table 1 presents the CVIs of the constituent definitions.

Table 1. Content Validity Index of the constitutive definitions of the latent trait "stress in the person-health environment interaction ". Fortaleza-Ceará-Brazil, 2020.

Constitutive definition	CVI	p-value[a]
Person		
Human beings who interact with the environment in order to achieve a state of health that allows them to develop their social roles.	0.75	0.633
Health environment		
Organized and delimited system of social rules, behaviors and care practices developed to maintain the continuous adjustment of human beings to stressors, seeking their balance in everyday life.	1.0	0.100

CVI: Content Validity Index; p-value[a]: Statistical significance by the binomial test.

Based on the validation indices obtained for the person constitutive definition, it was found that there was a good CVIi and the health environment constitutive definition obtained excellent CVIi (0.78; p>0.05). Soon after, the content validation of the 18 operational definitions presented in Table 2 was carried out.

Table 2. Content Validity Index of the operational definitions of the latent trait "stress in the person-health environment interaction". Fortaleza-Ceará-Brazil, 2020.

Items	CVI	p-value[a]
1. Incomprehensible verbal language	0.87	0.367
2. Rude behavior of healthcare professionals	0.87	0.367
3. Lack of or difficulty in communicating with healthcare professionals	0.87	0.367
4. Conflicts in interpersonal relationships	1.00	0.100
5. Feeling of distrust towards the healthcare professional	0.75	0.633
6. Incompetence of healthcare professionals	0.87	0.367
7. Unwillingness to listen attentively by the healthcare professional	0.87	0.367
8. Lack of information about the patient's health status	0.87	0.367
9. Difficulty accessing consultations	0.87	0.367
10. Lack of physical resources	0.87	0.367
11. Lack of human resources	0.87	0.367
12. Waiting time	0.87	0.367
13. Difficulty accessing medication	0.87	0.321
14. Difficulty accessing tests	0.87	0.367
15. Geographical accessibility	0.87	0.367
16. Impaired infrastructure	0.87	0.367
17. Lack of professional confidentiality	0.87	0.367
18. Insufficient consultation time	0.87	0.367

CVI: Content Validity Index; p-value[a]: Statistical significance by the binomial test.

Regarding the operational definitions, all have been validated with excellent CVIi (≥ 0.78; p>0.05), except for number 5, which obtained good CVIi. After that, the content validation of the items presented in table 3 was carried out.

Table 3. Content Validity Index of the items of the latent trait "stress in the person-health environment interaction". Fortaleza- Ceará-Brazil, 2020.

Items	CVI	p-value[a]
1. Do you have difficulty understanding the guidance of professionals about your health?	0.87	0.367
2. Do you feel that health professionals have been disrespecting you?	0.87	0.367
3. Do you notice a lack or difficulty of communication with health professionals?	0.87	0.367
4. Do you have conflicts with healthcare professionals?	1.00	0.100
5. Do you feel that the health professionals distrust your complaint?	0.87	0.633
6. Do you notice incompetence in the health professionals when they take care of you?	0.87	0.367
7. Do you feel a lack of reception from health professionals?	0.87	0.367
8. Do you notice that the health professional is missing information about your health?	0.87	0.367
9. Do you have difficulty making an appointment with a specialist?	0.87	0.367
10. Do you notice a lack of material in the unit during your service?	0.87	0.367
11. Do you notice a lack of equipment in the unit during your service?	0.87	0.367
12. Do you notice insufficient number of professionals in the health unit to meet the demand?	0.87	0.367
13. Do you wait more than 30 days for your appointment date?	1.00	0.367
14. Do you wait more than 1 hour for your time with the healthcare provider on the day of your appointment?	1.00	0.633
15. Do you notice a lack of the medications used by you in the health unit?	0.87	0.321
16. Do you have trouble scheduling exams?	0.87	0.367
17. Do you have trouble getting to the health unit?	1.00	0.367
18. Do you have difficulty physically accessing the health unit (ramps, stairs) during your service?	1.00	0.367
19. Do you need to pay for transportation to the health unit?	1.00	0.367
20. Do you perceive the health unit as dirty?	0.87	0.367
21. Do you feel that the health unit is uncomfortable?	0.87	0.633
22. Do you notice that the health unit is disorganized?	0.87	0.367
23. Do you feel that the health unit has no enough ventilation?	0.87	0.367
24. Do you notice that the health unit is short of space?	0.87	0.633
25. Do you miss privacy in the health unit?	0.87	0.367
26. Do you notice that the healthcare provider leaves insufficient time for you to express your concerns during the service?	0.87	0.367
27. Do you believe that the health professional is breaking confidentiality about your information?	0.87	0.367
28. Do you realize that the duration of the consultation with the health professional is short?	0.87	0.367
Total CVI	**0.93**	**-**

CVI: Content Validity Index; p-value[a]: Statistical significance by the binomial test.

The validation indices obtained for the items were all with excellent CVIi scores (≥ 0.78; p>0.05) and total CVI of 0.93. In the content analysis process, some experts requested changes to the spelling of some items: in Item 3, it was requested that the term "lack of communication" be replaced with "lack or difficulty of communication"; in Item 9, it was requested to replace the word "specialized" with "expert"; in items 13 and 14, it was requested to rewrite stipulating a time and in item 23, replace the term "increased temperature" with "no enough ventilation".

After the content analysis, a semantic validation was carried out in which 30 users were interviewed, 66.6% of whom were women, with an average age of 41 years (17.7 years), 56% had elementary education, 33.3% had high school and 10.7%, higher education, 35% were married, 28% were Parrot race, 35% received 1 to 2 minimum wages, 40% had informal occupation and 40% had no occupation and 20% presented comorbidity. The interview highlighted the need for modification, adequacy of content and structuring of some items to improve QUEIPAS and, therefore, were accepted. Items 2, 4, 16, and 21 were rewritten to become more comprehensible to users, according to (Table 4).

Table 4. Items of the questionnaire "Stress in the person-health environment interaction" that underwent changes in the semantic analysis. Fortaleza-Ceará-Brazil, 2020.

No change	After changes
2.Do you feel that health professionals have been disrespecting you?	2.Do you feel that health professionals are rude towards patients?
4.Do you have conflicts with healthcare professionals?	4. Have you ever argued with the health professionals?
16.Do you have trouble scheduling exams?	16.Do you think difficulty to schedule exams?
21.Do you feel that the health unit is uncomfortable?	21. Do you feel that the health unit is uncomfortable (hard chairs...)?

After content and semantics validation, the QUEIPAS items were reorganized and the instrument began to have the structure presented in Appendix G.

DISCUSSION

The experts' profile, composed of health professionals with stricto sensu training, ensured a technically qualified assessment of the instrument, an essential condition in content validation studies. For the assessment of the instrument, professionals with experience in the area of creation and validation of instruments in health were consulted, with a view to more judicious evaluation[11-13]. Which contributed to the construction of a higher quality instrument[14].

Regarding the validation of the content of the constituent definitions, the understanding of stress in the person-health environment interaction incites a process of reflection of this phenomenon by the

actors involved, since it reaches complex dimensions of their daily life. This result leads to the reflection that health services practices need to be reformulated in the search for a global vision of the individual[15].

The personal dimension obtained the smallest CVI among the elaborated dimensions. Its formulation was consolidated from the theoretical assumptions of King and national and international studies indicated variables that fell within this dimension[16-28]. Each human being is unique; a group of people may experience the same situation, but each one can perceive it differently and this will have an impact on the manifestation of stress or not[15].

The health environment dimension obtained an excellent and this result can be analyzed from the perspective of accountability of the health environment to the stress of the user inserted in that environment. The health service is the complex locus of care, imbued with ideological representations that shape the practices of health professionals from the articulation of different knowledge and elements, whether social, scientific, cultural, anthropological and symbolic[29]. People interact with this environment and the goal of care is to help individuals and groups of people maintain their health; if this interaction is not positive, the goal of maintaining health will not be achieved and as a result stress will occur[30].

Concerning the operational definitions, all had satisfactory validity by the judges. This result demonstrates that the unveiling process was based on solid knowledge, compiled from studies, making it possible to confirm the structure of the latent trace.

In the dimension of the factors related to the person, the results indicate that stress in interaction emerges mainly from perceived disrespectful attitudes[27-28,29-33] from communication failures[25,32-33], and weaknesses in the therapeutic bond[17,24-27,36], showing that the core of the construct is anchored in the relational quality between user and professional.

The centrality of communication observed in the remaining items confirms the structuring role of interaction in stress genesis, according to King's model. The recurring presence of indicators related to listening, language comprehension and confidence reveals that ruptures in the communicative process compromise the transaction and intensify the stress experience[35].

The nurse, when interacting with users, must use verbal and non-verbal language to provide care. Verbal communication is evaluated positively when the nurse has a willingness for qualified listening. The dialogue between nurses and users has to be built from a comprehensible verbal language, which carries reciprocity as its essence, as well as making it possible for interlocutors to express their subjectivity, being necessary, still, that the nurse demonstrates belief in the user's speech[38].

In the dimension of factors related to the health environment, long waiting and the unpredictability of the care flow configure recurring sources of stress, as they weaken the user's sense of control over care, negatively interfering in the interaction with professionals and in the establishment of ties[24,26-27].

Space perception directly influences how individuals behave in care situations. Difficult access,

scarcity of physical and human resources and inadequate infrastructure conditions can be interpreted by the users as threats to their well-being, favoring stress responses. Since perception is subjective and selective, the same situation can be experienced differently among people, producing stress in some and not in others[15]. In this sense, care for the environment in which nursing practices are carried out becomes essential, as contexts marked by sensory overload or deprivation can generate perceptual distortions and unexpected behaviors[15]. Among these situations, the prolonged wait during the flow of care stands out, which, even when the user evaluates positively the consultation and interaction with professionals, constitutes a recurring moment of stress in health services[39].

In health services, the care journey often exposes the user to long waiting periods, marked by uncertainty about the order of care, lack of information and uncomfortable environments. These aspects, captured by QUEIPAS items, reflect how the overload of demand and fragilities in the flow of assistance favor experiences of frustration and discredit regarding care. Such conditions tend to compromise the interaction between user and professional, since stress weakens the bond and trust necessary for the assistance process.

Another relevant stress factor refers to the unfavorable financial conditions, operationalized in the instrument by items that address the need to pay transportation to access the unit and the lack of medicines. The requirement to bear costs for travel or purchase of drugs unavailable in the unit imposes additional suffering on already vulnerable people[40-41], interfering with both access and therapeutic adherence[27,41]. By empirically evidencing these elements, QUEIPAS demonstrates that stress in the interaction person-environment of health results from the articulation between subjective experiences and organizational conditions of care, highlighting the role of professionals in recognizing such sources of tension and intervening sensitively, strengthening the communicative process and transaction in care.

Study limitations

The study presents some limitations that should be considered in the interpretation of the results, such as the low number of participating experts, although within the recommended by the literature, which may limit the diversity of perspectives in assessing constituent and operational definitions. In addition, the geographical concentration of experts, mostly from Ceará, can restrict national representativeness, since professional perceptions and practices may vary between different regions of the country.

On the other hand, the study presents several strengths that reinforce its methodological robustness and scientific relevance. First, the rigor adopted in the conceptual construction of the construct is highlighted, based both on an integrative literature review and on Imogene King's Theory, which ensures theoretical solidity and internal coherence to the proposed definitions. The participation of experts with proven experience in stress and in building and validating instruments, many of them trained stricto sensu, gives credibility to the content validation process. Another important strength is the use of appropriate

statistical strategies, such as the Content Validity Index (CVI) and the binomial test, which ensure accuracy in assessing agreement among experts.

Contributions for the Area of Nursing, Health and Politics

The study offers relevant contributions to nursing and health by proposing and demonstrating evidence of content validity of a set of constituent, operational definitions and items capable of composing QUEIPAS. It offers subsidies for professionals and managers to identify factors generating stress in users, favoring more sensitive practices aligned with real needs. For nursing, it strengthens the production of care technologies aimed at the qualification of interactions, communication and reception, as well as supporting organizational interventions that promote healthier care environments.

CONCLUSION

QUEIPAS presented evidence of content validity satisfactory for the construct. Its continuous improvement expands its potential use in clinical practice and research, being able to assist health teams in tracking the stress arising from user interaction with the service. The structuring of the construct into two interdependent dimensions - person and health environment - whose contents have been validated by experts, broadens the understanding of a phenomenon still little defined in the literature and relevant to public health. These results are expected to contribute to a change in the way of understanding stress in the care context, highlighting its impact on the individual inserted into health systems. Ressalta-se que o QUEIPAS integra um processo contínuo de produção de evidências de validade, sendo necessárias investigações adicionais que explorem outras fontes de evidência e consolidem seu uso seguro e efetivo na prática clínica.

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