



REVISIONES

Relevance of data collection instruments for quality of care

Relevancia de instrumentos de recolecta de datos en la calidad del cuidado

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Keywords: instruments; validation; data collection; nursing

ABSTRACT

In view of the importance of the nursing process in evidence-based practice, we attempt to identify validated and reliable instruments to collect data from patients. An integrative review was carried out in the databases CINAHL, BVS and PUBMED, using the words “nursing” and “validated clinical assessment tools”, as well as “validation studies”, “reproducibility of results” and “nursing assessment”. Full articles available in English, Spanish or Portuguese were included, excluding reviews that did not follow the methodological steps described and did not address the theme. In the 40 analyzed studies, instruments were identified that are applicable to different areas, such as geriatrics and gerontology, intensive care, oncology, psychiatry, nutrition, infectology, occupational health, palliative care, cardiology, among others. Instruments were found to evaluate the following areas: risk of falls, patient satisfaction, quality of life, sleep, depression, mental confusion, dementia, pain, behavior, nutritional status, violence, personality, psychosis, breastfeeding, nausea and vomit, fatigue, end of life needs, sedation and agitation, abstinence from opioid use, pressure ulcers, capacity of workers with musculoskeletal problems to restart activities, immunological status of patients with HIV/AIDS, and patients’ degree of knowledge about their disease. There was an increase in the number of publications from 1990 to 2006. Most of the instruments, 47.5%, were applicable to elderly populations. Nursing, when using validated instruments in its practice, provides more qualified care. Several behaviors and clinical manifestations exist, however, without validated instruments for their assessment.

RESUMEN

Considerando la importancia del proceso enfermero en la práctica basada en evidencias, buscamos identificar instrumentos validados y confiables para la recolección de datos en pacientes. Realizamos una revisión integrativa utilizando las bases CINAHL, BVS, PUBMED. Fueron incluidos artículos disponibles a texto completo en inglés, español y portugués, se excluyeron las revisiones que no contenían descritos los pasos metodológicos y los que no abordaban el tema. En los 40 estudios analizados fueron identificados instrumentos aplicables a diferentes áreas como geriatría y gerontología, terapia intensiva, oncología, psiquiatría, nutrición,

infectología, salud del trabajador, cuidados paliativos, cardiología, entre otros. La mayoría de los instrumentos 47.5% aplicaba para población anciana. Enfermería al utilizar instrumentos validados en su práctica pasa a ejercer una asistencia con mayor calidad. Sin embargo, es evidente que diversos comportamientos y manifestaciones clínicas todavía no disponen de instrumentos validados para su evaluación.

INTRODUCTION

To strengthen nursing autonomy¹⁻², in professional practice, intuition has been replaced by the inclusion of research results that support the assessment of patients' health conditions³. In the development of the nursing process, it is relevant to collect data with a view to identifying the phenomena or diagnoses present that will constitute the reference framework for the elaboration of the care plan and the implementation of care actions.

This explains the relevance of validated instruments, which are still limited, considering the range of the profession. Besides, validated instruments are not always known and used. Thus, the aim in this research is to identify validated and reliable instruments that can be applied in the data collection phase of the Nursing process.

METHOD

An integrative review was accomplished⁴ in the databases CINAHL, BVS and PUBMED, using the key words "nursing" and "validated clinical assessment", as well as "validation studies", "reproducibility of results" and "nursing assessment". The titles and abstracts were analyzed, and publications without a clear presentation of the instruments' construction or validation were discarded. Out of 132 identified abstracts, 12 were excluded because they reported on a bibliographic review without paper selection criteria; 46 did not adapt to the research objectives, as they evaluated nursing services, medical instruments or diagnosis validations; 17 others were repeated, i.e. they were present in more than one database, and one was not available in English, Spanish or Portuguese. Then, out of 56 remaining papers, 16 were excluded because they were not available online, finally resulting in 40 papers.

RESULTS

Characteristics of investigated papers

First, in the analysis of the 40 papers⁵⁻⁴⁴, general identification, dissemination, study design and subject characteristics were considered.

As for the publication date, the studies were issued between 1990 and 2009, and increased as from 1999, particularly in 2004^{7,16,29,41,42,44}, 2006^{6,8,11,30,38,39} and 2008^{21,26-28,37,43}.

When identifying the study population, it was evidenced that an important number of studies (n=19) contained instruments applied to the elderly population^{5,8,10,13,15,16,18,19,21,23,28-30,32,34,36,39,40,43}, followed by studies with instruments focused on adults (n=9)^{6-7,17,22,24,26,35,38,44}, pediatric patients (n=2)^{11,25}, infants (n=2)^{27,41} and subjects of different ages (n=4)^{20,33,37,42}, while others did not specify the study population (n=4)^{9,12,14,31}.

Concerning the clinical areas, 18 studies were developed in Geriatrics and Gerontology^{5,8,10,13,15-16,18-19,21,23,28-30,32,34,39-40,43}, five in Intensive Care^{11,17,25,37,41}, four in Oncology^{26,35,38,42}, besides Occupational Health⁹, Palliative Care³¹, Cardiology¹⁴ and other studies that did not specify the area^{12,36}.

Patient data collection instruments according to clinical area

According to the clinical areas, instruments were identified with different goals. The Geriatrics and Gerontology instruments were focused on the identification and assessment of fall risks^{5,21,29-30}, patient satisfaction assessment⁸, assessment of patients' perceived quality of life¹³, sleep assessment¹⁵, depression assessment and identification^{16,18,28}, assessment of mental confusion¹⁰, identification of dementia in elderly patients³², pain assessment in elderly patients with dementia⁴⁰, identification of behavioral changes in elderly patients with dementia³⁹, eating difficulties of elderly patients with dementia¹⁹ nutritional assessment of hospitalized elderly³⁴ physical morbidity assessment³⁶ and assessment of discomfort in patients with Alzheimer's⁴³.

The instruments cited in Psychiatry were aimed at: assessment of personality aspects⁶, specification of violence in psychiatric patients^{7,44} and assessment of psychosis patients²⁰.

Specific nutrition instruments were used to discuss the assessment of neonatal breastfeeding²⁷ and appetite³³. Oncology instruments were focused on the assessment of chemotherapy-induced nausea and vomiting²⁶, assessment and identification of depression³⁵, and sleep assessment⁴². In the Palliative Care area, an instrument was used to identify end-of-life needs³¹.

In Intensive Care, instruments were used to assess sedation and agitation levels in pediatric patients¹¹, confusion¹⁷, opioid and benzodiazepine abstinence syndrome at a pediatric ICU²⁵, pressure ulcer risk prevention³⁷ and neonatal pain⁴¹. In occupational health, the aim was to assess the capacity of workers with musculoskeletal problems to perform their activities upon their return to work⁹. In the Infectology area, an instrument was used to assess the immunological status of HIV/AIDS patients^{22,24} and, in Cardiology, to assess patients' knowledge level on their disease¹⁴. Another instrument was aimed at identifying and assessing fall risks in hospitalized patients without age specifications¹².

Data collection instruments according to validation

Among the elderly fall risk assessment instruments, the "Morse Falls Scale" and "STRATIFY" demonstrated comparability with nurses' clinical judgment and precision⁵. The use of the "Hendrich Fall Risk Model" to assess fall risks can predict almost 75% of falls, with a 74.9% sensitivity and 73% specificity level. The instrument has been validated and tested in an acute care context¹².

Researchers in Australia evaluated the fall risk through two instruments, one of which specifically assessed the fall risk in elderly patients with conditions to stay alone. The other was a specific instrument to assess patients who needed help for self-care. Three times higher fall levels (sensitivity 73%, specificity 55%) were identified among patients able to stay alone and with two or three fall risk factors (e.g. previous falls, being institutionalized, presence of urinary incontinence), while two times higher fall rates (sensitivity 87%, specificity 29%) were found among patients who needed help with self-care, were in no conditions to stay alone and displayed between one and three risk factors²¹.

In the United States, existing types of post-fall instruments were assessed at private and public care institutions. It was found that, at most institutions, fall risk assessment instruments were used instead of post-fall assessment instruments (63.7%). The authors highlighted the importance of this distinction, as post-fall assessment instruments specifically serve to identify the etiology of falls, and indicated that no validated and empirically tested post-fall

assessment instrument was identified²⁹. In a more recent study³⁰, the feasibility of the “Post Fall Index” for care institutions was assessed, showing good inter-rater agreement (70-100%). That instrument has been validated and is reliable and clinically applicable to prevent falls.

To support the assessment of behaviors and injuries in the fields of memory, daily activities, mood, social behavior and behavioral disorder, the “Nurses’ Observation Scale for Geriatric Patients” (NOSGER) was another validated instrument for elderly populations. Nurses or caregivers can apply it, and both relatives and caregivers considered the approval level good²³. The identification of dementia in elderly patients was another research problem. The “Dementia Screening Scale” (DSS) obtained a precision level of AUC=0.912 (95% CI 0.89-0.94), showing a better validity score than the team’s diagnostic assessment. The scale was considered easy to apply, low-cost and associated with low levels of non-response³². Behavioral changes in elderly patients with dementia could also be measured through the “Behavioural and psychological symptoms of dementia” (BPSD) instrument, with good internal consistency ($\alpha=0.86$), agreement (ICC=0.79), and test-retest reliability (ICC=0.98). Behavioral changes were associated with the male gender, cognitive problems, functional disability, neuropsychiatric symptoms and high levels of work overload in caregivers³⁹.

For pain assessment, four instruments were correlated with the “Observational Rating Scale” for validation purposes, including the “*Escala Horizontal Visual Analógica*” (HVA), “*Escala Vertical Visual Analógica*” (VVAS), the “*Faces Pain Scale*” (FPS) and the “*6-point verbal rating scale*” (VRS), showing high reliability and strong correlation levels (Spearman’s=0.81-0.95; $p<0.01$). The “Observational Rating Scale”, then, was moderately correlated with the patient’s self-assessment, tended to underestimate pain intensity and was only indicated for those patients who proved they were unable to answer the self-assessment⁴¹.

The risk of pressure ulcers was assessed with the help of the “Suriadi and Sanda Scale” (SS Scale), applied to patients hospitalized at intensive care units, with a sensitivity level of 81%, specificity 83%, positive predictive value 65% and negative predictive value 91%. Further research on predictive validity was considered necessary after the validation of the scale, as well as the determination of cut-off points in different populations³⁷.

The perceived quality of life in a community of elderly patients was assessed through the 12 items of the “Assessment of Quality of Life” (AqoL) instrument, whose psychometric validity was considered acceptable. The instrument demonstrated sensitivity to predict future health costs, showing that high scores result in lower future costs, as opposed to low scores¹³.

The patient satisfaction assessment instrument “Satisfaction with the Nursing Home” was applied to elderly people living in care institutions with a view to assessing satisfaction with the quality of nursing services. Its use is indicated for researchers, leaders, managers and professionals who work to improve care quality for institutionalized elderly patients⁸.

The knowledge of patients with heart conditions on their own disease was measured with the help of the “Patient Knowledge questionnaire” (PKQ). Through this instrument, the assessment of patients’ knowledge became fundamental to identify and clarify doubts, besides contributing to behavioral changes¹⁴.

The “*Observational Sleep Assessment Instrument*” (OSAI) was used to measure elderly people’s sleep pattern, with an agreement level of 92.7%. Most variables showed consistency and correlation, being very similar with the information obtained from the portable monitor. The study simple was considered small though, demanding further studies

in larger populations¹⁵. Cancer patients' sleep could be assessed through the "Pittsburg Sleep Quality Index" (PSQI), which is considered relatively easy to apply. The Index showed reliability and construct validity on the psychometric evaluation but, also, additional research was suggested to assess the reliability, sensitivity and construct validity in cancer patients of different ethnic origins, with a view to using the instrument in clinical studies⁴².

Among instruments to assess the functional capacity of workers with musculoskeletal problems to perform their activities when returning to work, the "Functional Abilities Confidence Scale" (FACS) and the "Occupational Role Performance Questionnaire" (ORQ) showed the highest percentages of psychometric evidences. This type of instrument helps to monitor the rehabilitation of workers' damage progress, offers a comprehensive assessment of the impact of treatment and its global effect, and indicates the workers' aptitude to return to their functions. Other potential uses for these instruments are the assessment of change in workers' limitations, the identification of workers with lower production levels, besides the reorganization of aims and work responsibilities, decreasing task demands, besides identifying people at risk of damage⁹.

The "Sign and Symptom Check-List for Persons with HIV Disease" (SSC-HIV) focused on common signs and symptoms of HIV patients. The evaluated symptoms were: fever, fatigue, confusion, nausea and vomiting, psychological anguish, dyspnea, gastrointestinal discomfort and diarrhea, which can help with the intervention plan. As a limitation, the lack of items that expressed women's experience in living with HIV/AIDS was appointed. Sign and symptom management is considered the main component of HIV/AIDS patient care. Their assessment in this process can improve communication between patients and professionals, besides facilitating early diagnosis and intervention²². Another study also assessed changes in the immunological status of HIV patients through the "HIV-Quality Audit Marker" (HIV-QAM). Its predictive validity for mortality ranged between three and six months after the start of hospital treatment against pneumonia related with *Pneumocystis carinii*²⁴.

The instruments that assessed the opioid abstinence syndrome focus attention on children in Intensive Care. It was highlighted that this event can affect up to 20% of children exposed to opioid use, and is related with the duration of the total dose infusion²⁵. The syndrome can be assessed using instrument like the "NAS". Its use revealed greater effectiveness than the clinical judgment used at most neonatal centers. The "OBWS" showed a strong correlation with nurses' clinical judgment, with 80% reliability, 87% specificity and 50% sensitivity; the "Seven Signs of Behavioural Distress" revealed a 95% inter-rater reliability coefficient; and the "Sedation Withdrawal Score" provided no validated data to sustain its use²⁵. A pilot study was accomplished to validate the "*State Behavioural Scale*" (SBS), with a view to measuring sedation and agitation levels in intubated infants and small children, showing moderate to high inter-rater correlation¹¹.

Measuring the intensity and duration of chemotherapy-induced nausea and vomiting is beneficial to control antiemetics use. For this purpose, the "MAT" and "INVR" were used, which could be combined with a small scale of daily measures to evaluate the intensity and duration of nausea and vomiting and an additional question about previous use of antiemetics and adverse events²⁶. The cancer patient fatigue assessment instrument provides quantitative information to monitor patients' condition and treatment progress. The information can improve communication between professionals and patients and even be included in proposed treatment decisions. The instrument used was the "Wu Cancer Fatigue Scale" (WCFS), applied to women with breast cancer. Nevertheless, validation is needed in patients with other types of cancer, treatment and in other populations³⁸.

Eating difficulties in elderly patients with dementia were assessed with the help of the instrument “Edinburgh Feeding Evaluation in Dementia” (EdFED), which obtained a significant correlation between the Nursing interventions (supervision, physical help and nursing care level) and the eating difficulty indicators (spilling or leaving food on the plate after eating)¹⁹. The aim of the “Nutrition Screening Tool” (NST) was to identify the nutritional status of hospitalized elderly patients, and the instrument permitted documenting this assessment. The tool is recommended for outpatient or hospital care centers³⁴. Eight items from the “Council on Nutrition appetite questionnaire” (CNAQ) and two items deriving from the “Simplified Nutritional Appetite Questionnaire” (SNAQ) were used to predict weight loss and assess appetite. Both instruments were considered clinically efficient and facilitated the early identification of anorexia risk due to weight loss³³. Neonatal breastfeeding could be assessed using the “NOMAS”, whose psychometric properties are considered consistent and complete to assess both maternal and bottle feeding²⁷.

The assessment of depression in elderly people and the importance of effective screening for depressive symptoms in this population were demonstrated when applying the “GDS Score”. The nurses detected corresponding symptoms in 50.1% of the elderly²⁸. When applying the five items of the “Geriatric Depression Scale” (GDS) to identify depression in elderly people, another study¹⁸ showed significant agreement with the clinical diagnosis, as 48.1% of this population was depressed. The “ISAR” instrument was validated to identify severe functional losses and depression in elderly people and to assess the results of subsequent interventions¹⁶. Assessing depression in palliative care patients is relevant and, on many occasions, is not considered in clinical practice, although it can be done with the help of the visual scale³⁵.

To assess psychosis, the “Positive and Negative Syndrome Scale” (PANSS) and “Routine Assessment of Patients Progress” (RAPP) were used, which identified score differences between groups with the same diagnosis, demonstrating the characteristics of the psychosis manifestation pattern. Focusing on the importance of evidence-based practice, the use of instruments was considered relevant to document clinical results²⁰. Using the “Millon Multiaxial Clinical Inventory” (MMCI-II) and the “Entitlement Scale” (ES) (Cronbach’s $\alpha = .9740$) to assess personality traits, traits of aggression, sociopathy and paranoia were found, which permitted the accomplishment of therapeutic interventions based on the evidence the study provided⁶. Another study used an instrument to preview violence in psychiatric patients in a clinical practice context, called the “BVC-VAS”. The instrument revealed easy use and precision to predict violent attacks in psychiatric nursing services⁷. The same instrument can be applied with a 64.3% sensitivity and 93.9% specificity level⁴⁴.

The “NEECHAM Confusion Scale” was used to identify delirium in elderly hospitalized patients, to monitor the course of the cognitive dysfunction and the severity of the delirium¹⁰. In another study, the aim was to construct an instrument called “Confusion assessment method for the intensive care unit” (CAM-ICU), with a view to preventing delirium at intensive care units through the assessment of physical, chemical and environmental stressors patients are exposed to. Forty-eight percent of delirium was found, similar to other studies in the area¹⁷.

End-of-life care needs were assessed using the “Needs at the End-of-Life Screening Tool” (NEST), with a view to determining the course of actions and desired patient outcomes, addressing social, existential, symptomatic and therapeutic needs³¹. Physical exercise among institutionalized elderly patients was assessed with the help of the “Continuing Care Activity Measure” (CCAM). This instrument permitted distinguishing gross motor function levels and changes, stimulating the focus of this population’s mobilization, with a view to

reducing nursing time-associated costs and contributing to wellbeing³⁶. Discomfort in patient with Alzheimer's was also assessed with the help of the "Discomfort Scale for Dementia of the Alzheimer's Type" (DS-DAT), which is considered easy to use, fast and effective to help health and mainly Nursing professionals, as they regularly interact with patients and, therefore, need reliable instruments to assess comfort or wellbeing⁴³.

CONCLUSION

The number of publications on the theme increased between 1999 and 2006. Most papers (47.5%) were focused on the elderly population, with specific instruments for Geriatrics and Gerontology, which are significant today in the context of global population aging. When using validated instruments in its practice, the quality of Nursing care increases. It is evident, though, that different behaviors and clinical manifestations still lack validated instruments for their assessment, and that, on many occasions, Nursing professionals do not know existing ones.

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