

# Nursing diagnoses and their components in acquired immune deficiency syndrome patients

Diagnósticos de enfermagem e seus componentes em pacientes com a síndrome da imunodeficiência adquirida

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## Keywords

Acquired immunodeficiency syndrome; Nursing Diagnosis; Nursing process; Delivery of health care

## Descritores

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## Abstract

**Objective:** To identify nursing diagnoses in patients with acquired immune deficiency syndrome and to analyze the association between the most frequent diagnoses and their defining characteristics, and related or risk factors in this population.

**Methods:** A cross-sectional study was developed with 113 patients admitted in a hospital in Northeast Brazil. An anamnesis script and physical exams were carried out for data analysis. The diagnoses went through a peer-review process conducted by the authors. The association occurred through Pearson's Chi-squared and Fisher's exact tests.

**Results:** Twenty-four diagnoses were identified. The most frequent had a statistically significant relationship with their components and were included in the domains of health promotion, perception/cognition, sexuality, and life principles.

**Conclusion:** The most prevailing nursing diagnoses were ineffective protection, deficient knowledge, noncompliance, and sexual dysfunction. Overall, the defining characteristics and diagnostic factors showed a significant association.

## Resumo

**Objetivo:** Identificar os Diagnósticos de Enfermagem em pacientes com a síndrome da imunodeficiência adquirida e analisar a associação entre os diagnósticos mais frequentes com suas características definidoras, fatores relacionados ou de risco nessa população.

**Métodos:** Estudo transversal com 113 pacientes internados em um hospital da Região Nordeste do Brasil. Para a coleta, foram utilizados roteiros de anamnese e exame físico. Os diagnósticos passaram por processo de revisão de forma pareada entre os autores. A associação ocorreu por meio dos testes qui quadrado de Pearson e exato de Fisher.

**Resultados:** Identificaram-se 24 diagnósticos. Os mais frequentes tiveram relação estatisticamente significativa com seus componentes e estavam inseridos nos domínios promoção da saúde, percepção/cognição, princípios da vida e sexualidade.

**Conclusão:** Os diagnósticos de enfermagem mais prevalentes foram proteção ineficaz, conhecimento deficiente, falta de adesão e disfunção sexual. Em geral, as características definidoras e os fatores dos diagnósticos apresentaram associação significante.



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## Introduction

The Acquired Immune Deficiency Syndrome (AIDS) is a disease caused by the Human Immunodeficiency Virus (HIV) that weakens the immune system, thus facilitating the incidence of opportunistic infections. Despite great advances in the fight against AIDS, it is still considered a worldwide public health problem.<sup>(1,2)</sup>

In light of this problem and as agents of the health-illness process transformation, nurses play an important role providing care to people living with AIDS. It is crucial that this action be carried out in a comprehensive and systematic manner, in order to reach better quality and resoluteness for these patients.<sup>(3)</sup>

The Nursing Care Systematization is based on comprehensive care practice. The implementation of this new perspective on care has been facilitated by the use of the Nursing Process.<sup>(4,5)</sup>

The second stage of the Nursing Process consists of the Nursing Diagnoses, which involve clinical reasoning on the health status of an individual, using the data collected from their anamnesis and physical exam. Thus, a detailed analysis of the health status of the patient contributes to the identification of the actual needs that demand specific interventions.<sup>(5)</sup> Therefore, a good clinical examination on the referred manifestations is essential, as well as the correct identification of the component elements of the Nursing Diagnoses.

Studies on the relationship between Nursing Diagnoses and their defining characteristics, and related and risk factors in specific populations are fundamental to nursing clinical practice, since they allow testing the hypothesis that there is a link between Nursing Diagnoses and their elements. Furthermore, they make it possible to determine their predicting capacity, increasing the reliability and accuracy of the inferential diagnosis process.

Therefore, the objective of this study was to identify Nursing Diagnoses in patients with AIDS and to analyze the association between the most frequent diagnoses and their defining characteristics, and related or risk factors in this population.

## Methods

A cross-sectional study was conducted in a public reference hospital for the treatment of infectious and contagious diseases, located in Northeast Brazil.

The study population consisted of patients admitted to the hospital with a confirmed medical diagnosis of AIDS. The size of this population was based on the mean number of patients hospitalized in 5 years (2009 to 2013), which totaled 158 patients. The sample was calculated according to the following procedure: alpha level of 5% and margin of error of 0.05; since the proportion was unknown, a p-value of 0.5 was attributed. Sample calculation resulted in 113 patients. The method applied was by convenience sampling.

The study sample corresponded to patients that met the inclusion criteria, namely: having been clinically diagnosed with AIDS, being over 18 years of age, being admitted to the hospital during the data collection period, and having at least 12 hours of hospitalization. Patients that were unaware of the illness diagnosis were excluded.

Instruments were used for carrying out physical exams and an anamnesis script in data collection. These instruments addressed socio-demographic and clinical data (form of transmission, time of diagnosis, presence of infections, adherence to antiretroviral therapies, medications, and laboratorial exams). It is noteworthy that the tools approached defining characteristics (signs and symptoms), related/risk factors subdivided into 12 domains (health promotion, nutrition, elimination and exchange, activity/rest, perception/cognition, self-perception, role relationships, sexuality, coping/stress tolerance, safety/protection, life principles and comfort) presented in taxonomy II of NANDA International (NANDA-I).<sup>(6,7)</sup>

The tools were evaluated by eight experts with experience in the area of Nursing Diagnoses and AIDS, and validated as for their appearance, content, transparency, and applicability.

The experts were also requested to make suggestions and changes they considered relevant. The items validated were those that reached an agreement index  $\geq 0.80$  among the experts.

After adjustments were made in the tool, a pre-test with 10% of the studied sample was applied. Since there was no need to make changes in the tool, the participants in the pre-test were included in this study sample.

Data were collected with the patients from March to September 2014, following the minimum period of 12 hours of hospital stay of the study subjects. Those willing to collaborate with the study were submitted to a physical exam and an anamnesis script in a separate room, at the referred hospital, respecting their privacy.

For identifying the Nursing Diagnoses, their defining characteristics, and related or risk factors, the NANDA International Nursing Diagnoses: Definitions and Classification 2012-2014<sup>(6,7)</sup> was used, following a two-step procedure: analysis (data categorization and gap identification) and synthesis (pool, comparison, identification, and relationship of causing factors). In the inferential diagnosis process, medical records were evaluated separately by two authors of this study, one holding a master's degree and the other a Ph.D., in order to provide better reliability to the results.<sup>(8)</sup> The diagnoses that matched were accepted. Those that showed any discrepancy among the evaluators had their medical records reassessed, until consensus could be reached.

Data analysis was conducted by means of absolute and relative frequencies. Measures of central tendency were taken for nursing diagnoses, and the Shapiro-Wilk test was used for checking normal distribution in a level of statistical significance of 5%. Subsequently, Pearson's Chi-squared test and Fisher's exact test were used for checking the association between the nursing diagnoses and their defining characteristics and related factors. A level of statistical significance of 5% was considered.

The study was registered in Brazil under the Platform Presentation of Certificate number for Ethics Assessment (CAEE) 23008113.8.0000.5537.

## Results

Most patients were male (72.6%), with a mean age of 39 years ( $\pm 9.81$ ), without a partner (66.4%), heterosexual (71.7%), having incomplete elementary school (55.7%), household income of a minimum wage (47.8%), and living in the state countryside (67.8%). The mean time of diagnosis of AIDS was 5 years ( $\pm 5.38$ ) among the patients. Approximately 70% had an opportunistic infection. The main reasons for the current hospitalization were due to respiratory system (21.2%) or gastrointestinal system (18.6%) symptoms.

Regarding treatment, 69% had already quit treatment because of skepticism or lack of interest (20.5%). As for alcohol consumption, approximately 51.3% consumed this substance, 41.6% were smokers, and 31% reported having consumed illegal drugs up to the week of hospitalization.

Among the participants studied, 24 Nursing Diagnoses were identified, whereas only four predominated in more than 50% of the patients, namely: ineffective protection, deficient knowledge, noncompliance, and sexual dysfunction.

The predominating diagnoses were related to the following domains: health promotion, perception/cognition, life principles and sexuality. The patients obtained a mean of 8.55 Nursing Diagnoses, median of 8, standard deviation of  $\pm 3.05$ , maximum value of 17 and minimum of 2. The Shapiro-Wilk test showed a 0.041 value, demonstrating asymmetrical distribution (abnormal). These data can be best viewed in table 1.

The ineffective protection Nursing Diagnosis was present in 100% of the patients, which made impracticable the elaboration of the 2x2 contingency table among the Nursing Diagnosis, its defining characteristics, and related factors; consequently, not allowing the completion of the statistical association tests. However, the following frequencies were observed for the defining characteristics: immune deficiency (100%), clotting failure (67.2%), fatigue (61.9%), weak-

**Table 1.** Distribution of Nursing Diagnoses identified in hospitalized patients

Nursing Diagnoses	Present	Absent
	n(%)	n(%)
Ineffective protection	113(100.0)	0(0.0)
Deficient knowledge	91(80.5)	22(19.5)
Noncompliance	78(69.0)	35(31.0)
Sexual dysfunction	61(54.0)	52(46.0)
Risk for impaired liver function	49(43.3)	64(56.6)
Ineffective health maintenance	41(36.3)	72(63.7)
Disturbed body image	39(34.5)	74(65.5)
Disturbed sleep pattern	36(31.9)	77(68.1)
Fatigue	35(31.0)	78(69.0)
Acute pain	31(27.4)	79(69.9)
Risk-prone health behavior	29(25.7)	84(74.3)
Anxiety	26(23.0)	87(77.0)
Imbalanced nutrition: less than body requirements	25(22.1)	88(77.9)
Relocation stress syndrome	21(18.6)	92(81.4)
Risk for compromised human dignity	19(16.8)	94(83.2)
Insomnia	14(12.4)	99(87.6)
Impaired comfort	12(10.6)	101(89.4)
Constipation	12(10.6)	101(89.4)
Impaired oral mucous membrane	12(10.6)	101(89.4)
Spiritual distress	8(7.1)	105(92.9)
Dysfunctional family processes	8(7.1)	106(93.0)
Risk for powerlessness	7(6.2)	106(93.8)
Ineffective denial	6(5.3)	107(94.7)
Chronic sorrow	6(5.3)	107(94.7)

ness (46%), and dyspnea (24.7%). The related factors identified were: immune disorders (100%), abnormal blood profile (84.9%), drug abuse (45.1%), inadequate nutrition (22.1%), and drug therapy (14.1%).

Table 2 shows the defining characteristics and related factors of the deficient knowledge, noncompliance, and sexual dysfunction Nursing Diagnoses.

## Discussion

Study limitations were related to the non-probabilistic sampling used, in which the researcher selects accessible elements, which does not guarantee the representativeness of the sample, making the generalization of the results difficult.

**Table 2.** Distribution of the Nursing Diagnosis deficient knowledge, noncompliance, and sexual dysfunction, according to the defining characteristics and related factors

Variables	Deficient knowledge		Total	p-value
	Present	Absent		
<b>Defining characteristics</b>				
Instructions inappropriately followed				
Present	91	4	95	0.001*
Absent	-	18	18	
Total	91	22	113	
Verbalization of the problem				
Present	91	6	97	0.001*
Absent	-	16	16	
Total	91	22	113	
<b>Related factors</b>				
Information misinterpretation				
Present	68	6	74	0.02†
Absent	23	16	39	
Total	91	22	113	
Lack of familiarity with information resources				
Present	66	2	68	0.04*
Absent	25	20	45	
Total	91	22	113	
<b>Noncompliance</b>				
Behavior indicating noncompliance				
Present	70	5	75	0.002†
Absent	8	30	38	
Total	78	35	113	
Evidence of development of complications				
Present	45	13	58	0.04†
Absent	33	22	55	
Total	78	35	113	
Failure in keeping scheduled appointments				
Present	48	17	65	0.03†
Absent	30	18	48	
Total	78	35	113	
<b>Related factors</b>				
Relevant ability to comply with the treatment regimen				
Present	69	4	73	0.003*
Absent	9	31	40	
Total	78	35	113	
Forgetfulness				
Present	73	-	73	0.002*
Absent	5	35	40	
Total	78	35	113	
<b>Sexual dysfunction</b>				
Perceived deficit of sexual desire				
Present	59	10	69	0.001*
Absent	2	42	44	
Total	61	52	113	
Perceived limitations imposed by the disease				
Present	58	9	67	0.001*
Absent	3	43	46	
Total	61	52	113	
<b>Related factors</b>				
Altered bodily function				
Present	49	12	61	0.04†
Absent	12	40	52	
Total	61	52	113	

\*Fisher's exact test; † =Pearson's Chi-squared test

On the other hand, the study showed strengths that must be highlighted. The identification of the Nursing Diagnoses and their respective defining characteristics and related and risk factors is indispensable for the practice, as for listing specific nursing interventions and directing them towards actual needs of hospitalized patients who live with AIDS.

The ineffective protection Nursing Diagnosis, according to the NANDA International, refers to a reduced ability for self-protecting against internal and external threats, such as illnesses or injuries. In studies conducted with patients living with AIDS, this Nursing Diagnosis had a prevalence of 98% to 100%.<sup>(9,11)</sup>

Leukopenia, thrombocytopenia, and anemia were related to immunodeficiency, which have its cause in viral replication and in the HIV mechanism of action, since it binds to the cell surface and destroys T CD4 lymphocytes, increasing susceptibility to opportunistic infections.<sup>(12)</sup>

It is noteworthy that the presentation of fatigue in these patients is probably a result of these cellular changes, particularly the decrease in red blood cells, which contributes to the condition of anemia and dyspnea and weakness symptoms felt by the individual.<sup>(13-17)</sup>

Based on the patients with AIDS interviewed, the study showed that 12.5% (n=66) presented malnutrition, justified by diarrhea, loss of appetite, fever, and malabsorption of nutrients. It is also important to point out that the HIV has mechanisms that affect specifically the nutritional status of individuals by increasing the energy demand and interfering in the absorption and metabolism of the nutrients.<sup>(18)</sup>

The consumption of illegal drugs, alcohol, and tobacco is seen by some authors as a risk factor for developing opportunistic infections in patients with AIDS. Oral candidiasis and hairy leukoplakia are some examples of these infections.<sup>(19,20)</sup>

Therefore, some nursing activities must be carried out with the aim of controlling the infection, namely: monitoring systemic and local signs and symptoms of the infection, vulnerability to infections, absolute count of granulocytes, white blood cells and differential results, and maintenance of

safeguard measures. Nursing guidelines related to the importance of antiretroviral use, as well as a way of minimizing side effects and avoid complications related to the outbreak of opportunistic infections, are also crucial for therapeutic success.

The deficient knowledge Nursing Diagnosis, according to NANDA International, is characterized by lack or absence of cognitive information related to a specific topic. The prevalence of this diagnosis in conducted studies corresponded to 19.6% to 88.3% of the patients.<sup>(9,21,22)</sup>

Behaviors, such as fear, anxiety, guilt, and anger occur at the time of the diagnosis of AIDS, which could make the person not capable of coping with the situation, demonstrating lack of interest for following the instructions related to treating the illness.<sup>(9,13)</sup>

In a study conducted with people living with AIDS, they shared their difficult to understand the questions related to illness prevention and treatment.<sup>(22)</sup> Low educational level is also one of the factors that contribute to misinterpretation of information regarding the illness.<sup>(21,23)</sup> Additionally, HIV can contribute to the onset of neurologic manifestations, such as progressive dementia.<sup>(9,24)</sup>

Consequently, it is unquestionable the need for the nursing practice to engage in efforts to also carry out health education activities directed towards promoting the practice of safer sex; protection against infection, by explaining the signs and symptoms of the infection, and ways of avoiding them; process/treatment, by explaining the purpose and how to participate in the treatment; and the illness process, by explaining the illness physiopathology, about their health condition and changes in lifestyle to avoid further complications and/or control of the illness process, as well as control measures related to the illness treatment side effects.

However, methodological and/or approach strategies are necessary to facilitate the learning of these patients, adjusting the instruction to their level of knowledge and understanding, introducing information in a motivational format, and encouraging their active participation.

The NANDA International noncompliance Nursing Diagnosis is defined as the behavior of the person and/or caregiver that deviates from the

health promotion plan or therapy agreed with the person and/or family and/or community.

In a study conducted with individuals with AIDS, this Nursing Diagnosis showed prevalence of approximately 35% among hospitalized patients, but there were no specifications on the defining characteristics and related factors.<sup>(3)</sup>

Behaviors indicating noncompliance and failure in keeping scheduled appointments are evidenced by the patient withdrawal or interruption of the use of antiretroviral drugs and not showing up at the health services, to receive medications, to attend to medical appointments, or to make exams.<sup>(25)</sup>

Negative convictions related to the illness or treatment, lack of motivation feelings or denial of health condition expressed by the individual, resistance or difficulty changing behaviors and lifestyle habits are part of the fundamental values of the individual that hinder adherence to the treatment of the illness.<sup>(25)</sup>

It is further noted that the feeling of shame or fear of suffering from prejudice from friends and families when they become aware of the illness can contribute to the non-use of antiretroviral drugs in public places or at work, which can have an influence in treatment efficacy.<sup>(25)</sup>

Drug use can interfere in noncompliance to treatment, due to behavioral and cognitive changes on the individual's state of mind, making them forget to take the medications. Furthermore, serum levels of blood alcohol can increase the antiretroviral therapy side effects, which can lead the patient to opt for interrupting the drug therapy.<sup>(25)</sup> Additionally, forgetfulness can also be the result of a depressive condition, which adds up to memory and attention deficit.<sup>(26)</sup>

Studies show that the onset of side effects, particularly at the beginning or during the change of antiretroviral therapy, manifests as one of the troublesome factors that lead to the withdrawal or interruption of the treatment.<sup>(15,25)</sup>

It is noteworthy that the development of renal, hepatic, neurologic, cardiovascular complications and malignancies can be linked to treatment withdrawal or irregularity. This is due to the fact that the antiretroviral therapy plays an important role in

viral suppression and maintenance of higher CD4 cell counts.<sup>(12)</sup>

Therefore, some nursing activities are worth highlighting, aiming at changing adherence behavior, namely: to determine patient motivation towards changing, to help the patient to identify strengths and to reinforce them, to encourage replacement of undesirable for desirable lifestyles, and to discuss with patients/important people the process on how to change the behavior. Additionally, with the aim of increasing better adherence to treatment, the nurse can evaluate the understanding the patient has regarding the illness, providing actual information on the treatment, encouraging verbalization of feelings, providing support on the use of medications, helping to identify positive strategies for dealing with limitations, and monitoring necessary lifestyle changes.

The NANDA International sexual dysfunction Nursing Diagnosis is defined as the condition in which the individual goes through changes in sexual function, during the phases of sexual response to desire, arousal, and/or orgasm, which is seen as unsatisfying, unrewarding, and inadequate. Prevalence results varying from 13.3% to 66.6% were identified.<sup>(3,10,21,22)</sup>

The fear of virus transmission, depression, and trauma for having contracted the disease are some of the main causes of sexual dysfunction manifested by these patients. Additionally, prejudice involving the disease and bodily changes, such as lipodystrophy and weight loss, for some people lead to low self-esteem and lack of interest in expressing their sexuality.<sup>(3,21,27,28)</sup>

Therefore, nurses must carry out activities aiming at improving patients' coping by evaluating their adaptation towards bodily image changes, encouraging a gradual control of the situation. It is also necessary to intervene in the improvement of the patients' bodily image, helping them to open up about the changes caused by the disease and discussing actions to improve physical appearance.

Finally, it is important that nurses carry out actions aimed at advising patients regarding sexual is-

sues, explaining that the disease, the medications, and stress often alter the sexual function, encouraging them to verbalize and make questions, and trying to include the sexual partner, whenever appropriate.

Further studies in this area are necessary, in order to broaden the research on diagnoses that were not included in this study or for this specific population. The development of research with the aim of analyzing the content and clinical accuracy and validity of the Nursing Diagnosis in this group is also recommended.

## Conclusion

Twenty-four Nursing Diagnoses were identified in patients with AIDS, with the most frequent being ineffective protection, deficient knowledge, noncompliance, and sexual dysfunction. There was an association found in the deficient knowledge Nursing Diagnosis with the defining characteristics of inadequate follow-up instructions and verbalization of problems, and with the factors related to misinterpretation of information and lack of familiarity with information resources. The noncompliance Nursing Diagnosis showed an association with defining characteristics and factors related to behaviors indicating noncompliance and relevant ability to comply with the treatment regimen. On the other hand, the sexual dysfunction Nursing Diagnosis showed an association with defining characteristics of perceived deficit of sexual desire and perceived limitations imposed by the illness, besides the factor related to altered bodily function.

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## Collaborations

Silva RAR and Costa RHS collaborated during the conception stages of the study, analysis, data

interpretation, manuscript drafting, critical review of its intellectual content, and approval of the final version to be published. Nelson ARC, Prado NCC, and Rodrigues EHF contributed to the manuscript drafting, relevant critical review of the intellectual content, and approval of the final version to be published.

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