

Analysis of a Health Team's Records and Nurses' Perceptions Concerning Signs and Symptoms of Delirium¹

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This study investigates the extent of under-diagnosis of acute confusion/delirium by analyzing the records of a health team and the perception of nurses concerning this phenomenon. This quantitative study was developed in a central university hospital in Portugal and used the documentary and interview techniques. The sample obtained through the application of the NeeCham's scale was composed of 111 patients with the diagnosis of acute confusion/delirium hospitalized in the medical and surgical acute care units. A rate of 12.6% of under-diagnosis was identified in the records and a rate of 30.6% was found taking into account the perception of nurses. No indicators of acute confusion/delirium were found in 8.1% of the 111 cases and only 4.5% of the patients were diagnosed with acute confusion/delirium. The results indicate there is difficulty in identifying acute confusion/delirium, with implications for the quality of care, suggesting the need to implement training measures directed to health teams.

Descriptors: Nursing; Elderly; Delirium, Dementia, Amnestic, Cognitive Disorders.

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Análise dos registros produzidos pela equipe de saúde e da percepção dos enfermeiros sobre os sinais e sintomas de delirium

Esta pesquisa pretendeu conhecer a dimensão do subdiagnóstico da confusão aguda/delirium, ao analisar os registros produzidos pela equipe de saúde e percepção dos enfermeiros sobre esse fenômeno. Foi desenvolvido em um hospital universitário central, de Portugal, delineada dentro do paradigma quantitativo, utilizando a técnica documental e entrevista. A amostra obtida, pela aplicação da Escala de Confusão NeeCham, foi de 111 doentes com diagnóstico de confusão aguda/delirium, internados em unidades de cuidados agudos médicos e cirúrgicos. Identificou-se taxa de subdiagnóstico do fenômeno de 12,6% nos registros e de 30,6% tendo em conta a percepção dos enfermeiros. Em 8,1%, dos 111 casos, não foi identificado qualquer indicador de confusão aguda/delirium. Somente 4,5% dos doentes tinha o fenômeno diagnosticado. Os resultados apontam dificuldade para se identificar a confusão aguda/delirium, com implicações para a qualidade dos cuidados, sugerindo a necessidade de medidas formativas dirigidas às equipes de saúde.

Descritores: Enfermagem; Idosos; Delirium, Demência, Transtorno Amnésico e outros Transtornos.

Análisis de registros producidos por el equipo de salud y de la percepción de los enfermeros sobre las señales y síntomas de delirio

Esta investigación pretendió conocer la dimensión del subdiagnóstico de la confusión aguda/delirio, al analizar los registros producidos por el equipo de salud y percepción de los enfermeros sobre este fenómeno. Fue desarrollado en un hospital universitario central de Portugal. Delineada dentro del paradigma cuantitativo, utilizando la técnica documental y la entrevista. La muestra obtenida, por la aplicación de la Escala de Confusión NeeCham, fue de 111 enfermos con diagnóstico de confusión aguda/delirio, internados en unidades de cuidados agudos médicos y quirúrgicos. Se identificó una tasa de subdiagnóstico del fenómeno de 12,6% en los registros y de 30,6% teniendo en cuenta la percepción de los enfermeros. En 8,1% de los 111 casos, no fue identificado cualquier indicador de confusión aguda/delirio. Solamente, 4,5% de los enfermos tenían el fenómeno diagnosticado. Los resultados apuntan para la dificultad en identificar la confusión aguda/delirio, con implicaciones para la calidad de los cuidados, sugiriendo la necesidad de adoptar medidas formativas dirigidas a los equipos de salud.

Descriptorios: Enfermería; Ancianos; Delirium, Demencia, Amnésicos y Cognitivos.

Introduction

Acute Confusion (AC) is frequently described as Acute Confusional State (ACS) or delirium⁽¹⁻³⁾. However, some caveats are found in the literature. AC/ACS are labels frequently used and people tend to identify this clinical condition through the responses given to these episodes. The concept of delirium most strictly defined is based on the Diagnostic and Statistical Manual of Mental Disorders presented by the Psychiatric Association (APA)⁽³⁾.

The APA characterizes delirium as reduced consciousness manifested by cognitive, orientation, memory, attention, thinking or behavior disorders, also involving errors in sensorial perception⁽⁴⁾. This syndrome is more frequently found among elderly hospitalized individuals⁽¹⁻⁵⁾ than among individuals in other age groups⁽⁶⁾, and holds a high clinical interest because it is related to less favorable health results, increased cases of dementia, morbidity, mortality, time

of hospitalization and the costs associated with it⁽¹⁻⁵⁾. It has a multifactorial cause and is usually associated with predisposing factors (visual impairment, severe disease) and precipitant ones (immobility, poor nutrition)^(1,3,5). Despite its importance, the evidence shows it remains under-diagnosed in about 25% to 75% of the cases, reaching 100% in its hypoactive subtype⁽⁵⁾, which is more difficult to recognize⁽⁷⁻⁸⁾. The fluctuating nature of its manifestations coupled with health professionals' lack of knowledge concerning this syndrome's characteristics, the low use of evaluation instruments to monitor it^(5,9-11) – such as the NeeCham Confusion Scale⁽¹¹⁾ – and lack of recording the phenomenon on the part of the health team, are other reasons leading to its under-diagnosis. Because nurses are constantly in contact with patients, they are in a better position to detect subtle changes early and diagnose the problem. If this condition remains under-diagnosed it is not treated^(2-3,7,9) and can result in innumerable personal, social and economic⁽⁸⁾ consequences. Therefore, investigating this issue is considered a priority.

This study's general objective was to identify the level of under-diagnosis of AC/delirium in a central university hospital in Portugal. Its specific objectives were: to identify the level of severity of AC/delirium; analyze the proportion of indicators (signs and symptoms) of AC/delirium in the records kept by physicians and nurses at the clinical level through the descriptions that indicate the phenomenon or related interventions; and analyze the nurses' level of perception concerning the phenomenon of AC/delirium.

This study also explored the relationship between the characteristics of patients and of hospitalization with the *documentation of the phenomenon, documentation of nursing interventions, nurses' perceptions* and under-diagnosis of AC/delirium, aiming to find the causes, besides those already known, that might explain its under-diagnosis.

Method

This is a non-experimental, exploratory and correlational descriptive study with a quantitative approach, a method that allows an objective description of historical facts. It was conducted at the hospital of the University of Coimbra, which is composed of various buildings with diverse medical specialties and cares for a large number of patients. The exclusion criteria were: being hospitalized for less than 24 hours; being younger than 17 years old; having concurrent psychiatric diagnosis or aphasia. A non-probabilistic convenience sample

was used and the Portuguese version of the NeeCham Confusion Scale⁽¹¹⁾ validated for the Portuguese culture was applied; this is a good instrument to evaluate the studied phenomenon⁽³⁾.

The services available for data collection were the following units: medicine, cardiology, surgery, endocrinology, gastroenterology, hematology, neurology, orthopedics, pneumology, intensive therapy, infectology and urology. Cross-sectional data collection was carried out over two months and a sample of 111 patients was obtained. The selected patients were those who obtained scores below 25 on the NeeCham Confusion Scale.

A documentary analysis was performed in the clinical processes of the 111 patients (medical and nursing records) and the nurses responsible for caring for these patients were interviewed immediately after the NeeCham Confusion Scale was applied. The following question guided the interview: how do you evaluate your patient's mental condition? Answers provided the nurses' *perceptions* concerning the phenomenon. The documentary analysis aimed to quantify the level of under-diagnosis of the phenomenon given the presence of diagnosis, signs and symptoms. The interview aimed to unveil the nurses' perceptions concerning the presence of AC/delirium at that point in time. A total of 111 interviews were conducted, one per patient, while some nurses had more than one patient in this condition.

The analysis of collected data, clinical records and interviews was based on the technique of content analysis⁽¹²⁾. For that, an analysis model was initially conceived. It was composed of categories and dimensions listed in the literature as indicators of AC/delirium based on the International Classification for Nursing Practice[®] version 1.0⁽¹³⁾. The method used to organize the corpus of analysis within the established categories was guided by the semantic value. The semantic value was the base unit from which information was categorized; each unit was recorded in each dimension only once⁽¹²⁾. Hence, it was a categorical, frequency and quantitative analysis. Data were analyzed by the Statistical Package for the Social Sciences - version 14.0. Descriptive and inferential statistics were used in order to provide richer information.

The study was approved by the Research Ethics Committee after it was submitted to and authorized by the directors and managers of the nursing units (Doc. no. 111). Because the confused patients were considered vulnerable individuals, their legal/family representatives were asked to sign free and informed consent forms. The nurses also signed free and informed consent forms in order to participate in the study.

Results

General Data

The obtained results indicate that the 111 patients (with AC/delirium) were between 23 and 96 years of age, with an average age of 75.6 years. About half (56.8%) were between 65 and 84 years old, and 52.3% were men. Patients were hospitalized for an average of 12.2 days. According to the NeeCham Confusion Scale (this scale also reveals the condition's level of severity), 59.5% presented the highest level of severity – *moderate to severe confusion*. The remaining 40.5% displayed *mild or early development of confusion*. The individuals were distributed in the different units. A total of 69.3% belonged to three types of units: medicine (39.6%); neurology (19.8%) and orthopedics (9.9%). In terms of medical diagnosis, the largest groups were the circulatory system (26.1%), followed by the respiratory tract (22.5%), and neoplasms 10.8%.

Documentation of the phenomenon

The diagnosis of AC/delirium was identified in 4.5% (n=5) of the 111 patients in the sample.

However, the clinical records allowed the identification of various indicators of AC/delirium, which were called *documentation of the phenomenon*.

The *documentation of the phenomenon*, the result of analyzing the hospital records of patients with AC/delirium, fit in the categories: *psychological process, behavior, body process, neurological status, ability* and other dimensions associated with the phenomenon. Based on this conception, the phenomenon was documented in 86.5% of the cases, hence, under-diagnosis of the *documentation of the phenomenon* was identified in 13.5% of the cases.

A total of 504 descriptors were identified and these can be related to AC/delirium, especially in the nurses' records. The most frequent are the 31.9% that refer to *neurological status*, the 21.7% that refer to *body process*, the 18.2% that refer to *psychological process*; the 17.5% that refer to *behavior*, and the 10.7% that refer to alterations at other levels as presented in Table 1.

According to the adopted classification, *confusion* is a type of *cognition*, which in turn is a *psychological process* at a higher and abstract level⁽¹³⁾.

Table 1 – Descriptors of AC/delirium

Category – Psychological Process		
Dimension	Unit of Record	N (%)
Cognition		
Confusion	'continues with periods of confusion'	47 (9.3)
Attention	'rarely fixes the gaze'	14 (2.8)
Aphasia	'maintains aphasia'	20 (3.9)
Attitude		
Denial	'refused any treatment'	2 (0.4)
Category – Behavior		
Dimension	Unit of Record	N (%)
Interactive behavior	'pulled out the nasogastric tube'	69 (13.7)
Self Performing Activity	'attempted many times to get out of the bed'	19 (3.8)
Category – Body process		
Dimension	Unit of Record	N (%)
Rest		
Sleep	'intermittent and brief sleep'	17 (3.4)
Nervous system process		
Psychomotor activity	'was agitated during the entire shift'	74 (14.7)
Disorganized behavior	'inconsistent behavior'	12 (2.4)
Perception	'auditory hallucinations'	6 (1.2)
Category – Neurological status		
Dimension	Unit of Record	N (%)
Alertness	'vacant, lost stare'	11 (2.2)
Consciousness	'altered state of consciousness'	57 (11.3)
Orientation	'disorientation in time and space'	58 (11.5)
Response	'apathetic'	35 (6.9)

(continue...)

Table 1 – (continuation)

Dimension	Category – Ability	
	Unit of record	N (%)
Ability to communicate	'verbose, incoherent speech or indistinguishable'	49 (9.7)
Others		14 (2.8)
Total		504 (100)

In relation to the concepts associated with the description of the conditions of patients with AC/delirium the dimensions *psychomotor activity, confusion, interactive behavior, consciousness, orientation, and ability to communicate*, together represent 70.2% of data, while about one third (31.9%) is in the category *neurological status*.

The patients with *documentation of phenomenon* are on average hospitalized for longer periods and display more severe AC/delirium ($t=-1.532$ and $p=0.005$; $t=2.918$ and $p=0.004$). There is also a statistically significant relationship with *hospitalization service* ($\chi^2=18.898$ and $p=0.042$). The phenomenon is better

documented in the medicine, neurology and orthopedics services.

Documentation of nursing interventions

The analysis sought to identify *documentation of nursing interventions* reveals a total of 134 interventions (Table 2). Most (67.9%) of them are in the domain *organization*, for example: *immobilizing with other device* was the most common intervention followed by *immobilizing with bed rail*. Of the 111 patients, only 66 were subjected to interventions somewhat related to the phenomenon, which indicates that 40.5% of the patients did not receive interventions.

Table 2 – Descriptors of nursing interventions

Category – Prevent			
Actions	Care	N (%)	
Protect			
Fall prevention	'evaluate measures of physical and mechanical restraint'	1 (0.8)	
Safety measures	'ensure and maintain physical integrity'	1 (0.8)	
Category – Organize			
Actions	Care	N (%)	
Control			
Immobilizing with bed rail	'protective side rails were applied on bed'	42 (31.3)	
Immobilizing with other device	'upper limbs were immobilized'	49 (36.6)	
Category – Assist			
Actions	Care	N (%)	
Promote communication	'speak directly and slowly, giving time for the patient to answer'	6 (4.5)	
Others		35 (26)	
Total		134 (100)	

The *documentation of nursing interventions* reveals there is a statistically significant difference for the level of severity of AC/delirium ($t=2.148$; $p=0.029$), since patients with *documentation of interventions* display, on average, more severe AC/delirium. A significant relationship was found with *documentation of interventions* in relation to gender and hospitalization service ($\chi^2=6.355$ and $p=0.012$; $\chi^2=23.205$ and $p=0.010$). In the cases without *documentation of*

interventions, 62.2% were women and 37.8% were men. A low frequency of *documentation of intervention* was identified in the surgery and urology services: 100% and 85.7%, respectively, did not have *documentation of nursing interventions*.

The results also permitted verifying that the *documentation of the phenomenon* is significantly related to the *documentation of interventions* ($\chi^2=20.053$ and $p\leq 0.001$), since most of the patients with *documentation*

of the phenomenon also have documentation of nursing interventions. Table 3 shows that among patients without documentation of the phenomenon, only one had documentation of interventions.

Table 3 – Relationship between documentation of the phenomenon and documentation of nursing interventions

		Documentation of the phenomenon		
		No	Yes	Total
		n (%)	n (%)	n (%)
Documentation of nursing interventions	no	14 (31.1)	31 (68.9)	45 (100)
	yes	1 (1.5)	65 (67.7)	96 (100)
Total		15 (13.5)	96 (86.5)	111 (100)

Extent of under-diagnosis of confusion in documentation

According to the data, 12.6% of patients did not present any documentation of the phenomenon or documentation of interventions; hence this is the value of under-diagnosis in the documentation. The relationships between documentation of the phenomenon and documentation of interventions presented in Table 4 are evidence of the importance of identifying the phenomenon.

Table 4 – Relations between documentation of the phenomenon and documentation of interventions

Documentation	N (%)
With documentation of the phenomenon but without documentation of interventions	31 (28)
With documentation of the phenomenon and documentation of interventions	65 (58.5)
No documentation of the phenomenon but with documentation of interventions	1 (0.9)
No documentation of the phenomenon and no documentation of interventions	14 (12.6)
Total	111 (100)

A statistically significant relationship was found between the hospitalization service and under-diagnosis of AC/delirium in the documentation ($\chi^2=19.007$ and $p=0.040$). The urology service was the service that presented the highest level of under-diagnosis: 57.1% of its patients did not present documentation of the phenomenon or documentation of interventions. The

relation of under-diagnosis with the phenomenon's severity was also significant ($t=2.904$; $p=0.004$), noting that the under-diagnosed cases are, on average, less severe.

Perceptions of nurses

The interviews with nurses showed that 30.6% of them did not identify AC/delirium. A total of 131 associated concepts were identified among the nurses who identified the phenomenon. These concepts gave origin to the same categories used in the documentation of the phenomenon, only with different frequencies. A total of 36.6% of the concepts referred to the category neurological status, 32.8% to the psychological process and 15.4% to body process, and 9.2% and 6.1% to behavior and ability, respectively. The dimension that obtained the highest number of answers was orientation (29.0%), followed by confusion with 24.4%.

The perception of nurses was significantly related to the degree of severity of AC/delirium ($t=5.397$ and $p < 0.001$) and also with the degree of documentation of the phenomenon ($\chi^2=7.041$ and $p=0.008$), noting that the more severe patients were more easily identified and also that 92.2% of the patients with documentation of the phenomenon were identified by the nurses as having AC/delirium.

Absolute under-diagnosis of AC/delirium

Data suggest that the absolute magnitude of under-diagnosis is 8.1%; that is, no indicator related to AC/delirium was found in the documentation (phenomenon or interventions) or in the perception of nurses. When the phenomenon is recognized, the patients are older on average and present a greater level of severity of AC/delirium ($t=-2.400$ and $p=0.018$; $t=3.412$ and $p=0.01$, respectively). The absolute under-diagnosis of AC/delirium is also significantly related to under-diagnosis in the documentation ($\chi^2=67.859$ and $p < 0.001$) (Table 5).

Table 5 – Relationship between total under-diagnosis and under-diagnosis in the documentation

		Under-diagnosis of AC/delirium		
		No	Yes	Total
		n (%)	n (%)	n (%)
Under-diagnosis in the documentation	no	97 (100)	0 (0)	97 (100)
	yes	5 (35.7)	9 (64.5)	14 (100)
Total		102 (91.9)	9 (8.1)	111 (100)

Discussion

Most of the documentation related to patients with AC/delirium emerges from the documentation performed by nurses, which is consistent with the literature. Given the most intense contact of nurses with patients, nurses are able to more rapidly identify changes in patients' mental conditions^(1,3,14). However, establishing the diagnosis is difficult^(5,8-9) and may be related to the syndrome's characteristics (fluctuation of symptoms and the hypoactive subtype), infrequent use of reliable evaluation instruments, and factors inherent to the nurses themselves⁽⁹⁻¹¹⁾. As the data show, the characteristics of patients with AC/delirium (age and gender) and the particularities of the hospitalization (service and time of hospitalization) can also influence the recognition of the phenomenon and the conception of nursing care.

The study confirmed that a large portion of patients with AC/delirium are elderly, which is in agreement with the literature^(1-5,9-11,15). This age group tends to have a set of conditions that favors the development of this syndrome due to these individuals' vulnerability and also due to their more active use of health services⁽¹⁶⁾. They have also lived more years with more weaknesses. At the same time, more than two thirds of these patients were concentrated in three types of service – medical, orthopedics and neurological – that are already known to be related to a set of prevalent pathologies (such as the diseases in the circulatory system and respiratory tract) and the characteristics inherent to this age group^(2,17).

Documentation of the phenomenon was identified in about 86% of the clinical records and is related to hospitalization service and time, severity of AC/delirium and *documentation of nursing interventions*. The professionals of services that have a frequency of patients with AC/delirium above the average are more familiar with the phenomenon and are able to observe it better. Longer hospitalizations advance identification of the phenomenon. When professionals spend more time with patients they improve their knowledge of them and become more able to detect changes in their mental condition, increasing opportunities to document it.

AC/delirium is primarily identified through clinical indicators of exacerbation of motor behavior such as the exteriorization of medical devices, attempt to get out of the bed, which often results in falls and has been confirmed by evidence⁽¹⁸⁾. It is known that many elderly patients have the hypoactive subtype that is more difficult to detect, unlike patients who have more expressive signs and symptoms;

the hyperactive subtype is more easily detected. This study's concept of severity is in agreement with data from the literature and seems to be strongly related to the hyperactive subtype⁽⁷⁻⁸⁾. Hence, the conclusion is that under-diagnosis of AC/delirium is mainly present in cases of *lethargy, sleepiness, or apathy*.

The existence of *documentation* but with absence of perception of the *phenomenon* was identified, which may indicate a lack of understanding on the part of nurses concerning the specificities of this syndrome. Attention deficit is one of the most common changes distinguishing AC/delirium^(10,19) and a reduced number of cases was identified in this study. Additionally, indicators of rapid onset and fluctuation of symptoms were never recorded in the analyzed *documentation*. The literature also indicates that nurses have deficient knowledge related to geriatrics⁽²⁰⁻²¹⁾ and AC/delirium⁽¹⁰⁻¹¹⁾, which might explain the lack of records of this phenomenon's characteristics.

The *documentation of nursing interventions* is related to the *documentation of the phenomenon* and to the patients' gender. The first aspect seems logical. There is a higher probability of a patient to undergo nursing interventions once the problem is identified. However, the *gender* aspect is more of a problem since male patients are more susceptible to the development of this phenomenon and this fact may be related to potential beliefs and stereotypes. It is important to keep in mind that a significant number of interventions are related to behavior control measures, which may indicate more hyperactivity manifestations on the part of male patients and explain the restraint measures. The truth is that these interventions *per se* represent a risk factor for AC/delirium and indicate the poor quality of care delivery⁽²²⁾. Nursing practices should go beyond the simple management of signs and symptoms⁽²³⁾, as in the case of physical restraint. Hence, this study's findings require professionals to reflect on why interventions considered important in the literature, such as *reality orientation*^(5,9-10), are not documented and the following question is posed: is it possible that interventions are planned but not recorded, or that they are undervalued or unknown? The fact that about one third of the patients with *documentation of phenomenon* did not have any *documentation of nursing interventions* is of concern.

The hospitalization service was an element that influenced the *documentation of the phenomenon* and *documentation of interventions*. The urology, hematology and surgery services displayed significantly higher rates of under-diagnosis in *documentation* than other units.

Perhaps, the professionals working in these units are less attentive to the phenomenon given its lower incidence in these units.

Age is an important factor in the under-diagnosis issue because the older the individual the lower is under-diagnosis of AC/delirium, a factor already described in another study⁽²⁴⁾. Although age is associated with AC/delirium, any inpatient is susceptible to this syndrome^(1,6,15).

Even though an absolute rate of 8.1% of AC/delirium under-diagnosis was identified, it is a less expressive rate compared with data from other studies^(7,14,16). When one broadens the concepts and includes indicators of altered mental condition, under-diagnosis substantially decreases. On the other hand, when only the concepts AC and/or delirium are considered at the level of clinical process, only 4.5% of the cases were diagnosed, which reveals under-diagnosis rates that are truly of concern. Additionally, if only the concept *delirium* was taken into account, which was observed only once in the medical records, the under-diagnosis rate would be virtually 100%. Therefore, the fact that this investigation enabled the identification of concepts or indicators indicating the phenomenon does not mean the professionals confirmed the diagnosis. Hence, under-recognition is the main problem in diagnosing AC/delirium^(5,14,16).

Conclusion

This study made clear that the patients' mental condition is not properly evaluated. The use of evaluation instruments such as the NeeCham Confusion Scale is an important strategy because it makes more objective a phenomenon of great subjectivity. The under-diagnosis of AC/delirium is a fact and regardless of the reasons involved in its genesis, it is important to know and overcome them. This study allowed the identification of some of them, which is innovating and relevant for contributing to the knowledge in this subject. It additionally exposes the context of a large European hospital in relation to the under-recognition and under-diagnosis of AC/delirium, a very significant problem for the safety of patients and quality of care delivery.

Most of the documented nursing interventions refer to *Physical Restraint*, which is not in agreement with advanced nursing practices, though it is not clear whether other measures were implemented but not documented.

Professionals' experience should be complemented with the use of better evidence available in the literature

in order to provide improved care to the population. This study opens up the possibility of implementing training measures concerning AC/delirium and also measures to systematically evaluate the phenomenon and nursing interventions since such measures can lead to positive results.

This study's limitations especially refer to the affected individuals because the study includes a broad set of concepts related to the phenomenon, a reduced contextualization of the study field and of the clinical experience of the involved nurses with AC/delirium. However, these limitations do not belittle the importance of its findings. When a professional writes the expression *vacant stare*, s/he may not associate it with AC/delirium but s/he has evidently identified the change in state. Relaxing the criteria would certainly increase absolute under-diagnosis, which does not diminish the quality of the findings.

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