OBJN
ONLINE BRAZILIAN JOURNAL OF NURSING

ISSN: 1676-4285

Hospitalization of adults with Aids in the intensive care unit: an analytical study

Hospitalização de adultos com Aids em unidade de terapia intensiva: estudo analítico

Hospitalización de adultos con Sida en la unidad de cuidados intensivos: estudio analítico

Patrícia Trindade Benites[1]
ORCID: 0000-0003-2455-2777

Vanessa Karen Rodrigues de Carvalho[2]
ORCID: 0000-0003-2528-900X

Marcos Antonio Ferreira Júnior[2]
ORCID: 0000-0002-9123-232X

Oleci Pereira Frota[2]
ORCID: 0000-0003-3586-1313

1 Maria Aparecida Pedrossian University Hospital, MS, Brazil
2 Federal University of Mato Grosso do Sul, MS, Brazil

Corresponding author:
Oleci Pereira Frota
E-mail: oleci.frota@ufms.br

Submission: 11/17/2020
Approved: 06/01/2021

ABSTRACT

Objective: to analyze the association of sociodemographic and clinical variables with the outcome of patients with Aids admitted to the intensive care unit (ICU). **Method**: A cross-sectional, analytical, retrospective study with a quantitative approach carried out in a teaching hospital with 55 patients. Data were obtained from secondary sources for the years 2016 to 2018. A descriptive and inferential statistical analysis was performed. **Results:** Most patients were male (76.4%), non-adherent to antiretroviral therapy (88.6%), and were co-infected (58.2%). Acute respiratory failure (52.7%) was the main cause of admission. During hospitalization, blood transfusion (50.9%) was the most common therapeutic measure and infection (49.1%) was the most recurrent complication. Cytomegalovirus, syphilis, hemodialysis, cough, dyspnea, nausea, seizure, and length of stay in the ICU were statistically associated ($p<0.05$) with mortality in the ICU and/or hospital. **Conclusion:** It is necessary to improve men's health policies to increase the health surveillance of those affected by Aids.

Descriptors: Intensive Care Unit; Human Immunodeficiency Virus; Acquired Immunodeficiency Syndrome; Critical Care; Hospitalization.

RESUMO

Objetivo: analisar a associação de variáveis sociodemográficas e clínicas com o desfecho de pacientes com Aids admitidos em unidade de terapia intensiva (UTI). **Método**: Estudo transversal, analítico, retrospectivo, de abordagem quantitativa, realizado num hospital de ensino com 55 pacientes. Os dados foram obtidos de fontes secundárias referentes aos anos de 2016 a 2018. Foi realizado análise estatística descritiva e inferencial. **Resultados:** A maioria dos pacientes era homem (76,4%), não aderente à terapia antirretroviral (88,6%) e coinfectado (58,2%). A insuficiência respiratória aguda (52,7%) foi a principal causa de admissão. Durante a internação, hemotransfusão (50,9%) foi a medida terapêutica mais comum e infecção (49,1%) a complicação mais recorrente. Citomegalovírus, sífilis, hemodiálise, tosse, dispneia, náuseas, convulsão e tempo de permanência na UTI foram estatisticamente associados ($p<0,05$) à mortalidade na UTI e/ou hospital. **Conclusão:** Há necessidade de aprimorar as políticas de saúde do homem para incrementar a vigilância à saúde daqueles acometidos por Aids.

Descritores: Unidade de Terapia Intensiva; Vírus da Imunodeficiência Humana; Síndrome da Imunodeficiência Adquirida; Cuidados Críticos; Hospitalização.

RESUMEN

Objetivo: analizar la asociación de variables sociodemográficas y clínicas a la evolución de los pacientes con Sida ingresados en la unidad de cuidados intensivos (UCI). **Método**: Estudio transversal, analítico, retrospectivo, con abordaje cuantitativo, realizado con 55 pacientes en un hospital docente. Los datos se obtuvieron de fuentes secundarias relativas a los años 2016 a 2018. Se realizó análisis estadístico descriptivo e ilativo. **Resultados:** La mayoría de los pacientes eran hombres (76,4%), no adherentes a la terapia antirretroviral (88,6%) y coinfectados (58,2%). La insuficiencia respiratoria aguda (52,7%) fue la principal causa de ingreso. Durante la hospitalización, la transfusión de sangre (50,9%) fue la medida terapéutica más común y la infección (49,1%) fue la complicación más recurrente. El citomegalovirus, la sífilis, la hemodiálisis, la tos, la disnea, las náuseas, las convulsiones y la estancia en la UCI se asociaron estadísticamente ($p<0,05$) a la mortalidad en la UCI y/o el hospital. **Conclusión:** Es necesario mejorar las políticas de salud de los hombres para aumentar la vigilancia de la salud de las personas que viven con el VIH.

Descriptores: Unidad de Cuidados Intensivos; Virus de Inmunodeficiencia Humana; Síndrome de Inmunodeficiencia Adquirida; Cuidado Crítico; Hospitalización.

Benites PT, Carvalho VKR, Júnior MAF, Frota OP. Hospitalization of adults with Aids in the intensive care unit: an analytical study. Online Braz J Nurs [Internet]. 2021 Mês [cited year month day];20:e20216467. Available from: https://doi.org/10.17665/1676-4285.20216467

INTRODUCTION

Since the advent of antiretroviral therapy (ART), there have been changes in the profile of patients with Acquired Immunodeficiency Syndrome (Aids) admitted to the Intensive Care Unit (ICU)[1]. In the past, causes of hospitalization were related to complications of the disease. With ART, however, the complications unrelated to Aids have increased[2], as well as ICU survival rates[3]. However, these data are highly variable, depending on the socio-economic condition of the countries. Morbidity and mortality remain a cause for concern, especially in those individuals with unknown serological status[4] and without appropriate treatment[2].

Several clinical and epidemiological studies [5,6,7] on aspects related to the hospitalization of patients with Aids are found in the medical literature but those conducted in the ICU are scarce. There are investigations on the sociodemographic profile, the relationship with ART, and the outcome of patients with Aids admitted to the ICU[8]. The main causes related to admission, therapeutic management, factors related to the outcome in the ICU, and general hospitalization have also been investigated in an international study[2].

As people living with Aids at the most severe stage of the disease will eventually need to be admitted to the ICU and that there is a shortage of Brazilian studies on this topic, the following guiding question for this investigation was elaborated: "Regarding the changes in the profile of the epidemic and the effects of highly active antiretroviral therapy, what are the characteristics of patients with Aids admitted to the ICU, as well as the main causes of admission, clinical management and the relationship of these variables with the outcome in the ICU and hospital?". Thus, this study was aimed at analyzing the association of sociodemographic and clinical variables with the outcome of patients with Aids admitted to the ICU.

METHOD

This is a cross-sectional, analytical, retrospective study with a quantitative approach carried out in the Adult ICU of a teaching hospital in Mato Grosso do Sul. The hospital has 232 beds and has the only ward for Parasitic Infections (PI)in the state. It is a state reference ward in Parasitic Infections and highly complex procedures in the treatment of patients with HIV/Aids. The adult ICU consists of nine beds and showed an average turnover rate of 9.0% between January and June 2019.

Intentional non-probabilistic sampling was performed and included all patients admitted to the ICU due to Aids complications between 2016 and 2018 who were 18 years old or over. Patients with inconclusive and/or ineligible data were excluded. The time frame of the last three years was chosen because of reliable and accessible records only as of 2016. Data were collected from February to June 2019, from electronic and physical medical records, from the hospital's laboratory testing system, and from the Brazilian government platform Laudo Aids through an instrument containing: a) sociodemographic variables: age, sex, marital status, year of admission to the ICU, year of Aids diagnosis, use of antiretroviral therapy (ART); b) clinical variables: cause of admission to the ICU, clinical manifestations, co-infection,

period from hospital admission to admission to the ICU, length of stay in the ICU and hospital, care provided, complications, outcome of admission to the ICU and hospital; and c) laboratory tests: viral load (VL), CD 4 positive T lymphocyte count (cluster of differentiation) and hemoglobin levels.

Data were organized in *Microsoft Excel 2013* and analyzed using the SPSS statistical program, version 24.0. Descriptive and inferential statistical analysis was performed. The univariate assessment of the association between sociodemographic, epidemiological, and clinical variables with the outcome of the patient in the ICU and hospitalization was performed using the chi-square test. The comparison between the outcomes, in relation to the following quantitative variables: age, time since diagnosis, viral load, number of CD4 positive T lymphocytes, hemoglobin rate, time between the date of hospital admission (HAD) and ICU stay (ICU) and ICU stay was performed using *Student's t test*. All statistical tests were applied with a significance level of 5%. The protocol of this research was analyzed and approved by the Ethics and Research Committee of the Federal University of Mato Grosso do Sul under opinion numbers 3,096,657 and 3,305,060.

RESULTS

During the study period, 77 admissions of Aids patients were registered in the ICU. Of these, 17 were excluded because the medical record was not found and five were excluded due to incomplete or inconclusive data about the disease. Therefore, the sample of this study consisted of 55 patients. Of these, most were men (76.4%), with partners (41.8%) and inadequate adherence to antiretroviral therapy (83.6%). The mean age was 38.9 years old (± 10.7) and the mean time from the diagnosis of Aids to hospitalization was three years (± 2.9). Acute respiratory failure (ARF) was the most frequent cause that led to admission to the ICU (52.7%), the presence of co-infection was evidenced in 58.2% of patients, and tuberculosis (40.0%) was the most frequent one. Eight (14.5%) patients had more than one co-infection. Regarding those who had registered data on CD4 Positive T lymphocyte viral load (n=51), the mean was 438.6 copies/ml (± 1,109.8) and 117 cells/mm³ (±241), respectively. Of these, 37.0% had CD4 positive T lymphocytes between 50-100 cells/mm³. Mean hemoglobin was 9g/dL (±1.7) (Table 1).

Table 1 - Sociodemographic characteristics of Aids patients on admission to the ICU. Campo Grande, MS, Brazil, 2019

Sociodemographic characteristics (n=55)	**n**	**%**
Gender		
Male	42	76.4
Female	13	23.6
Marital Status		

With a partner	23	41.8
Without a partner	14	25.5
Other	18	32.7
Use of ART		
Adherence	09	16.4
Non-adherence	46	83.6
Year of admission to the ICU		
2016	20	36.4
2017	17	30.9
2018	18	32.7

ICU - Intensive Care Unit; ART - Antiretroviral Therapy.

Source: Prepared by the authors, 2019.

Table 2 – Clinical complications in patients with Aids on admission to the ICU. Campo Grande, MS, Brazil, 2019

Clinical complications of Aids* (n=55)	**n**	**%**
Acute respiratory failure	29	52.7
Decreased level of consciousness and orotracheal intubation	19	34.6
Distributive shock	7	12.7
Hemodynamic Instability	3	5.5
Immediately after surgery	3	5.5
Pneumothorax	2	3.6
Cranial hypertension	1	1.8
Sepsis	1	1.8
Clinical worsening	1	1.8
Steven Johnson Syndrome	1	1.8
Tuberculosis	16	40.0
Syphilis	8	20.0
Toxoplasmosis	8	20.0
Cytomegalovirus	3	7.5
Visceral Leishmaniasis	3	7.5
Hepatitis C	1	2.5
Human T-lymphotropic virus 1	1	2.5

*One patient may have more than one clinical complication.

Source: Prepared by the authors, 2019.

Table 3 – Laboratory data of Aids patients on admission to the ICU. Campo Grande, MS, Brazil, 2019

Laboratory data on admission (n=51)	**n**	**%**

CD 4 positive T lymphocytes		
>200 cells/mm³	4	7.8
200-100 cells/mm³	10	19.6
<100 cells/mm³	37	72.5

CD 4 - Cluster of Differentiation 4

Source: Prepared by the authors, 2019.

Of the patients requiring mechanical ventilation (MV) and vasoactive drugs (VAD), 92.7% and 43.6% used them before entering the ICU, respectively. During hospitalization, blood transfusion was used in half of the patients (50.9%), and infection (49.1%) was the most recurrent complication. The period between hospitalization and admission to the ICU was 8.53 days (±9.1) and the length of stay in the ICU was 13.4 (±7.8). Of the inpatients, 33 (60.0%) were transferred to the ward (PI, medical clinic and surgical clinic, and Medical Day Care). Of these, 18 (55.0%) were discharged from hospital (Table 2).

Table 4 - Clinical variables of patients after admission to the ICU. Campo Grande, MS, Brazil, 2019

Patient clinical variables* (n=55)	**N**	**%**
Mechanical ventilation		
Before admission to the ICU	51	92.7
After admission to the ICU	03	5.4
Not necessary	01	1.8
Vasoactive drug		
Before admission to the ICU	24	43.6
After admission to the ICU	16	29.0
Not necessary	15	27.2
Hemodialysis	08	14.5
Blood transfusion	28	50.9
Infection without sepsis	27	49.1
Sepsis	19	34.5
Pneumonia associated with mechanical ventilation	03	5.4
ICU Hospitalization Outcome		
Transfer to a ward	33	60.0
Death	22	40.0

*One patient may show more than one clinical variable. ICU - Intensive care unit.

Source: Prepared by the authors, 2019.

All socio-demographic, epidemiological, and clinical variables of the patients shown in Tables 1, 2, 3, 4 were compared with the outcomes in the ICU and in the hospital and the

statistically significant associations between one or both are shown in Table 5.

Table 5 - Clinical variables according to the outcome in the ICU and in the hospital for patients with Aids. Campo Grande/MS, 2019 (n=55). Campo Grande, MS, Brazil, 2019

Variables	Outcome					
	ICU %(n)			Hospital %(n)		
	Discharge (n=33)	Death (n=22)	p-value	Discharge (n=18)	Death (n=37)	p-value
Co-infection						
Cytomegalovirus						
Yes	0.0(0)	100(3)	0.029	0.0(0)	100(8)	0.033
No	63.5(33)	36.5(19)		34.6(18)	61.7(29)	
Syphilis						
Yes	50.0(4)	50.0(4)	0.532	0.0(0)	100(8)	0.033
No	61.7(29)	38.3(18)		38.3(18)	61.7(29)	
During Hospitalization						
Hemodialysis						
Yes	25.0 (2)	75.0 (6)	0.029	0.0 (0)	100 (8)	0.033
No	66.0 (31)	34.0 (16)		38.3(18)	61.7 (29)	
Blood transfusion						
Yes	53.6 (15)	46.4(13)	0.322	17.9 (5)	82.1 (23)	0.017
No	66.7 (33)	33.3(9)		48.1 (13)	51.9 (14)	
Sepsis						
Yes	10.5 (2)	89.5 (17)	0.001	5.3 (1)	94.7 (18)	0.002
No	86.1 (31)	13.9% (5)		47.2 (17)	52.8 (19)	
Clinical Manifestations						
Cough						
Yes	35.0 (7)	65.0 (13)	0.004	15.0 (3)	85.0 (17)	0.034
No	74.3 (26)	25.7 (9)		42.9 (15)	57.1 (20)	
Dyspnea						
Yes	35.3 (6)	64.7 (11)	0.012	23.5 (4)	76.5 (13)	0.331
No	71.1 (27)	28.9(11)		36.8 (14)	63.2 (24)	
Nausea						
Yes	100.0 (8)	0.0(0)	0.012	75.0 (6)	25.0 (2)	0.006
No	53.2 (25)	46.8(22)		25.5 (12)	74.5 (35)	

Seizure						
Yes	100.0 (6)	0.0 (0)	0.034	66.7 (4)	33.3 (2)	0.061
No	55.1 (27)	44.9 (22)		28.6 (14)	71.4 (35)	
ICU stay (days)	15.6±1.7	9.9±1.3	0.022	13.6±2.0	13.2±1.5	0.865

NOTE: The percentage values show the relationship between the response ("yes" or "no") and outcome ("Discharge" or "Death") variables; ICU - Intensive Care Unit.

Source: Prepared by the authors, 2019.

DISCUSSION

In this study, most patients were men, which can be explained by the epidemiological aspects of Aids and cultural history of men. In Brazil, from 1980 to June 2018, 606,936 cases of Aids were reported in men (65.5%) and 319,682 in women (34.5%). As of 2009, there was a drop in Aids cases in women and an increase in men, which contradicts the feminization phenomenon that has occurred in several countries. In 2016, the proportion between the sexes was 22 men to 10 women, a value that was maintained in 2017[9].

It should be noted that, historically, health care is not seen as a male practice[10] and some studies document that men search for health services when they have an acute complaint from a disease already installed and evolving unfavorably[10,11]. In this sense, men may be more prone to poor adherence to ART. A study carried out in Santa Catarina, Brazil, with 172 people with HIV/Aids found that men are 3.34 times more likely to have low/insufficient adherence to ART than women[12,13]. This disparity can be explained by the low demand for health services by men as well as the greater concern of women with measures to prevent and track diseases[10,11]. This study found a rate of 83.6% of general insufficient adherence to ART, which may imply several harmful consequences: immunological failure, rapid disease progression, and the appearance of severe opportunistic diseases[12,13], in addition to explaining the high number of admissions to the ICU.

A prospective study found that 85% of 100 patients had medium adherence to ART, 2% had low and 13% had high adherence, confirming that levels of poor adherence are even more prevalent[14]. Therefore, even years after the introduction of ART, people still do not fully adhere to the treatment, which can generate several implications, especially at the tertiary level of health that will help the patient after the disease has worsened.

The worsening of Aids favors the occurrence of opportunistic infections (OI), which sometimes require critical care measures in the ICU[2]. The appearance of OI is related to the immune status of the patient affected by Aids, especially the amount of CD4 positive T lymphocyte. Furthermore, they are among the main causes of hospitalization and mortality in patients with Aids[15]. It should be noted that OIs interfere with the natural course of the disease, accelerating its progression to the most advanced stage and affecting the patient's quality of life, in addition to generating high hospital costs[16].

A prospective study carried out in Colombia with 551 patients infected by the Human Immunodeficiency Virus (HIV) reports that 80% (n=24) of the deaths (n=30) were due to the OI that led to hospital admission[7]. In this study, it was observed that 72.5% of patients who had information about CD4 positive T lymphocyte counts had values of 50-100 cells/mm³, that is, they had severe immunosuppression[17]. The mortality of these patients can be mainly explained by the fact that diagnosis occurs during the most advanced stage of the disease with severe immune failure.

The depletion of the immune system leads to a predisposition to new infections and/or reactivation of latent infections and is related to increased mortality[18], a fact verified in this study, where syphilis and cytomegalovirus (CVM) infection were associated with in-hospital death from both infections (p=0.033) and in the ICU for CMV (p=0.029). Furthermore, 58.2% of the admitted patients had at least one co-infection, with tuberculosis (40%) being the most prevalent, followed by syphilis (20%) and toxoplasmosis (20%). These data are corroborated by the literature[19].

Only 7.5% of the participants in this research were diagnosed with CMV, and this is not in agreement with the prevalence found in the literature, which ranges from 75 to 90%[19]. Low CMV values may be related to a bias in the collection, as some medical records lacked detailed information or did not always contain serology data for CMV in the laboratory database. Aids reactivates CMV for those who already have the latent disease and is related to serious complications in immunocompromised patients, increasing morbidity and mortality rates[20]. The high rates of syphilis infection in Aids patients show that they continue to engage in unprotected sex[21]. These data demonstrate the importance of co-infections in the evolution of the disease and how they affect the outcome of hospitalization. ART is a protective factor for the regression of the disease since its absence is related to the increase in mortality rates of patients admitted to the ICU[3].

ARF was the most frequent condition for admission to the ICU. Retrospective studies carried out in China and France found a respiratory failure rate of 39% and 53.4% respectively in patients with Aids admitted to the ICU[2,3]. ARF is one of the most common complications that lead to admission to the ICU and is associated with mortality rates of 55%, which may increase if mechanical ventilation is needed. Aids patients are more prone to ARF because co-infections such as tuberculosis and cytomegalovirus contribute to this condition, in addition to OI, the most common being fungal pneumonia. In the literature, it is evident that these conditions affect about 60-80% of individuals hospitalized because of Aids[22].

Among the clinical manifestations prior to ICU admission, those that had statistically significant values and that resulted in death in the ICU and/or hospitalization were cough, dyspnea, nausea and seizure. Usually, the most common conditions that cause cough and dyspnea in these patients are pneumocystis, tuberculosis, or bacterial pneumonia – potentially severe conditions in immunocompromised patients. A hospital-

based study on pneumopathies in Aids patients found a rate of 54.2% for dyspnea, 64.4% for productive cough, and 18.6% for non-productive cough[23].

Neurological alterations are concerning and are related to severe conditions caused by Aids. Among them are neurotoxoplasmosis, neurocryptococcosis, and neurological alterations caused by CMV usually evidenced by convulsive crises[24]. A prevalence of 35.1% of this manifestation in patients with Aids was found in the literature[24], data that are slightly higher than in this study (21.8%). Neurological changes in Aids patients are associated with worse hospital outcomes[2].

Nausea is a very common symptom in individuals with Aids, which is present from the first signs and symptoms of the acute retroviral syndrome to the more advanced stages of the disease[25]. In this study, the incidence rate was 29.1% and it is usually associated with other signs and symptoms such as progressive weight loss, persistent diarrhea, vomiting, persistent lymphadenomegaly and asthenia[25].

Sepsis is another condition to which the immunodeficient patient is susceptible, and the prevalence in Aids patients is slightly higher compared to the seronegative population. Furthermore, it is related to worse prognosis and higher mortality in the ICU and general hospitalization[3], data that are in agreement with this study. There is a mortality rate of 29-76% in the ICU due to sepsis of patients with Aids. This data is lower compared to the findings in this study (89.5%). Furthermore, sepsis is related to increased length of stay in the ICU[26]. This, in turn, was also a variable with statistical significance in the outcome of ICU admission, which reflects its impact on the health condition of HIV-positive patients.

Among the clinical measures of treatment during hospitalization, hemodialysis was used in 14.5% of the participants. A study carried out with HIV-infected patients admitted to a general ICU reported similar results, in which 12.4% of patients required hemodialysis[2]. This occurs because acute kidney injury is a condition that often affects critically ill patients in the ICU, with hemodialysis being the main therapy. The practice is aimed at correcting metabolic abnormalities, regulating the fluid and electrolyte balance [27], eliminating excreta, and preventing other complications[4].

The greater need of Aids patients admitted to the ICU for hemodialysis is attributed to the high vulnerability to acute kidney injury, primarily due to nephropathies caused by HIV or secondarily by an underlying disease, hemodynamic disorders, volume depletion due to diarrhea and dehydration, hemodynamic stress, among others. In addition, there is the concomitant administration of large amounts of hepatotoxic and nephrotoxic drugs, typically required by these patients in the ICU, associated with the residual effects of equally toxic ART[28]. In this study, hemodialysis was associated with mortality in the ICU ($p=0.029$) and hospital ($p=0.033$). Results found in the literature show a mortality rate of 62% regarding patients undergoing hemodialysis in the hospital outcome[28] and an average rate of 43.2% in the ICU[29].

Patients undergoing hemodialysis have higher mortality rates than those who do not undergo the procedure. Another factor involved in this rate is the concomitant presence of sepsis,

which contributes to an increase in overall hospital mortality. The increase in morbidity and mortality can be explained by the fact that hemodialysis is a complicated process, as complications usually occur during the procedure, given the patient's clinical condition and hemodynamic instability[27].

Another clinical treatment used was blood transfusion, required in 50.9% of patients and with statistical significance in the outcome of hospital admission. Treatment is indicated for cases of anemia, thrombocytopenia, and coagulopathies, conditions to which critically ill patients are often exposed[30]. A study found that hemoglobin concentrations below 7g/dL are related to worse hospital outcomes during hospital stay, as well as the practice of blood transfusion is directly related to mortality within the ICU and wards. In addition, as the length of stay in the ICU increases, the chances of blood transfusions tend to increase[31]. In this study, the hemoglobin average was 9g/dL, below the reference for both sexes, which is associated with the need for blood transfusion and the significant mortality rate of the hospital outcome.

The mortality rate may be associated with the variables discussed above, as they influence the unfavorable outcome of both ICU and hospital admission, which was 45.4%. These values are below those found in other studies of patients with Aids admitted to the ICU. A similar study obtained mortality values in the ICU and in-hospital in general of 64.3% and 65.9% respectively[2], while a Brazilian study found values of 58% in the ICU and 17% in the wards[32]. This result may be associated with the quality of care provided to patients admitted to the ICU analyzed.

This study had some limitations, mostly related to data collection from secondary sources, which made it impossible, for example, to gather information about variables such as income, race, education, sexual orientation, and of some important laboratory variables at the time of admission and during hospitalization, such as serum albumin and lactate dehydrogenase, in addition to the deficit in filling in the mortality and prognosis scores. Therefore, the performance of prospective studies on the object of study is suggested.

CONCLUSION

Despite the robustness and wide coverage of public health policies in Brazil aimed at treating people living with HIV, most patients admitted to the ICU with Aids are young, with recent diagnosis of the disease and with severe immunodeficiency. Probably, these findings are due to the poor social and economic conditions of these people. Cytomegalovirus, syphilis, hemodialysis, cough, dyspnea, nausea, convulsion, and long ICU stay were associated with mortality, demonstrating the relevance of avoiding immunodeficiency.

This research contributes to improving the quality of care provided and supports the development of preventive actions in the ICU. The findings can also contribute to the improvement of health policies, in order to encourage adherence to treatment, regular consultations, the performance of control exams, and the adoption of a healthier lifestyle to prevent opportunistic conditions and promote health.

REFERENCES

1. Hernández-Cárdenas CM, Mendoza-Copa G, Hong-Zhu P, Gómez-García IA, Lugo-Goytia G. A multivariate prognostic score for predicting mortality of acquired immunodeficiency syndrome patients with hypoxemic respiratory failure and Pneumocystis jiroveci pneumonia. Rev Invest Clin [Internet]. 2019 [cited 2019 Nov 21];71(5):311-320. Available from: http://clinicalandtranslationalinvestigation.com/files/ric_19_71_5_311-320.pdf
2. Xiao J, Zhang W, Huang Y, Tian Y, Su W, Li Y et al. Etiology and outcomes for patients infected with hiv in intensive care units in a tertiary care hospital in China. J Med Virol [Internet]. 2015 [cited 21 Nov 2019];87(3):366-374. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1002/jmv.24063
3. Barbier F, Mer M, Szychowiak P, Miller RF, Mariotte É, Galicier L, et al. Management of HIV-infected patients in the intensive care unit. Intensive Care Med [Internet]. 2020 [cited 2021 Jan 25];46(2):329-342. Available from: https://pubmed.ncbi.nlm.nih.gov/32016535
4. Xiao L, Jia L, Li R, Zhang Y, Ji H, Faramand A. Early versus late initiation of renal replacement therapy for acute kidney injury in critically ill patients: a systematic review and meta-analysis. PLoS One [Internet]. 2019 [cited 21 Nov 2019];14(10):1-11. Available from: https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0223493&type=printable
5. Ngutshane BS, Sparaco A, Mayne ES. Epidemiological and immunological characteristics of HIV-infected patients on the cadaveric kidney donor waiting list at the johannesburg renal transplant program. AIDS Res Hum Retroviruses [Internet]. 2019 [cited 2021 Jan 25];35(4):388-392. Available from: https://pubmed.ncbi.nlm.nih.gov/30618265
6. Nunes AA, Caliani LS, Nunes MS, Silva AS, Mello LM. Profile analysis of patients with HIV/AIDS hospitalized after the introduction of antiretroviral therapy. Cien Saude Colet [Internet]. 2015 [cited 21 Nov 2019];20(10):3191-3198. Available from: http://www.scielo.br/pdf/csc/v20n10/en_1413-8123-csc-20-10-3191.pdf
7. Álvarez Barreneche MF, Restrepo Castro CA, Hidrón Botero A, Villa Franco JP, Trompa Romero IM, Restrepo Carvajal L, et al. Hospitalization causes and outcomes in HIV patients in the late antiretroviral era in Colombia. AIDS Res Ther [Internet]. 2017 [cited 21 Nov 2019];14(60):1-7. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5683524/pdf/12981_2017_Article_186.pdf
8. Cavalieri de Almeida M, Biralho de Almeida E. Perfil dos pacientes com infecção por HIV admitidos em unidade de terapia intensiva adulto em hospital universitário de Juiz de Fora, MG. Rev Enf UFJF [Internet]. 2015 [cited 21 Nov 2019];1(2):187-193. Available from: https://periodicos.ufjf.br/index.php/enfermagem/article/view/3805/1579
9. Ministério da Saúde (BR), Secretaria de Vigilância Em Saúde. Departamento de vigilância, prevenção e controle das infecções sexualmente transmissíveis, do HIV/Aids e das hepatites virais boletim epidemiológico HIV/Aids. Brasília: Ministério da Saúde, 2018. Available from: http://www.aids.gov.br/pt-br/pub/2018/boletim-epidemiologico-hivaids-2018
10. Lemos AP, Ribeiro C, Fernandes J, Bernardes K, Fernandes R. Men's health: the reasons for men to reach out to health services. J Nurs UFPE on line [Internet]. 2017 [cited 21 Nov 2019];11(Suppl. 11):4645-4652. Available from: https://periodicos.ufpe.br/revistas/revistaenfermagem/article/view/231205/25207
11. Oliveira MM, Daher DV, Silva JLL, Andrade SSCA. A saúde do homem em questão: busca por atendimento na atenção básica de saúde. Cien Saude Colet [Internet]. 2015 [cited 21 Nov 2019];20(1):273-278. Available from: http://www.scielo.br/pdf/csc/v20n1/pt_1413-8123-csc-20-01-00273.pdf
12. Carvalho PP, Barroso SM, Coelho HC, Penaforte FRO. Fatores associados à adesão à Terapia Antirretroviral em adultos: revisão integrativa de literatura. Cien Saude Colet [Internet]. 2019 [cited 21

Nov 2019];24(7):2543-2555. Available from: http://www.scielo.br/pdf/csc/v24n7/1413-8123-csc-24-07-2543.pdf

13. Gourlart S, Meirelles BHS, Costa VT, Pfleger G, Silva LM. Adesão à terapia antirretroviral em adultos com HIV/AIDS atendidos em um serviço de referência. REME [Internet]. 2018 [cited 21 Nov 2019];22(e-1127). Available from: http://www.reme.org.br/artigo/detalhes/1258
14. Menezes EG, Santos SRF, Melo GZS, Torrente G, Pinto AS, Goiabeira YNLA. Fatores associados à não adesão dos antirretrovirais em portadores de HIV/Aids. Acta Paul Enferm [Internet]. 2018 [cited 21 Nov 2019];31(3):299-304. Available from: http://www.scielo.br/pdf/ape/v31n3/1982-0194-ape-31-03-0299.pdf
15. Amorim LT, Schlemper Junior BR. HIV/AIDS in small cities in Midwest Santa Catarina, south of Brazil: Clinical and epidemiological aspects, opportunistic infections. Rev Soc Bras Med Trop [Internet]. 2019 [cited 21 Nov 2019];52(e20180430). Available from: http://www.scielo.br/pdf/rsbmt/v52/1678-9849-rsbmt-52-e20180430.pdf
16. Rubaihayo J, Tumwesigye NM, Konde-Lule J, Wamani H, Nakku-Joloba E, Makumbi F. Frequency and distribution patterns of opportunistic infections associated with HIV/Aids in Uganda. BMC Res Notes [Internet]. 2016 [cited 21 Nov 2019];9(501):1-16. Available from: https://bmcresnotes.biomedcentral.com/track/pdf/10.1186/s13104-016-2317-7
17. Ministério da Saúde (BR), Secretaria de Vigilância Em Saúde. Departamento de DST, Aids e hepatites virais. Protocolo clínico e diretrizes terapêuticas para manejo da infecção pelo HIV em adultos. Brasília: Ministério da Saúde 2013. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/protocolo_clinico_manejo_hiv_adultos.pdf
18. Boulougoura A, Sereti I. HIV in0fection and immune activation: the role of co-infections. Curr Opin HIV AIDS [Internet]. 2016 [cited 21 Nov 2019]; 11 (2): 191-200. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4831133/
19. Oliveira LS, Caixeta LM, Martins JLR, Segati KD, Moura RS, Daher MC et al. Adherence to antiretroviral therapy and correlation with adverse effects and coinfections in people living with HIV/AIDS in the municipality of Goias State. Rev Soc Bras Med Trop [Internet]. 2018 [cited 21 Nov 2019];51(4):436-444. Available from: http://www.scielo.br/pdf/rsbmt/v51n4/1678-9849-rsbmt-51-04-436.pdf
20. Gianella S, Letendre S. Cytomegalovirus and HIV: a dangerous pas de deux. J Infect Dis [Internet]. 2016 [cited 21 Nov 2019];214(Sup. 2):67-74. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5021239/pdf/jiw217.pdf
21. Salado-Rasmussen K. Syphilis and HIV co-infection: Epidemiology, treatment and molecular typing of Treponema pallidum. Dan Med J [Internet]. 2015 [cited 21 Nov 2019];62(12):1-11. Available from: https://ugeskriftet.dk/files/scientific_article_files/2018-11/b5176.pdf
22. Torres A, El-Ebiary M, Marrades R, Miró JM, Gatell JM, Sanchez-Nieto JM et al. Aetiology and prognostic factors of patients with Aids presenting life-threatening acute respiratory failure. Eur Respir J [Internet]. 1995 [cited 21 Nov 2019];8(11):1922-1928. Available from: https://erj.ersjournals.com/content/erj/8/11/1922.full.pdf
23. Gomes NT, Silva RM. Pneumopatia em pacientes com HIV/Aids: estudo de 118 casos em um hospital de referência. Pulmão RJ [Internet]. 2008 [cited 21 Nov 2019];17(2-4):62-69. Available from: http://www.sopterj.com.br/wp-content/themes/_sopterj_redesign_2017/_revista/2008/n_02-04/01.pdf
24. Camara VD, Sarmento MR, Ribeiro M, Tenan KC. Frequência de crise convulsiva em pacientes HIV+: a propósito de 13 casos. J Liga Bras Epilepsia. 1993;6(1):17-19.
25. Brasil. Ministério da Saúde. Departamento de vigilância, prevenção e controle das infecções sexualmente transmissíveis, do HIV/Aids e das hepatites virais. Protocolo clínico e diretrizes terapêuticas para manejo da infecção pelo HIV em adultos. Brasília: Ministério da Saúde, 2018.

Available from: http://www.aids.gov.br/pt-br/pub/2013/protocolo-clinico-e-diretrizes-terapeuticas-para-manejo-da-infeccao-pelo-hiv-em-adultos

26. Moreira J. The burden of sepsis in critically ill human immunodeficiency virus-infected patients - a brief review. Braz J Infect Dis [Internet]. 2015 [cited 21 Nov 2019];19(1):77-81. Available from: http://www.scielo.br/pdf/bjid/v19n1/1413-8670-bjid-19-01-00077.pdf

27. Silva AFS, Magalhães DM, Rocha PRS, Silva RF. Principais complicações apresentadas durante a hemodiálise em pacientes críticos e propostas de intervenções de enfermagem. Revista de Enfer magem do Centro-Oeste Mineiro [Internet]. 2018 [cited 21 Nov 2019];8:e2327. Available from: http://seer.ufsj.edu.br/index.php/recom/article/view/2327

28. Biagioni Santos MS, Seguro AC, Andrade L. Hypomagnesemia is a risk factor for nonrecovery of renal function and mortality in AIDS patients with acute kidney injury. Braz J Med Biol Res [Internet]. 2010 [cited 21 Nov 2019];43(3):316-323. D Available from: http://www.scielo.br/pdf/bjmbr/v43n3/7931.pdf

29. Santos RP, Carvalho ARS, Peres LAB, Ronco C, Macedo E. An epidemiologic overview of acute kidney injury in intensive care units. Rev Assoc Med Bras (1992) [Internet]. 2019 [cited 21 Nov 2019;65(8):1094-1101. Available from: http://www.scielo.br/pdf/ramb/v65n8/1806-9282-ramb-65-8-1094.pdf

30. Bruin S, Scheeren TWL, Bakker J, Van Bruggen R, Vlaar APJ. Transfusion practice in the non-bleeding critically ill: an international online survey-the TRACE survey. Crit Care [Internet]. 2019 [cited 21 Nov 2019];23(1):1-8. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6737617/pdf/13054_2019_Article_2591.pdf

31. Vicent JL, Jaschinski U, Wittebole X, Lefrant JY, Jakob SM, Almekhlafi GA et al. Worldwide audit of blood transfusion practice in critically ill patients. Crit Care [Internet]. 2018 [cited 21 Nov 2019];22(1):1-9. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5909204/pdf/13054_2018_Article_2018.pdf

32. Souza PN, Miranda EJP, Cruz R, Forte DN. Palliative care for patients with HIV/Aids admitted to intensive care units. Rev Bras Ter Intensiva [Internet]. 2016 [cited 21 Nov 2019];28(3):301-309. Available from: http://www.scielo.br/pdf/rbti/v28n3/en_0103-507X-rbti-28-03-0301.pdf