

## Analysis of 28 antiretroviral drug dispensing units in the state of Ceará

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### Abstract

**Objective:** To characterize the physical structure of antiretroviral Drug Dispensing Units (DDU) as well as the conditions of service offered to People Living with HIV/SIDA (PLHS). **Methods:** This is a descriptive, quantitative and exploratory study. Data collection occurred from a semi-structured form composed of 46 questions that was sent to the e-mails of the responsible for Antiretroviral (ARV) dispensing services, containing questions related to human resources and infrastructure characteristics of the units. **Results:** A total of 28 DDU participated in the study. It was observed that 71.4% (n=20) of these were implanted in replace assistance by care for patients with Sexually Transmitted Infections (STI) and Acquired Immunodeficiency Syndrome (SIDA) associated with Human Immunodeficiency Virus (HIV) Infection. Regarding the dispensing area of supplies and medicines, this was higher than 14m<sup>2</sup> in 80% and higher than 5m<sup>2</sup> in 90% of the sample studied. All units used the logistical drug control system for dispensing control; however, not all professionals in the units were able to operationalize it. Additionally, it was found that in 28.6% (n=8) of the DDU the waiting room/corridor was not adapted for people with disabilities, besides not having priority service as provided by law. It is also emphasized that, in 35.7% (n=10) of the services, the counter where the ARV were dispensed did not facilitate direct contact with the PLHA. In addition, about 29.0% (n=8) of the services had individual service counters with table and chairs available to users and in 60.7% (n=17) there were only counter/counter for service. Also, grids were found in the service desk, separating the attendant from the user in 71.4% (n=20) of the services. The room for individualized service and pharmaceutical clinical care was present in only 32.2% (n=9) of the services. **Conclusion:** It is suggested that there are adjustments in the physical structure of the units, as well as the need is urgent for individualized and private service, according to the specificities of each service, in order to strengthen the direct relationship between pharmacists and patients and, in particular, ensure humanized assistance.

**Keywords:** pharmaceutical assistance, antiretroviral therapy, access to health services, humanization of assistance.

## Análise de 28 unidades dispensadoras de medicamentos antirretrovirais no estado do Ceará

### Resumo

**Objetivo:** Caracterizar a estrutura física das Unidades Dispensadoras de Medicamentos Antirretrovirais (UDM), assim como também as condições de atendimento ofertadas às Pessoas Vivendo com o Vírus da Imunodeficiência Humana-HIV/AIDS (PVHA). **Métodos:** Trata-se de estudo descritivo, quantitativo e exploratório. A coleta de dado ocorreu a partir de formulário semiestruturado composto por 46 questões que foi enviado para os e-mails dos responsáveis pelos serviços de dispensação de Antirretrovirais (ARV), contendo variáveis relacionadas aos recursos humanos e características infraestruturais das unidades. **Resultados:** Participaram do estudo o total de 28 UDM. Observou-se que 71,4% (n=20) destas estavam implantadas em Serviços de Assistência Especializada aos portadores de Infecções Sexualmente Transmissíveis (IST) e da Síndrome da Imunodeficiência Adquirida (AIDS) associada à infecção pelo Vírus da Imunodeficiência Humana (HIV). No tocante à área de dispensação de insumos e medicamentos, esta foi superior a 14m<sup>2</sup> em 80% e superior a 5m<sup>2</sup> em 90% da amostra estudada. Todas as unidades utilizavam o Sistema de Controle Logístico de Medicamentos para controle das dispensações; porém, nem todos os profissionais das unidades eram capacitados para operacionalizá-lo. Foi constatado que em 28,6% (n=8) das UDM à sala/corredor de espera não era adaptada para pessoas com deficiência, além de não possuir atendimento prioritário conforme previsto em lei. Ressalta-se ainda que, em 35,7% (n=10) dos serviços, o balcão onde os ARV eram dispensados não facilitava o contato direto com as PVHA. Além disso, cerca de 29,0% (n=8) dos serviços possuíam guichês individuais de atendimento com mesa e cadeiras disponíveis para os usuários e em 60,7% (n=17) havia apenas guichês/balcão para atendimento. Foram encontradas grades no guichê de atendimento, separando o atendente do usuário em 71,4% (n=20) dos serviços. A sala para atendimento individualizado e cuidados clínicos farmacêuticos estava presente em apenas 32,2% (n=9) dos serviços. **Conclusão:** Sugere-se que haja adequações na estrutura física das unidades, bem como também urge a necessidade de atendimento individualizado e privativo, de acordo com as especificidades de cada serviço, no intuito fortalecer a relação direta entre farmacêuticos e pacientes e, em especial, assegurar um atendimento humanizado.

**Palavras-chave:** assistência farmacêutica, terapia antirretroviral, acesso aos serviços de saúde, humanização da assistência.



## Introduction

Infection with the human immunodeficiency virus (HIV), the microorganism responsible for the Acquired Immunodeficiency Syndrome (AIDS-HIV), continues to reach a significant portion of the world population, regardless of gender, age, or class, and persists as a public health problem that deserves different attention from government authorities.<sup>1</sup> Since its emergence in 1980, until July 2019, 966,058 cases of HIV were recorded in Brazil, given that it puts the country in the first position in the ranking of countries with the highest number of People Living with HIV/AIDS (PLHA) in Latin America.<sup>2</sup>

Specifically in Ceará, from 1983, when the first case of AIDS was diagnosed in the state, until November 2019, a total of 21,239 cases were reported. The AIDS detection rate in adults, from 2007 to 2012, showed a constant increase, with a peak in 2012 (13.7 per 100,000 inhabitants) and, after that year, the rates showed a gradual decrease in the number of notifications until 2018. The mean number of notifications in the last ten years was of approximately 1,113 new cases/year.<sup>3</sup>

In response to the HIV/AIDS epidemic, the Brazilian Ministry of Health (*Ministério da Saúde*, MS) and international entities have encouraged the adoption of combined prevention methods for HIV infection. One of these practices is the uninterrupted use of Antiretrovirals (ARVs), bearing in mind that users with an undetectable viral load significantly reduce the transmissibility of HIV.<sup>4-6</sup>

However, to ensure access, acceptability, and adherence to antiretroviral therapy (ART), the users must be adequately welcomed by the health professionals in specialized assistance services. Among these, it is possible to highlight the antiretroviral Drug Dispensing Unit (DDU).<sup>7</sup>

The DDU is an integral part of the health services that performs the management and dispensing of ARVs for assistance to the users, with no detriment to the dispensing of other medications or products, in addition to having the purpose of developing actions directed to medications, such as storage, conservation, control, and others directed to patients, as well as guidance on the use of the medications and supplies provided to users.<sup>8</sup>

Thus, the DDU ends up proving to be an important place for offering pharmaceutical services, enabling to reinforce the users' need for therapeutic adherence, as it is the last moment the patient has contact with the health service. Therefore, pharmacists have a primary role in ensuring a correct dispensation and adequate guidance on the rational use of medications and, consequently, the success of pharmacotherapy.<sup>9</sup>

In this sense, the quality of the health services goes through various care dimensions, whether technical, resource availability, management, and even the relationships established between users and professionals. In the case of the DDUs, some points should be object of concern in the daily work of the professionals involved in dispensation and pharmaceutical care.<sup>10</sup>

Thus, in the search for the standardization of care services for Sexually Transmitted Infections (STIs) and HIV/AIDS, the MS published Joint Ordinance No. 1, of January 16<sup>th</sup>, 2013, which defined the modalities of these services and proposed criteria for organization, structuring and operation.<sup>8</sup>

However, a study carried out by Picolli (2014), involving a DDU in Niterói (Rio de Janeiro), observed significant variations related

to the precariousness of the physical structure and of the human resources in these services, in addition to the absence of pharmaceutical professionals at all hours of operation in some units.<sup>11</sup>

In this perspective, a study carried out by Maciel, Santos and Rodrigues (2015) also stated that problems in work organization and physical conditions of health services lead workers to a forced adaptation, compromising quality of care. It also revealed excess of demand as one of the main factors that compromise the quality of care to be provided.<sup>12</sup>

However, the studies addressing the DDUs lack information related to their infrastructural characteristics, being limited to the clinical data of PLHA<sup>13-15</sup>. In this sense, studies characterizing the physical structure and care conditions offered to PLHA in the DDUs from Ceará are necessary to know the local reality of the functioning of these services.

From this perspective, the present study aimed at characterizing the physical structure of the DDUs from Ceará, as well as the care conditions offered to PLHA.

## Methods

This is a quantitative, descriptive, and exploratory study covering all 30 DDUs in Ceará, 13 of which are in Fortaleza, and the others distributed in 14 cities. The sampled units were registered from 2005 to January 2019 in the Logistic Control System of Medications (*Sistema de Controle Logístico de Medicamentos*, SILCOM), the MS system responsible for managing ARV medications in Brazil. Figure 1 shows the territorial distribution of the DDUs in Ceará according to their respective macro-regions.

**Figure 1.** DDUs that are participating in the research according to Ceará macro-regions. Brazil, 2019.



In order to obtain the research data, a data collection instrument was sent, addressing 46 questions related to infrastructure, ambience, and human resources characteristics, structured based on Joint Ordinance No. 1, of January 16<sup>th</sup>, 2013,<sup>8</sup> to the e-mails of those responsible for the DDUs registered in the SICLOM. In order to verify the understanding of the issues addressed, the instrument was previously validated by a technical advisor from the Ceará State Health Department. In addition, the questionnaire was sent after the acceptance of the institution's director/coordinator, by signing the letter of consent, and the subsequent signing of the free and informed consent form by the participants. For that, a deadline of 15 days was stipulated for sending the answered questionnaire. It is worth mentioning that only the participants representing units duly registered in the SICLOM and

who were not away from the DDU for more than 60 days were included in the research. In addition, units with an inactive profile in the system at the time of data collection were excluded from the sample. Information inherent to the registration of the DDUs and their respective responsible ones were provided by the Ceará State Health Department.

As parameter for the selection of the variables, Joint Ordinance No. 1, of January 16<sup>th</sup>, 2013<sup>8</sup> was used, which defines its modalities, classification, structure organization, and functioning, namely: a) service type in which the DDUs are implemented; b) infrastructural characteristics of the DDUs and c) human and material resources. Table 1 shows the definitions of the chosen variables.

**Table 1.** Description of the variables selected based on Joint Ordinance No. 1 of January 16<sup>th</sup>, 2013.

Service type in which the DDUs are implemented	It refers to the type of health facility in which the DDU is implemented, examples: general hospital, day hospital, care services specialized for people with STIs/HIV/AIDS, primary health care unit, among others.
Infrastructural characteristics of the DDUs	If they were designed to meet the specifications set forth in this Ordinance, emphasizing the following aspects: smooth and waterproof floor, ceiling, and walls, being easy to wash and without cracks, ventilation conditions for the storage area of medications, a comfortable dispensing area with an appropriate size, ensuring individualized care and confidentiality of patients, a waiting area sheltered from the sun, toilets with sink and washbasin for hand washing, electrical installations in good conditions, room for pharmaceutical care.
Human and material resources	Presence of a team with technical qualifications to operate the SICLOM, assist people, and clinically manage HIV infection, air conditioning system, and chairs for patients' accommodation at the waiting area with access to drinking fountains.

Source: Adapted from Brazil (2013)

Data collection was conducted from September 2018 to March 2019. The data obtained were organized in tables and graphs, and are mostly expressed by frequency distribution as percentages using *Microsoft Excel*<sup>®</sup> (2013 version) and the *Statistical Package for Social Sciences*<sup>®</sup> (version 21).

The project that resulted in the elaboration of this paper was submitted to the Research Ethics Committee (*Comitê de Ética em Pesquisa*, CEP) of the State University of Ceará (*Universidade Estadual do Ceará*, UECE), having been approved in February 2018, under number 2510.356.

## Results

The DDUs under study assisted a total of 18,352 patients; 75.4% (n=13,828) male, indicating a gender ratio of three men for each woman. It was also observed that a single unit had approximately 10,000 patients registered, with a daily assistance mean of 250 patients, while 14.3% (n=4) of the units assisted less than 50 users per month. The monthly mean of patients assisted in the DDUs was 192.5±1,273.4, ranging from 18 to 7,003 patients/month.

Regarding the type of program provided in the DDUs, it was observed that 60.7% (n=17) were exclusive for ARV dispensation and that 39.3% (n=11) provided medications of basic, strategic, and specialized components, and even medications ordered by a judicial claim.

Twenty-eight DDUs were analyzed, and 93.3% of the units registered in the SICLOM were distributed in 14 cities from Ceará. The area where these DDUs were inserted was over 14 m<sup>2</sup> in 78.6% (n=22) of the units studied, where 85.7% (n=24) of these had a dispensing

area greater than 5 m<sup>2</sup>, with an emphasis on the macro-region of greater Fortaleza with 53.6% (n=15) and 39.3% (n=11).

Regarding the type of service in which the units were located, it was observed that the majority, 71.3% (n=20), were Specialized Assistance Services (SAS) for people with STI/HIV/AIDS. Among the other services, it is valid to signal that dispensation was carried out by general hospitals (10.7%; n=3), followed by the Basic Health Units (BHUs) and the Orientation and Serological Support Centers together with the Counseling and Testing Centers (OSSCs/CTCs), both with 7.2% (n=2), in addition to a day hospital, which represented 3.6% of the units analyzed.

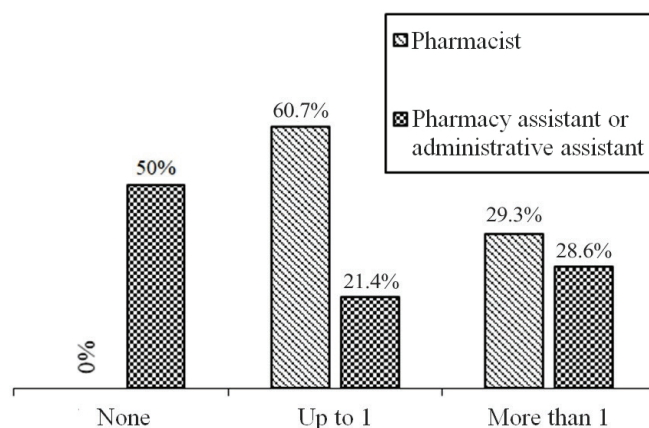
Regarding the profession of the people responsible for the DDUs, it was verified that most of them were pharmacists (85.7%; n=24), followed by nurses (10.7%; n=3), and social workers (3.6%; n=1). There were a total of 71 people working in the DDUs at the moment of data collection; among them, 50.7% (n=36) were administrative or pharmacy assistants, and 42.3% (n=30) were pharmacists.

Specifically, regarding ARV dispensing, it was verified that all the DDUs used at least one system for dispensing control. The operational SICLOM was used in 100% of the services, but only 63.9% (n=23) of the pharmacists were trained to operate it. In addition, regarding the analysis of ARV prescription, 25.1% (n=7) of these were dispensed without a pharmacist's check, given that 46.4% (n=13) of the DDUs did not expect the presence of this professional throughout their operating hours.

Another characteristic found was the presence of professionals trained to manage HIV infection and assist patients in the DDUs. Therefore, it was identified that, in 50.0% (n=14) of the DDUs, the administrative or pharmacy assistants did not have additional training for this purpose (Figure 2).



**Figure 2.** Percentage of professionals with additional training to manage and assist PLHA in the DDU from Ceará (n=28), Brazil, 2019.



Regarding the aspects of the DDUs' service and dispensing areas, it was revealed that 67.9% of the employees were not wearing uniforms and did not have an identification badge, 32.2% (n=9) of the units did not have enough computers to meet users demand, and 10.7% (n=3) of them did not have Internet.

In addition, it was also verified that, in 28.6% (n=8) of the DDUs, the waiting room/corridor was not adapted for people with disabilities and did not have priority service as provided by law. It is noteworthy that, in 35.7% (n=10) of the services, the counter where ARVs were dispensed did not facilitate direct contact with PLHA and that, in 85.7% (n=23) of the DDUs, the waiting room/corridor was shared with other services.

In addition to the points previously listed, it was also verified that 28.6% (n=8) of the units had individual service windows containing a table and chairs available to the users of the service and that, in 60.7% (n=17), there were windows/counter for standing services. Grids were also found at the service counter, separating users from the attendant in 71.4% (n=20) of the units. Other characteristics of the waiting area of the DDUs from Ceará are shown in Table 2.

Most of the units did not have a telephone, printer, and air conditioning system. In addition, there was no television in the waiting area and in the medication dispensing area in any services. It was also identified that, in 21.4% (n=6) of the DDUs, the temperature and relative humidity daily control and record was not performed. Other findings related to infrastructure and storage conditions of the DDUs from Ceará are shown in Table 3.

**Table 2.** Characterization of the waiting and assistance areas of the DDUs studied in Ceará. Brazil, 2019.

Parameters	YES	NO	DOES NOT APPLY
	N (%)	N (%)	N (%)
Does the waiting room/corridor have protection from the sun and rain?	25 (89.3)	3 (10.7)	-
Is the waiting room/corridor acclimatized?	15 (53.8)	13 (46.2)	-
Is there a password system for services?	-	28 (100.0)	-
Are there chairs for patients' accommodation?	12 (42.9)	15 (57.1)	-
Is there access to toilets?	19 (67.9)	9 (32.1)	-
Is there a bulletin board?	11 (39.3)	17 (60.7)	-
Is there a drinking fountain to which the patients can access?	5 (17.9)	23 (82.1)	-
Does the counter where the medications are dispensed enable pharmacist-user contact?	16 (57.1)	12 (42.9)	-

N = Absolute frequency; % = Percentage

**Table 3.** Circumstances of the storage area of medications and supplies dispensed at the DDUs studies in Ceará. Brazil, 2019.

Parameters	YES	NOT	DOES NOT APPLY
	N (%)	N (%)	N (%)
Do the facilities have smooth and waterproof surfaces (floor, ceiling, and walls), being easy to wash and without cracks?	12 (42.9)	16 (57.1)	-
Are the conditions and ventilation adequate?	17 (60.7)	8 (39.3)	-
Are the electrical installations in good and safe conditions?	23 (82.1)	5 (17.9)	-
Are the toilets isolated from the medication handling area?	24 (85.7)	4 (14.3)	-
Do the toilets contain sinks or washbasins with running water?	28 (100.0)	-	-
Are the medications stored in the unit itself?	28 (100.0)	-	-
Are the medications stored at an adequate temperature?	23 (82.1)	5 (17.9)	-
Is the environment in which the medications are stored protected against the direct incidence of sunlight?	28 (100.0)	-	-
Is the storage environment protected from the entry of rodents and insects, with protection in the windows?	16 (57.1)	12 (42.9)	-
Is the number of refrigerators proportional to the volume of medications requiring refrigerated storage?	21 (75.0)	4 (14.3)	3 (10.7)
Are there enough stands to store medications?	21 (75.0)	7 (25.0)	-
Are the DDU medications stored together with other drugs in the pharmacy?	17 (60.0)	11 (40.0)	-
Is the environment air-conditioned between 18°C and 25°C, with daily control and recording of temperature and relative humidity?	20 (71.4)	8 (28.6)	-

N = Absolute frequency; % = Percentage



Therefore, specific aspects of the DDUs from Ceará were also studied, making it possible to detect that there was some room for individualized assistance in only 32.2% (n=9) of the units. However, the availability of at least one table and three chairs for patient accommodation and bibliographic material to clarify possible doubts during care was only present in 21.4% (n=6) and 42.9% (n=12) of the units, respectively.

## Discussion

This study analyzed 28 DDUs from Ceará, using as a national normative parameter Joint Ordinance No. 1, of January 16<sup>th</sup>, 2013, allowing for greater knowledge about infrastructure characteristics and other aspects that can interfere in the comprehensive care of PLHA and the well-being of workers in these services.<sup>8</sup>

Considering that the state of Ceará has 184 cities, according to the last census of the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE), it was possible to observe a limitation in the number of DDUs.<sup>16</sup> Absence of these units was detected in six macro-regions, a result that can lead to failures in treatment access, considering that PLHA have to move from their respective cities to receive ART in other macro-regions. This result proved to be similar to a study by Mettrau, Prevé, and Pereira (2013), in which the authors detected the absence of DDUs in most of the cities in the state of Santa Catarina.<sup>9</sup>

Regarding the services in which the DDUs are located, it was shown that the majority were SAS services. These services were implemented in 1994, in a decentralized manner, with a defined function of ensuring assistance during the patient's treatment period for HIV/AIDS.<sup>8</sup> However, the MS has encouraged DDU expansion for various services, as well as clinical follow-up, one of which is the BHU, intending to expand the access of PLHA to HIV/AIDS services due to the disease chronicity and the stigma reduction of the serological condition of these users.<sup>17</sup>

Regarding the training of those responsible for the DDUs, a significant portion was managed by pharmaceutical professionals. Such result corroborates with the findings of a study by Barbosa *et al.* (2017) that characterized the infrastructure of public pharmacies in Minas Gerais and identified that pharmacists were responsible for 94.7% of the services.<sup>18</sup>

In addition, this research showed the presence of pharmacists in all the DDUs. However, in 28.6% (n=8) of the services, absence of administrative assistants was verified and, then, the pharmacists had to perform basic activities that require a significant time, such as checking, separating, stocking, and controlling medications, signaling work overload and hindering the assistance of specialized services that these professionals can provide to PLHA. It should also be emphasized that there are no full-time pharmacists in almost 50% of the DDUs studied, which is in contradiction to the recommendations of the Ministry of Health and Law 13,021 of August 8<sup>th</sup>, 2014; and the users of the service ends up being the most affected, as they do not have access to health in a comprehensive way.<sup>8,19</sup>

Campese *et al.* (2016) highlighted that a pharmacy with the presence of a full-time pharmacist can have a privileged scenario in the construction of a socially useful service, intending to provide health care.<sup>20</sup> In the same direction, Leite *et al.* (2017) highlight that medication dispensing services cannot prevail only in the delivery act, as well as bureaucratic technical services, but that the ability to welcome, listen, understand, be responsible for and

support users' complaints and needs should be practiced.<sup>21</sup>

Regarding care for PLHA, the Joint United Nations Program on HIV/AIDS (UNAIDS) recommends that the health services should guarantee an environment of confidentiality and trust between users and professionals.<sup>22</sup> However, the data presented are worrisome, as it was noted that a single DDU serves an excessive number of PLHA daily, in association with other programs made available at the unit, a situation that can impair the quality of the services provided.

Nevertheless, a study by Soares and Brandão (2013) revealed that, when researching the reason for users not returning to an OSSC/CTC between 2008 and 2009, it was related to the need to identify the users when testing or fetching exams, representing a service failure in relation to anonymity.<sup>23</sup> The researchers considered that this factor could be related to the cause of the users' low return to the testing service, which can corroborate the results previously presented.

Due to the reduced space in most of the DDUs from Ceará, they generally do not have an exclusive area for users waiting to be seen. There were no service desks, no access to drinking fountains, no waiting rooms/corridors with places to sit, and there were bars separating users from those responsible for dispensing in some of these units. This scenario of discomfort in the waiting area of users in the DDUs was similar to those found by other researchers who studied drug dispensing services in Brazil.<sup>24</sup>

In addition, according to Barbosa *et al.* (2017)<sup>18</sup>, normally, the physical space where the dispensing of medications to users of the SUS is carried out is reduced and, frequently, this occurs through windows or glass with grids, without any kind of guidance to the user, indicating inadequate conditions to develop dispensing services, such as those advocated by Leite *et al.* (2017).<sup>21</sup> Services through windows or grids, separating users from those responsible for dispensing, is an organizational problem that can have important effects on therapy since the humanization of user service has been associated with adherence to treatment.<sup>23</sup>

The operational version of the SICLOM is implemented in all the DDUs from Ceará. This system is responsible for the logistic control of medications in order to analyze and control ARV dispensations through medical prescription, according to the prevailing Clinical Protocols and Guidelines for the Management of HIV Infection of the MS.<sup>4-6</sup> However, there is an urgent need that all the DDU employees are periodically trained for their continued operation to reduce work overload and the sharing of responsibilities, in addition to providing reliable information corroborating the programming and acquisition of ARV by the MS and the updating of protocols in order to provide rational use of medications by PLHA.<sup>11</sup>

It is also important to emphasize the presence of collaborators in the DDUs without the necessary additional qualification regarding the management of HIV infection and in the care of PLHA, even though there are consistent results in the literature regarding the benefits of permanent training for the work process of the professionals and for the health care provided to the patients.<sup>25-26</sup> This result can infer the quality of information and the service provided, which can cause dissatisfaction and disbelief in the user of the service, since guidelines on the benefits of ART and its use, adverse reactions, possible interactions, characteristics of the supplies provided, and clarifications about the disease is part of the DDU employees' duties.<sup>17,27</sup>

Another worrying factor is the presence of professionals in the services without proper uniforms and identification badges. Wearing uniforms enables greater safety and confidence, as well



as it improves the relationship between health service employees and patients.<sup>28</sup> An insufficient number of computers to meet the service demand was also reported, as well as lack of Internet in some of them. According to Leite *et al.* (2017), not having access to the Internet and to information systems isolates the service in the pharmacy concerning other health services and creates barriers to the development of the user's therapeutic project, as well as it hinders access to the SICLOM and the consultation of diverse information, guidelines, and medical records to support the services provided.<sup>21</sup>

Regarding the infrastructure characteristics of the pharmacies in which the DDUs are located, it was clear that a significant portion of these units did not have an adequate structure to store medications and, in some, the cleaning of the service could be impaired due to structural failures, as well as the lack of protection in the windows, enabling rodents and insects to enter. Although few units have reported that the conditions related to the electrical installations were not adequate, this issue is extremely relevant, requiring greater attention by the units' managers, since it can put the safety of employees and PLHA at risk.

Considering this context, problems related to the infrastructure interfere in the work process, compromising the quality of the services offered and generating demotivation among the professionals and discomfort in the patients.<sup>29</sup> In most of the sampled dispensing units, the environment does not seem to contribute to humanization as a guiding principle for care and management practices in the Unified Health System (*Sistema Único de Saúde*, SUS).<sup>30</sup>

Thus, it is also possible to observe inappropriate conditions of ventilation, control, and recording of temperature and humidity in the DDUs and an insufficient number of equipment, such as refrigerators and shelves to store ARVs and supplies. According to Dutra, Martins and Lima,<sup>31</sup> the lack of equipment to maintain adequate temperature compromises the quality of storage. Santos and Lopes (2017) also highlight that the poor storage of medications can interfere with their stability, being able to destroy the drug molecules, as in cases of oxidation reactions, or to form products with a different chemical composition, triggering losses in therapeutic actions.<sup>32</sup>

It was also identified that, in a considerable part of the units, ARVs are still stored separately from other drug classes, as suggested in MS Ordinance 344 of May 12<sup>th</sup>, 1998.<sup>33</sup> However, in mid-2016, through the publication of Ordinance 103 of August 31<sup>st</sup>, 2016, ARV substances were excluded from Ordinance 344/98, allowing them to be transported and stored together with other drugs, not being subjected to special control.<sup>34</sup>

The structure of the health services is directly related to the condition of welcoming and bonding. Thus, the absence of a pharmaceutical service room and appropriate conditions for welcoming patients makes it difficult to build plans for adherence and pharmacotherapeutic follow-up, in addition to building a bond between the service and the user.<sup>20</sup> According to Brehmer and Verdi (2010), conflicting ethical situations between workers and users are generated by inadequate service spaces, in which the users have no right to privacy and to have their particular needs met, constituting an obstacle to welcoming and achieving therapeutic success.<sup>35</sup>

The findings of this research contrast with those of Leite *et al.* (2017). These authors characterized the infrastructure of the primary health care pharmacies in the SUS through the analysis of data from the National Survey on Access, Use and Promotion of Rational Use of Medications in Brazil (*Pesquisa Nacional sobre o*

*Acesso, Utilização e Promoção do Uso Racional de Medicamentos no Brasil*, PNAUM – Services), which indicated less favorable conditions in the development of adequate dispensation services in Northeast Brazil, as they show smaller physical spaces, lack of equipment, and insufficient number of professionals.<sup>21</sup>

It is expected that, with this study, there will be greater encouragement for the structuring of the DDUs by managers, in addition to their reorganization and creation of specific policies for that, which indicates the need to expand the existing resources directed to the structuring of the pharmaceutical services in Ceará, aiming at providing individuality and privacy, favoring the service and the direct relationship between pharmacists and patients. As a strong feature of the study, we can mention the easy access of the researchers to those responsible for the DDUs, considering that most of the units are in Fortaleza, the city of residence of the researchers, besides the fact that one of them was a collaborator in the STI/HIV/AIDS technical area of the State Health Secretariat (*Secretaria da Saúde*, SESA).

As a possible study limitation, the lack of feedback from two professionals of the DDUs studied stands out, thus reducing the sample size. However, this does not preclude the work performed since the participating units represented nearly 93% of state services. It is also suggested to increase the sample in future research studies, involving the other federative units to compare the realities of each Brazilian region.

## Conclusion

The results achieved are worrying, as they signal significant divergences from the recommendations proposed by the reference regulations.<sup>8</sup> This situation can impair the quality of assistance to PLHA as a result of the lack of adequate conditions to provide services, mainly due to the fragilities in the infrastructure of the units. Therefore, there is a need for improvements in the physical structure of the DDUs, aiming at offering adequate working conditions to their collaborators and humanization in the assistance to PLHA. It is also essential to readjust the storage location of medications and supplies to ensure the quality of the items dispensed and aspects related to DDU management, which need to be improved to promote patient and employee safety.

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## Collaborators

FAPF participated in the following stages: choosing the theme and elaboration of the research project, survey of the collected data, data interpretation, and writing of the article. MBR and RBS collaborated in the work statistics and in the interpretation of the results. ACBP and MMFF contributed in the writing of the paper and in the relevant critical review of the intellectual content.

## Conflicts of interest statement

The authors declare that there are no conflicts of interest regarding this article.



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